

The California State University

1987 — 1988

GENERAL CATALOG

Undergraduate and Graduate

CALIFORNIA STATE UNIVERSITY

FRESNO

POTENTIALS UNLIMITED



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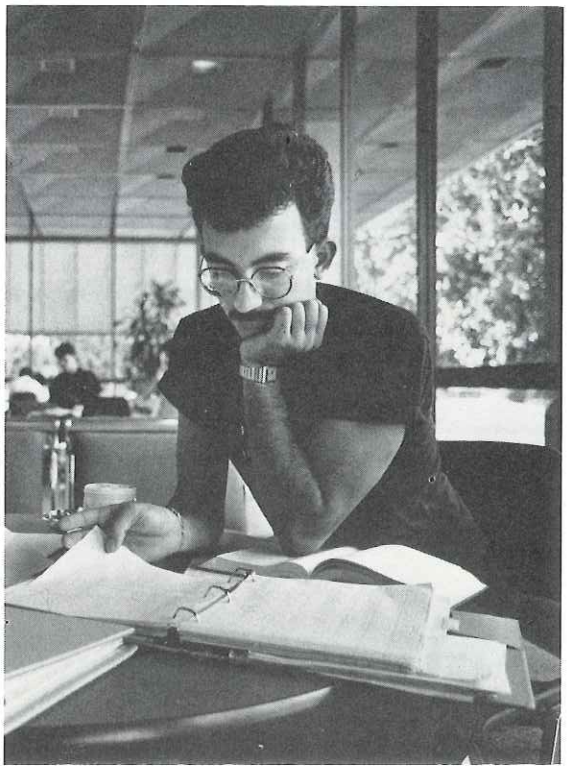
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Academic Calendar 1987–88

(Please Note: This document is not intended to be construed as an employee work calendar.)

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AUGUST

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NOVEMBER

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☐ Classes

■ Holidays

APRIL 1987

20 Monday	Advising and Early Registration for fall 1987 semester begins.

MAY 1987

23 Saturday	The 76th Annual Commencement for 1986–87.

JUNE 1987

June 1–Aug 21 Mon–Fri	**SUMMER SESSION.** (Check *Summer Session Catalog* for starting and ending dates of each class.)
June 1–July 10 Mon–Fri	Discovery '87—A series of one-day orientation and advising sessions for newly admitted undergraduate students and their parents.
26 Friday	Last day to submit changes and clearances (incomplete grades, approved petitions, departmental approvals, transfer transcripts) required for graduation at the end of the spring 1987 semester.
30 Tuesday	Last day to submit fall 1987 Early Registration forms to the Financial Aids Office for fee deferments (vouchers).

JULY 1987

10 Friday	Last day to pay fees for Early Registration for fall semester 1987.

FALL SEMESTER 1987

AUGUST 1987

24 Monday	**SEMESTER BEGINS.**
25 Tuesday	Advising Day for new students. Academic Assembly for faculty.
26 Wednesday	PRIORITY ADD DAY FOR EARLY REGISTRATION.
27 Thursday	WALK-THROUGH REGISTRATION.
28 Friday	Regular Add and Drop period begins.
31 Monday	**INSTRUCTION BEGINS.** LATE REGISTRATION BEGINS ($25 late fee). Auditors may register. Application period for a degree to be granted in December 1987 is August 31–September 10.

SEPTEMBER 1987

1–30, Tues–Wed	Filing period for applications for spring 1988 student teaching—Multiple Subject (elementary) and Single Subject (secondary) Credential Programs.
7 Monday	Labor Day. No classes. All offices closed.
10 Thursday	End of regular filing period for applications for degrees to be granted in December 1987.
14 Monday	LATE REGISTRATION ENDS. END OF REGULAR ADD PERIOD. Last day to register for Credit by Examination. Last day for refunds by resident students. (Nonresidents see *Schedule of Courses,* "Fee Refund Schedule.")
21 Monday	Last day to file an application for the master's degree to be granted in December 1987. (Late fee required September 11–21.)
28 Monday	LAST DAY TO DROP A CLASS without notation on the permanent record. Last day to obtain approval for credit/no credit grading. Last day to change from audit registration to credit registration or credit registration to audit registration. Last day to take examination for Credit by Examination. Last day of late filing period for application for the baccalaureate degree and credentials to be granted December 1987. (Late fee required September 11–28.)

OCTOBER 1987

9 Friday	Last day for graduate students to apply for Advancement to Candidacy this semester to be eligible for graduation in May 1988.
12 Monday	Last day for faculty to submit Credit by Examination grade.
23 Friday	Last day to register for reading and writing examination for Admission to Student Teaching.
26 Monday	Last day to file edited, committee-approved master's thesis for December 1987 graduation.

NOVEMBER 1987

Nov 2–Feb 1 Mon–Mon	Filing period for scholarships for 1988–89 academic year.
16 Monday	Advising and Early Registration for spring 1988 semester begins.
18 Wednesday	Advising Day for new students, spring 1988 semester. Classes in session.
20 Friday	LAST DAY TO WITHDRAW FROM A COURSE FOR SERIOUS AND COMPELLING REASONS, EXCEPT BY COMPLETE WITHDRAWAL FROM THE UNIVERSITY.
25 Wednesday	Last day to submit spring 1988 Early Registration forms to the Financial Aids Office for fee deferments (vouchers).
26–27, Thurs–Fri	**Thanksgiving recess.** All offices closed.

Academic Calendar 1987–88

DECEMBER 1987

2 Wednesday	Last day to pay fees for Early Registration for spring 1988 semester.
11 Friday	LAST DAY OF INSTRUCTION. LAST DAY TO WITHDRAW FROM A COMPLETE PROGRAM.
14–18, Mon–Fri	SEMESTER EXAMINATIONS.
18 Friday	Last day to submit to the graduate office departmental clearance paperwork on behalf of December 1987 master's degree candidates. Last day to submit changes (incomplete grades, transfer transcripts, etc.) to the Records Office for December 1987 master's graduates.
23 Wednesday	**FALL SEMESTER ENDS.**
Dec 25–Jan 19 Fri–Tues	**Winter recess.**

SPRING SEMESTER 1988

JANUARY 1988

18 Monday	Martin Luther King, Jr., Day. Campus closed.
20 Wednesday	PRIORITY ADD DAY FOR EARLY REGISTRATION.
21 Thursday	WALK-THROUGH REGISTRATION.
22 Friday	Regular Add and Drop period begins.
22 Friday	**SEMESTER BEGINS.** Advising Day for new students.
25 Monday	**INSTRUCTION BEGINS.** LATE REGISTRATION BEGINS ($25 LATE FEE). Auditors may register. Application period for degree to be granted in May 1988 is January 25–February 3.
29 Friday	Last day to submit changes and clearances (incomplete grades, approved petitions, departmental approvals, transfer transcripts) required for graduation with a baccalaureate degree at the end of the fall 1987 semester.

FEBRUARY 1988

1 Monday	Last day to file applications for scholarships for 1988–89 academic year.
1–29, Mon–Mon	Filing period for applications for fall 1988 student teaching—Multiple Subject (elementary) and Single Subject (secondary) Credential Programs.
3 Wednesday	End of regular filing period for applications for applications for degrees to be granted in May 1988.
5 Friday	LATE REGISTRATION ENDS. END OF REGULAR ADD PERIOD. Last day to register for Credit by Examination. Last day to file for refund by resident students. (Nonresidents see *Schedule of Courses,* "Fee Refund Schedule.")
12 Friday	Last day to file an application for the master's degree to be granted in May 1988. (Late fee required February 4–12.)
15 Monday	Presidents' Day. No classes. All offices closed.
22 Monday	LAST DAY TO DROP A CLASS WITHOUT NOTATION ON THE PERMANENT RECORD. Last day to obtain approval for credit/no credit grading. Last day to change from audit registration to credit registration or credit registration to audit registration. Last day to take examination for Credit by Examination. Last day of late filing period for application for the baccalaureate degree and credentials to be granted in May 1988. (Late fee required February 4–22.)

MARCH 1988

1 Tuesday	Filing deadline for financial aids for fall 1988.
4 Friday	Last day for graduate students to apply for Advancement to Candidacy this semester to be eligible for graduation in August 1988 or December 1988.
7 Monday	Last day for faculty to submit Credit by Examination grade.
25 Friday	Last day to file edited, committee-approved master's thesis for May 1988 graduation.
Mar 28–April 1 Mon–Fri	**Spring recess.**

APRIL 1988

18 Monday	Early Registration for fall 1988 begins.
21–24, Thurs–Sun	**Vintage Days.**
22 Friday	LAST DAY TO WITHDRAW FROM A COURSE FOR SERIOUS AND COMPELLING REASONS, EXCEPT BY COMPLETE WITHDRAWAL FROM THE UNIVERSITY.

MAY 1988

13 Friday	LAST DAY OF INSTRUCTION. LAST DAY TO WITHDRAW FROM A COMPLETE PROGRAM.
16 Monday	Last day to submit to the graduate office departmental clearance paperwork on behalf of May 1988 master's candidates. Last day to submit changes (Incomplete grades, transfer transcripts, etc.) to the Records Office for May 1988 master's graduates.
16–20, Mon–Fri	SEMESTER EXAMINATIONS.
21 Saturday	77th Annual Commencement.
27 Friday	**SPRING SEMESTER ENDS.**

JUNE 1988

24 Friday	Last day to submit changes and clearances (incomplete grades, approved petitions, departmental approvals, transfer transcripts) required for graduation with a baccalaureate degree at the end of the spring 1988 semester.

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JANUARY

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Classes

Holidays

The California State University

The individual California State Colleges were brought together as a system by the Donahoe Higher Education Act of 1960. In 1972 the system became The California State University and Colleges and in 1982 the system became The California State University. Today, 18 of the 19 campuses have the title "university."

The oldest campus—San Jose State University—was founded as a Normal School in 1857 and became the first institution of public higher education in California. The newest campus—California State College, Bakersfield—began instruction in 1970.

Responsibility for The California State University is vested in the board of trustees, whose members are appointed by the governor. The trustees appoint the chancellor, who is the chief executive officer of the system, and the presidents, who are the chief executive officers on the respective campuses.

The trustees, the chancellor, and the presidents develop systemwide policy, with actual implementation at the campus level taking place through broadly based consultative procedures. The Academic Senate of The California State University, made up of elected representatives of the faculty from each campus, recommends academic policy to the board of trustees through the chancellor.

Academic excellence has been achieved by The California State University through a distinguished faculty, whose primary responsibility is superior teaching. While each campus in the system has its own unique geographic and curricular character, all campuses, as multipurpose institutions, offer undergraduate and graduate instruction for professional and occupational goals as well as broad liberal education. All of the campuses require for graduation a basic program of *General Education-Breadth Requirements* regardless of the type of bachelor's degree or major field selected by the student.

The CSU offers more than 1,500 bachelor's and master's degree programs in some 200 subject areas. Many of these programs are offered so that students can complete all upper-division and graduate requirements by part-time late afternoon and evening study. In addition, a variety of teaching and school service credential programs are available. A limited number of doctoral degrees are offered jointly with the University of California and with private institutions in California.

The Consortium of the CSU draws on the resources of the 19 campuses to offer regional and statewide off-campus degree, certificate, and credential programs to individuals who find it difficult or impossible to attend classes on a campus. In addition to Consortium programs, individual campuses also offer external degree programs.

System enrollments total approximately 325,000 students, who are taught by a faculty of 19,100. Last year the system awarded more than 50 percent of the bachelor's degrees and 30 percent of the master's degrees granted in California. More than one million persons have been graduated from the 19 campuses since 1960.

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California State University, Fresno
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Fullerton, CA 92634
Dr. Jewel Plummer Cobb, President
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Dr. James M. Rosser, President
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San Bernardino, CA 92407
Dr. Anthony H. Evans, President
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Calexico, CA 92231
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San Francisco State University
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San Francisco, CA 94132
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San Jose State University
One Washington Square
San Jose, CA 95192
Dr. Gail Fullerton, President
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California Polytechnic State University, San Luis Obispo
San Luis Obispo, CA 93407
Dr. Warren J. Baker, President
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Rohnert Park, CA 94928
Dr. David W. Benson, President
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California State University, Stanislaus
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Turlock, CA 95380
Dr. John W. Moore, President
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Office of the Chancellor

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Ex Officio Trustees

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Governor of California
State Capitol, Sacramento 95814

The Honorable Leo T. McCarthy
Lieutenant Governor of California
State Capitol, Sacramento 95814

The Honorable Willie L. Brown, Jr.
Speaker of the Assembly
State Capitol, Sacramento 95814

The Honorable Bill Honig
State Superintendent of Public Instruction
721 Capitol Mall, Sacramento 95814

Dr. W. Ann Reynolds
Chancellor of
The California State University
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90802-4275

Officers of the Trustees

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President

Dr. Dale B. Ride
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Mr. Thomas J. Bernard
Vice Chair

Chancellor W. Ann Reynolds
Secretary-Treasurer

Appointed Trustees

Appointments are for a term of eight years, except for a student trustee, alumni trustee, and faculty trustee whose terms are for two years. Names are listed in order of appointment to the board. Terms expire in the year in parentheses.

Dr. Claudia H. Hampton	(1994)
Mr. Willie J. Stennis	(1991)
Mr. Donald G. Livingston	(1987)
Ms. Celia I. Ballesteros	(1987)
Ms. Lynne Wasserman	(1988)
Mr. George M. Marcus	(1989)
Mr. Dixon R. Harwin	(1990)
Mr. Thomas J. Bernard	(1989)
Mr. Roland E. Arnall	(1990)
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Mr. Tom C. Stickel	(1992)
Mr. Lee A. Grissom	(1988)
Ms. Marian Bagdasarian	(1988)
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Mrs. Marianthi K. Lansdale	(1993)
Mr. Dean S. Lesher	(1993)
Mr. Theodore A. Bruina	(1991)
Dr. John E. Kashiwabara	(1994)

Correspondence with Trustees should be sent:

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Dr. W. Ann Reynolds
Chancellor

Dr. William E. Vandament
Provost and Vice Chancellor Academic Affairs

Dr. Herbert L. Carter
Vice Chancellor, Administration

Mr. D. Dale Hanner
Vice Chancellor, Business Affairs

Dr. Caesar J. Naples
Vice Chancellor, Faculty and Staff Relations

Mr. Mayer Chapman
Vice Chancellor and General Counsel

President's Message

As you turn the pages of this *General Catalog,* you will discover a great deal about California State University, Fresno, its faculty, staff, and students, and its many courses of study. We think you will sense the pride each person at CSU, Fresno feels in being a part of a major regional university — a university whose recent growth in size, prestige, and academic quality has been both impressive and inspiring.

Students at CSU, Fresno pursue degrees in many fields — from accountancy to zoology. Some seek broad liberal arts educations. Others seek highly specialized educations in technological fields. All are in search of knowledge to enrich their lives and of skills to prepare them for meaningful careers in today's rapidly changing world.

With the 21st century drawing near, CSU, Fresno is alert to the challenges its graduates will face. This university has extended its influence to the rest of the state, the nation, and the world. Many of our students come from great distances, many of our faculty engage in far-reaching exchanges of expertise, and a significant number of our students participate in study abroad programs. As the theme of this catalog suggests, CSU, Fresno is your passport to an adventurous new world!





Harold H. Haak
President
California State University, Fresno

PREVIEW

California State University, Fresno is a stimulating center of intellectual and cultural activity, dedicated to academic excellence, integrity, and freedom. It is committed to developing qualified professionals and leaders, and to serving the San Joaquin Valley.



CSU, Fresno offers challenging and innovative programs in the liberal arts and sciences, in the professions, in applied fields, and in special and interdisciplinary areas. Departmental programs provide unusual and interesting opportunities for a proficient and enriching university experience.

The excellence of the CSU, Fresno faculty has been documented in a variety of ways, including recognition from national and international associations. More than 80 percent of the tenured faculty hold doctoral degrees in their areas of study. However, the most important characteristic of the CSU, Fresno faculty is their ability to care about students and their willingness to give of their time on an individual basis.

The Campus

Under a dense canopy of more than 4,000 trees, the CSU, Fresno campus sits at the northeast edge of Fresno, amid San Joaquin Valley vineyards and orchards, against a backdrop of the beautiful Sierra Nevada. The campus was officially designated as an arboretum in 1978 and its park-like setting creates a beautiful environment for making new friends and pursuing a quality education.

The 220-acre main campus features more than 45 traditional and modern buildings. An additional 34 structures are on the 1,190-acre University Farm, which is considered one of the most modern and best equipped agricultural facilities in the West.

Outstanding research facilities, including computer, engineering, electronics, and industrial technology laboratories, are complemented by cultural and recreational facilities, which include two college unions, indoor and outdoor theaters for drama and music, swimming facilities, many individual and team sport facilities, a new baseball stadium at Beiden Field that seats 3,758 spectators, and a 30,000-seat football/soccer stadium. The CSU, Fresno campus is fully accessible and students with mobility impairments will find the naturally flat terrain easy to navigate.

The Community

Fresno's metropolitan area has a population of more than 400,000 and yet it maintains a friendly "big town" feeling. Cultural events are numerous and feature such groups and facilities as the Fresno Philharmonic Orchestra, the Fresno Arts Center, the Fresno Metropolitan Museum, and several live theater organizations.

The community is proud of CSU, Fresno and enthusiastically supports many of the university's programs, whether they are sports, the arts, academic competitions or other special events.

Recreation

Fresno is the only place in the nation within an easy drive of three national parks Yosemite, Sequoia, and Kings Canyon. Therefore, it isn't surprising that much of CSU, Fresno's recreational and social life centers on the outdoors. Boating, fishing, water skiing, and windsurfing at one of the six nearby lakes are popular activities during the spring and summer. Winter recreation includes downhill skiing and cross-country skiing at nearby Sierra Summit or Badger Pass in the beautiful Sierra Mountains.

In addition to an extensive intramural program, on-campus recreation includes a series of current films, drama productions, and concerts ranging from rock to jazz to classical. The annual Vintage Days celebration and a number



of university receptions, winetastings, art festivals, and the University Lecture Series are among the many events open to the public. Informal meeting places such as the College Union and the Satellite College Union are visited by students throughout the day and evening.

Accreditation

California State University, Fresno is fully accredited by the California Board of Education and the Western Association of Schools and Colleges.

CSU, Fresno is also a member of the Western Association of Graduate Schools, the Council of Graduate Schools in the United States, and the American Association of Colleges for Teacher Education.

School, department, or program accreditations, certificated memberships, and accrediting organizations include:

- American Assembly of Collegiate Schools of Business
- National Council for Accreditation of Teacher Education
- Commission on Teacher Credentialing
- Council on Education of the Deaf
- American Speech-Language-Hearing Association
- American Chemical Society
- Accreditation Board for Engineering and Technology
- State Board of Registration for Professional Engineers and Land Surveyors
- National Accreditation Council for Environmental Health Curricula
- Member of the American Society of Allied Health Professions
- State Department of Public Health
- Approved for admission to internship program of the American Dietetic Association
- American Home Economics Association
- National Association of Industrial Technology
- Foundation for Interior Design Education Research
- Accrediting Council on Education in Journalism and Mass Communications
- National Association of Schools of Music
- California Board of Registered Nursing
- National League for Nursing
- American Physical Therapy Association
- Council on Rehabilitation Education, Inc.
- Council on Social Work Education
- National Athletic Training Association
- Council on Accreditation of the National Recreation and Park Association

The University's Mission

The primary mission of California State University, Fresno is to provide comprehensive bachelor's and master's degree instruction for qualified students. The university may in the future offer doctoral degrees jointly with a doctoral granting university in some academic areas. As the major public university in the San Joaquin Valley, a large geographical area with a rapidly growing population, the university especially serves students from its particular service area: Fresno, Madera, Kings, and northern Tulare counties.

The university provides a General Education Program for the purpose of fostering life-long learning, and works in partnership with community colleges for the matriculation of transfer students. The university maintains strong programs in the arts and sciences as well as in many professional and applied fields. The university also emphasizes programs in agriculture and business, reflecting its location in the world's premier agriculture and agribusiness center. The university recognizes a special commitment to work

> **"I found the university's orientation to be even more helpful than I had anticipated. It seemed to be well organized and left no questions unanswered."**
>
> *— Freshman, Undeclared Major*

with the community in the preparation of students for industries and professions in the San Joaquin Valley.

As a publicly supported institution, the university also has a special mission to serve students from groups that historically have not participated in university education, whether because of age, socioeconomic background, physical disability or geographical location.

The university fosters applied research and public service programs that encourage the development of its faculty and support and enhance instruction, especially those contributing to the intellectual, social, cultural, and economic vitality of the San Joaquin Valley and California.

The University's History

CSU, Fresno is the sixth oldest in The California State University system. It began with the establishment of the first junior college in California in 1910 and a state normal school in 1911 which, under a single administration, offered two-year programs in general and vocational training and in teacher preparation. Between 1911 and 1921 a campus was built on University Avenue, then the northern border of Fresno. In 1921 the combined schools became Fresno State Teachers College, authorized to offer a four-year program and grant the bachelor of arts degree in teaching. In 1935, by act of the Legislature, the official designation became Fresno State College. A variety of degree programs in addition to those related to the teaching credential were authorized at that time. Following World War II, expansion was accelerated, both academically and physically. The first master's degree was offered in 1949; today it is offered in 42 fields of study.

Between 1953 and 1958 the college was moved from the old campus site, by then surrounded by the City of Fresno, to a1,410-acre site six miles to the northeast. In 1961, under the newly created California State College system, the administration and control of the state colleges was transferred from the State Board of Education to an independent board, the Trustees of the California State Colleges. By legislative action in 1972 the state college system became The California State University and Colleges, and in 1982 the system was renamed The California State University.

The present official seal of the university was designed by artist and CSU, Fresno Professor Emeritus Darwin Musselman, who also created the new seal used by The California State University system. It includes the "lamp of learning" and the "book of knowledge." The Latin inscription "Lvcem Accipe Vt Reddas" translates to "Receive the light that you may give it forth." The date 1911 refers to the founding year of the school.



Between 1965 and 1968 an approximation of university organization was accomplished on the Fresno campus and the transition to official university status in the state system became effective on June 1, 1972. The university now comprises the Schools of Agriculture and Home Economics, Arts and Humanities, Business and Administrative Sciences, Education and Human Development, Engineering, Health and Social Work, Natural Sciences, Social Sciences, the Division of Extended Education, and the Division of Graduate Studies and Research.

Fresno State College in 1911 had an enrollment of 150 students, most of whom were women. By 1940 the enrollment had increased to 2,000 students, by 1964, to 7,500. In the fall of 1986 more than 17,700 students registered.

The presidents, in order of tenure are:

Charles L. McLane	(1911–1927)
Frank W. Thomas	(1927–1948)
Arnold E. Joyal	(1948–1964)
Frederic W. Ness	(1964–1969)
Karl L. Falk (Acting)	(1969–1970)
Norman A. Baxter	(1970–1980)
Harold H. Haak	(1980–)



PROFILE



Profile photos by Eusevio Arias

California State University, Fresno brings together thousands of people with diverse backgrounds and interests, and integrates them into a dynamic university system that is dedicated to serving the individual.

The following interviews were recorded last year in various offices and classrooms on campus. They offer you an opportunity to "converse vicariously" with some of the individuals who make this university unique.

Fareed Nader

"My students appreciate the fact that I have practical experience and am willing to work with them in field laboratories."

FAREED W. NADER
Professor of Surveying Engineering



Fareed Nader, professor of surveying engineering, originally planned to become a dentist. He quickly changed his mind when he went to enroll in the predental program at the University of Arizona and found himself at the end of a seemingly infinite line of students. "I went around and looked at all the registration lines, and the shortest one was the engineering line. That's when I decided to become an engineer."

"My career choice really wasn't that flippant," Nader explains with a smile. "My grandfather was a building contractor, and two of my cousins were engineers, so I was familiar with the profession and I was just as inclined to become an engineer. I thought I would try engineering for one semester, and if I didn't like it, I could always switch to dentistry later. I was immediately hooked on engineering; it was and still is an exciting, creative, and very satisfying profession."

Nader is now the program coordinator for the Surveying Engineering Program at the university. CSU, Fresno has the distinction of being one of only four universities in the United States (and ***the only one west of the Mississippi River****) that are approved by the Accreditation Board for Engineering and Technology to offer a Bachelor of Science degree in surveying engineering.*

Nader, who is a distant cousin of consumer advocate Ralph Nader, earned his bachelor's degree in civil engineering in 1961 from the University of Arizona and in 1966 received his master's degree at Arizona State University. He earned his Ph.D. in surveying and mapping in 1973 from Purdue University, where he taught engineering measurements. It was at Purdue that Nader discovered that "teaching was more enjoyable than being a student or anything else I had done."

He began full-time teaching at the University of Hawaii but took a leave of absence after five years to be able to spend more time with his ailing father. On one of his trips to visit his father in Arizona, he heard about the surveying program at CSU, Fresno and decided to make a stopover in Fresno. "I met some of the professors, who gave me a tour of the facilities, and I was really impressed with the quality of the surveying and photogrammetry program," Nader explains. "Because the pay in Hawaii wasn't very good and the living expenses were high, I was ready to take a new job."

Nader also spent four years as a surveyor and construction supervisor for the Federal Aviation Agency, which helped him develop his practical approach to teaching. He says, "My students appreciate the fact that I have practical experience and am willing to work with them in field laboratories. Whether they're out climbing observation towers or in the mud pulling the measuring tape, I'm out there working with them."

What is surveying engineering?

Surveying is a very old profession, but it is difficult to explain in a few words everything that a surveyor does. Surveying is the science and art of making measurements that are needed to determine the relative positions of points near the earth's surface. We apply this definition in many different ways, but the oldest and perhaps the best-known application of surveying is finding the boundaries of a piece of property. The process would include the following steps: first, interpreting the property's legal description; second, searching for evidence of old monuments (boundary markers); third, making field measurements of distances, angles, directions, and elevations; fourth, analyzing these measurements mathematically; and finally, displaying the results on a map. An example of a more complicated surveying task would be to design and locate the boundaries of a highway tunnel that makes both horizontal and vertical turns while passing through a mountain. In modern surveying, the surveyor can choose to use traditional methods of measurement, electronic satellite positioning systems, or photogrammetry.

How is photogrammetry different from surveying?

Photogrammetry is the science of making measurements on photographs. Engineers became aware that by taking photographs of objects and knowing the internal structure of the camera, the geometry of the photograph, and the distortions of the camera lens, they could make precise measurements from those pictures. It was no longer necessary to actually go into the field and make the measurements before

making a map. It sounds simpler than it really is; photogrammetry requires the use of trigonometry, calculus, and an unlimited amount of higher mathematics and science. Complex though it may be, photogrammetry has enabled us to easily make measurements of a lot of things that we weren't able to do before. For example, we now make maps of wild animals, the sails of ships, flexing airplane wings, and even objects like human eyeballs. On campus, we've been working for the animal husbandry department, making measurements of young horses to project the animals' adult sizes, weights, and other data. Because the horses won't stand still long enough for us to make ordinary measurements with a measuring tape, we take pictures of them with calibrated, metrical Zeiss cameras. Then we make the measurements on the photographs in our photogrammetry laboratories.

Why are there so few surveying programs?

The program is an expensive one to maintain, and some of the smaller states haven't wanted to invest enough money to train the minimal 10 or 12 people needed to keep a program going. Instead, those states have been sending interested students to CSU, Fresno, where we have gathered a widely acclaimed surveying and photogrammetry faculty, who are privileged to teach in four modern laboratories, housing 18 photogrammetric stereoplotters — more than any other school in the country. One important factor contributing to the success of CSU, Fresno's surveying engineering program is the unyielding commitment the university's administration has made to support the program on many levels. The pride they have in this rare program and enthusiasm for its continued success is obvious.

Among engineering specialities, is demand highest for surveyors?

Surveying engineers easily get jobs. The scarcity of accredited surveying programs virtually guarantees jobs to CSU, Fresno students after graduation. Last year, the graduates were getting anywhere from three to six job offers, with an average starting salary of $27,000 per year.

Are students ready to start at a large company when they graduate?

We are preparing students to become professionals. This, in part, means that they are capable of effectively working in large or small companies. In order to achieve this goal, we educate students in methods of applying their knowledge and skills to any situation. The education of a surveyor is a growth process which begins with his or her first course — but never ends. I can't emphasize enough that, with rapid advancements in science and technology, the education of a surveyor is a never-ending process.

Does that never-ending process apply to you as well?

Absolutely! I attend many seminars in which I am simply a student, and I read two or three books, as well as monthly journals, in addition to the text I am using for each class. To stay current in practical field techniques, I work as a surveyor during summers. This gives me a broad body of knowledge from which to draw for my class lectures. In some classes, the students and I become partners in education; that is, we are learning together. An example of this partnership is my geodesy class, in which we use applied mathematics to study the size and shape of the earth and the gravity field that surrounds it. I welcome and am mentally stimulated by the challenging questions students ask. These questions and concerns focus my attention on matters that aren't fully understood, and this prods me to find out more about the subject. Sometimes we obtain very creative results from "dumb questions."

One of the most satisfying aspects of engineering is that it is a very creative profession. There is always some new development that must be blended into an old curriculum, and sometimes there are so many new developments that it's necessary for us to create new courses. For example, last year I developed two new courses, and in the last two years taught four courses that were new to me. Needless to say, the education of this surveying engineer is definitely a never-ending process!

What are your strengths in teaching?

Perhaps my greatest strengths are flexibility, stamina, and creativity. Since joining the CSU, Fresno faculty, I have taught 29 different course or laboratory subjects, in three departments. I enjoy the challenge of learning. I'm willing to put in considerable time understanding and restructuring complex subjects so I can present them to students in an easily grasped form.

Students get very frustrated with me because I'm slow to grade examinations and return them. I'm very concerned that engineering students develop good problem solving habits, so rather than going through the examinations and just marking the final answers right or wrong, I look at every number in their calculations and point out why they are wrong and how they can improve their procedures. I seem to have a good rapport with students; they come to my office for advice on everything from homework to love! Many of the program's graduates keep in touch with me and stop in to visit when they are in Fresno.

What do you like to do in your spare time?

There hasn't been much spare time lately! With my wife, Rosemarie, I enjoy the quiet and serenity of country living. She is a musician who frequently provides music for events like weddings and church services. I sing with her and sometimes play the guitar. Occasionally I scare our dogs by singing folk songs in Hawaiian. My wife and I take dancing lessons and belong to a dance club that meets once a month. I enjoy leisurely reading books about economics and political philosophy.

Linnea M. Aycock



"I feel I am succeeding when my class has already begun the discussion before I arrive."

LINNEA M. AYCOCK
Associate Professor of English

After visiting one of Linnea Aycock's graduate seminars, a colleague reflected that "anyone who attended Lynn Aycock's English 250T would get a very good picture of what graduate instruction in the humanities is supposed to be like." From the collective exchange of ideas in a graduate seminar to the spirited discussions in a freshman composition class, Aycock's emphasis is on student involvement.

"My goal as a teacher is to motivate students to think and read critically, and to write about ideas that touch their personal lives," Aycock says. "I guide class discussions, ask probing questions, and comment on students' writing. But I am only the catalyst. People learn through their own discovery of meaning, through their own creativity. Watching that process unfold in the classroom or in individual conferences is one of the most exciting aspects of teaching. I learn something from each class meeting."

Students appreciate her enthusiastic support for their work. As one student says, "Her interest spills over, creating an atmosphere of intense involvement and participation. Even the shyest students in the class are able to speak up without the intimidating notion that their comments may be all wrong. She inspires us to think, instead of giving pat answers that discourage questions."

Aycock received her A.A. degree from Fresno City College in 1969 and then transferred to CSU, Fresno to major in English. After receiving her B.A. ***(Summa Cum Laude)*** *in 1971 and her master's degree* ***(with distinction)*** *in 1974, she received a fellowship to the University of Iowa, where she received her doctorate. Aycock didn't plan to return to Fresno, but ten years later, when offered a position at CSU, Fresno, she was delighted to come back to the valley.*

In the four years that she has been teaching full time at CSU, Fresno, Aycock has had an opportunity to work in areas that reflect her varied interests. Her first semester she supervised student teachers in the public schools. That spring she took over the English Internship Program for a semester, an experience that led to teaching technical writing last spring. From the fall of 1984 to the spring of 1986, she directed the English Writing Laboratory. During this time, she taught several writing and literature classes, including Freshman Composition, Twentieth Century British Literature, Images of Women in Literature, and graduate seminars in the Twentieth Century British Novel and Virginia Woolf. Aycock is also active in all phases of faculty governance. She has served on numerous committees at the department, school, and university level, including the Executive Committee of the School of Arts and Humanities, the Undergraduate Curriculum Subcommittee, and the Academic Senate.

To balance the mental challenges of her job, Aycock jogs at least three miles a day and tries to make time for other sports such as biking or swimming. "Top on my list is racquetball," adds Aycock. "On the court, you'll see a completely different side to my personality."

Why did you decide to become a teacher?

Partly because I have a passion for literature and writing that I want to share. And partly because I want to give back some of what teachers have given me. When I was growing up, teachers provided the stability and encouragement I didn't have at home. They gave me tools to enrich my life, and a few changed my life profoundly. The possibility of doing that for someone else is a continuing challenge and inspiration.

Did you decide to become an English teacher when you were in high school?

I loved English, but didn't want to teach high school. At the time, I couldn't see any practical alternatives. I started college as a sociology major, then dropped out to work and travel.

PROFILE

What made you change your mind?

After three-and-a-half years, I came back to school determined to follow my interests and not worry about a job. That was one of the best decisions I've ever made. By luck, I ended up in one of Conrad Discont's literature classes at Fresno City College. Watching him transform literature into something vibrant and alive, I knew I wanted to do the same thing. My decision was reinforced when I transferred to Fresno State and began taking classes in the English department. There I was fortunate enough to take classes from people like Roger Chittick, Lillian Faderman, and others — some of the finest teachers I've ever had.

So when you returned to school, you went straight through until you received your Ph.D.?

Yes. But it took me awhile. I was always juggling conflicting demands on my time. As an undergraduate, I worked at several jobs — weekends and summers as a waitress in Yosemite, weekdays at a fast food restaurant in Fresno, and one summer as a mental health aide for Valley Medical Center. Except for my first-year fellowship at Iowa, I taught part time while I was working on my M.A. and Ph.D. Those early years of teaching were exciting, but I never got much sleep. I often spent half the evening writing my own papers and then stayed up until 2:00 or 3:00 a.m. reading student papers.

Students consistently comment on how helpful you are on both a personal and professional level. Do you think it is easier for you to relate to students because you can remember the pressures of going to school and balancing other responsibilities?

I can remember my life as a student very well. I also listen to what my students tell me about the pressures they are under. Student life can be fun, but it's not easy. Some people stereotype students as irresponsible — kids more interested in partying than books. There are people like that. But most of my students have jobs as well as full school schedules; many have families and quite a few commute from other towns in the valley. I have a special interest in reentry students. They have so much to offer in terms of life experience and mature insights. They may lack a degree of confidence at first, but they almost always do well because they are highly motivated.

Most of the students in your composition classes are non-majors. How do you motivate them?

I try to make them feel comfortable about the class, about talking to each other, about the idea of writing. I try to show them that the ability to use language well is a source of power in our society. I also stress the intrinsic value of writing as discovery, using writing to learn about oneself and others. When students become engaged in this process, when they begin to write for themselves, not just for a grade, they often exceed my expectations. I remember one student, an accountancy major, who thought English Composition was going to ruin her semester. She ended up publishing two of the papers she wrote for class and enrolling in the English Internship Program the next semester. So it's not just a question of being an English major or not. It has more to do with the desire to communicate clearly no matter what field one is in.

Do you approach a literature class any differently?

In all my classes, I encourage students to actively participate in what they read and write. I like to stir up controversy, to elicit conflicting points of view. I probably do more of that in a literature class because I want students to see the richness and multiple possibilities inherent in any work of art. I want them to go beneath the surface and grapple with unanswerable questions. Literature is not a list of facts that can be transmitted in fifty minute intervals three times a week. The process of understanding literature is a dynamic one that goes beyond the classroom and beyond me as a teacher. I feel I am succeeding when my class has already begun the discussion before I arrive, or when we continue talking for a half hour in the hall after the class is over.

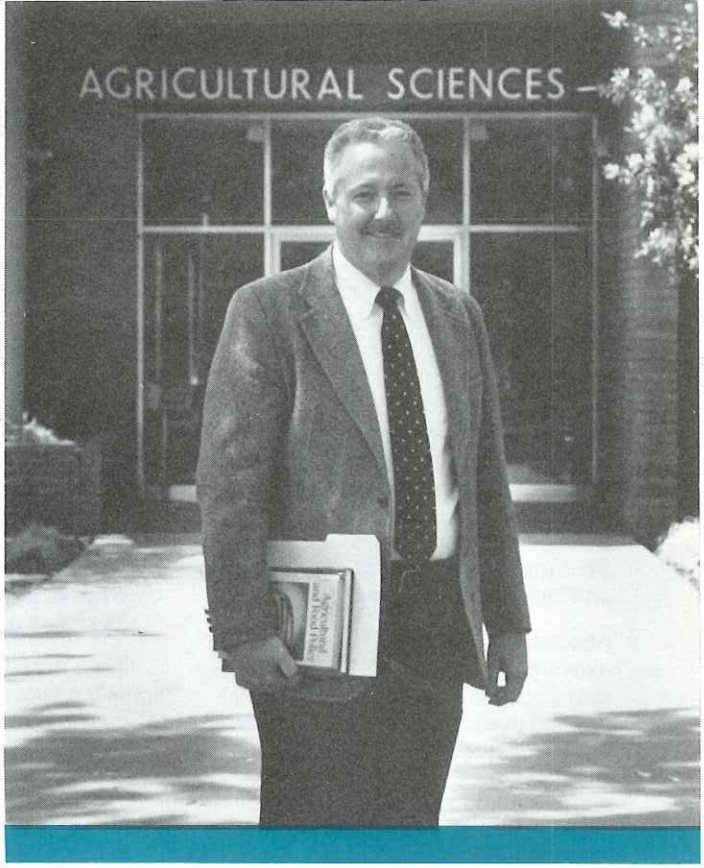
Do you have any advice for students majoring in English?

An English degree is both personally rewarding and practical. Teaching is an obvious career choice. But a degree in English can also be a valuable asset for students going into law, business, public relations, counseling, or technical writing. The English Internship Program provides an excellent opportunity for practical experience. And the skills you learn as an English major — analysis, critical thinking, and clear writing — are in demand everywhere.

Do you ever hear from former students?

I keep in touch with quite a number of my former students. They drop by my office to let me know how their other classes are going, or how they're doing after they graduate. Some have left the area, but I get letters, and occasional phone calls from all over the United States and other parts of the world — Belgium, Africa, Japan. Many students become friends and we continue conversations begun long ago in class. Watching them grow and change over the years is one of the most rewarding aspects of this profession.

John R. Shields



"I get great pleasure from nurturing students to think critically and creatively about problems and issues confronting a dynamic agricultural sector."

JOHN R. SHIELDS
Professor of Agricultural Economics

The plaque on the office wall reads, "Luck is what happens when preparation meets opportunity." And judging from the background of Professor John Shields, he has indeed prepared himself for a varied career.

After earning a B.A. degree in Asian history (with a year's study in Japan) and completing a Secondary Teaching Credential at San Francisco State University, Shields became a Peace Corps volunteer from 1967 to 1970 in Botswana (Africa) and Turkey, teaching English, mathematics, and history. Then, before returning to the U.S.A., he backpacked for seven months through the Middle East, South Asia, and northern Europe with his wife, Elizabeth, whom he had met in Africa, where she was a volunteer science teacher from Northern Ireland. "Those were the most rewarding and adventurous years in our lives," recalls Shields. "Special lifelong friendships with students and volunteers were forged and an internationally oriented career was born."

Masters degrees in comparative education and public finance preceded doctoral study in agricultural economics at Michigan State University. "In 1978, just as I was about to accept a foreign service officer appointment with the U.S. State Department's Agency for International Development (AID)," says Shields, "CSU, Fresno approached me about a faculty position. The choice was difficult, but the chance to come home to California after a long absence was enticing, and a nine-month teaching appointment would allow me to pursue international work during the vacation periods."

Over the summers of 1981 and 1982, Dr. Shields evaluated technical assistance projects for AID's Africa Bureau. This experience led to his recruitment as a staff member for the President's Board for International Food and Agricultural Development (BIFAD) from 1983 to 1985. "Being a policy analyst in Washington, D.C., certainly has its fascinations," reflects Shields, "but I really prefer the cross-cultural excitement of working abroad."

Professor Shields is now coordinator of the international agricultural program and chair of the school's curriculum committee. As a faculty member in the Department of Agricultural Economics at CSU, Fresno, Shields has taught core courses in economic principles, government policy, and research methods, plus elective courses he initiated in labor-management relations, international trade, export marketing, and economic development. He has served in the Academic Senate and on the university-level committees for budget and undergraduate curriculum, which stimulated him to study higher education administration at the University of Maryland in 1984 to 1985. "Friends kidded me about being an educational junkie," laughs Shields.

What attracted you to the San Joaquin Valley and CSU, Fresno in particular?

The ethnic diversity, which gives this rural region a cosmopolitan flavor, appealed to my international inclinations. The warm climate and Fresno's proximity to the high Sierras match my love of the outdoors. The university's location in America's richest agricultural county and the agricultural school's academic program and close cooperation with agribusiness industries offer a rich professional opportunity for teaching and service. Moreover, as an alumnus of the CSU system, I believe strongly in its special mission to provide quality undergraduate instruction.

What is most satisfying about being a professor at CSU, Fresno?

Professionally, the unique opportunity to exercise leadership in curriculum development and to work with my colleagues and administrators in designing first-class B.S. and M.S. degree programs in agricultural business has been most gratifying. In 1985, the undergraduate program was recognized as one of only four model programs in the country by the National Agribusiness Education Project. Personally, I get great pleasure from nurturing students to think critically and creatively about problems and issues confronting a dynamic agricultural sector. The labor economist in me enjoys counseling students to map out

their strategy for career exploration, academic preparation, and professional networking for personal growth in challenging occupations.

So "luck" is a credo of your advising and instructional roles?

Absolutely! With a good education and relevant experience, you can make your own opportunities. Every professional position I've held has been restructured to match my qualifications. There is literally a "hidden job market" out there with employers ready to create a position for problem solvers who possess the desired mix of knowledge, skills, talents, attributes, and attitudes. My responsibility as a teacher and mentor is to ensure students are active — not passive — partners in acquiring an education that helps develop their potential.

Given the recent farm crisis, what are employment prospects for agricultural graduates?

Very good! In fact, we can't always fill all our internships or supply enough graduates. Occupational opportunities in agricultural science, technology, and management go begging at very competitive salaries. A 1986 national assessment report by the U.S. Department of Agriculture is projecting a 10 percent shortage of college graduates in the scientific and business specialties of agriculture, which is the number one high-technology sector of California's economy. The Department of Labor's *Dictionary of Occupational Titles* identifies more than 260 professional jobs in agriculture and food-related industries. These represent tremendous opportunities for urban and rural residents alike and for Asian, Hispanic, and Black students; women now constitute 40 percent of our enrollment. It is important to realize only 8 percent of new agricultural sector jobs are in farm production; yet the adverse publicity about the current cycle of the historic farm problem obscures the reality of excellent job prospects in the whole spectrum of food and fiber industries that are available to our animal, plant, and food science graduates — especially those with some agricultural business training. Our new food industry management program stresses this integrative approach.

What is the nature of agricultural business as a field of study?

It is a multidisciplinary degree program with a broad science foundation, a strong business base, and a solid core in agricultural economics. The major also includes a career specialty chosen from a variety of interest areas — usually management, finance, and marketing — that often include courses from disciplines outside agriculture and business. When combined with the General Education curriculum, our programs develop some of the most liberally educated students on campus. It's actually a leadership training program that blends theory and practice in preparing graduates to address important societal issues that require an integrated understanding of science, technology, economics, and management.

Are you currently involved in any international activities?

Yes. I recently chaired an ad hoc faculty team for the Vice President for Academic Affairs Office that wrote a planning proposal for internationalizing CSU, Fresno's curriculum. I'm directing an export market expansion project through the school's California Agricultural Technology Institute (CATI). And, I was just appointed to the International Science and Education Council's training committee and recently helped plan a national conference on international training — activities which should enable me to identify future opportunities for our agricultural school.

How would you characterize your approach to life?

I fervently believe success is a function of commitment, hard work, flexibility, cooperation, and perseverance in doing a quality job. The symbolic farewell gift from my colleagues in Washington, D.C., was the best-seller *A Passion for Excellence.* A management consulting firm brought in to evaluate the Board for International Food and Agricultural Development staff operations there profiled me as "future looking, an institution builder, and a natural brainstormer." I think that's the same role I've played here at CSU, Fresno. Correspondingly, I place high expectations for top performance on students, some of whom object that I require too much work and grade tough. So, welcome to the real world of competitive standards!

What outside endeavors do you pursue?

After a decade of sedentary life, my enthusiasm for skiing and softball has been rekindled by my 10-year-old daughter, Lisa. We share dog training lessons, and she wants me to teach her basketball and golf. Recreational reading in recent years has focused on two intriguing areas: astronomy, especially the cosmological and metaphysical speculation about the origin and fate of the universe; and paleontology in conjunction with evolutionary biology.

What about this other sign on your wall: "Is this what I wanted to be when I grew up?"

That one surprises students who view professors as set in their careers. But being a teacher is only one of many occupations open to an agriculturalist. I want my student advisees to be constantly aware of life's unfolding opportunities and always maintain the ability to choose the best possible career path consistent with their values and goals as they continually approach forks in the road. After all, that's what my field of economics is all about — the science of making optimal choices.

Rosita S. Chen



"I tell my students, You must push your pencils hard, do your homework, and try again and again."

ROSITA S. CHEN
Professor of Accountancy

More than two thousand years ago, a pupil asked Confucius what made him the greatest teacher in the nation. Confucius said, "I never get bored when I learn and never get tired when I teach." This is the example that Dr. Rosita Chen, professor of accountancy, has been trying hard to emulate in her own teaching. Chen is from Taiwan where teaching is considered a position of integrity, a "clean and high" career. "It is clean because traditionally teaching offers little financial reward," says Chen. "It is high because the teaching profession is regarded foremost among all careers in Chinese society. So like many Chinese, I was significantly influenced by this cultural ideology and desired to be a teacher even when I was a little girl."

Chen has distinguished herself during her seven years at CSU, Fresno. She received the 1985 Faculty Innovation Award from the School of Business and Administrative Sciences, has had several feature articles published in leading accounting journals, served as reviewer of an advanced accounting textbook, and has been active in presenting and discussing research papers at numerous professional conferences. She is now working on projects to computerize intermediate and advanced accounting teaching materials. Chen also helped initiate an international cultural and academic exchange program with Tamkang University in Taiwan. Over the last three years, many Chinese scholars have come to the campus under the program.

After earning a Bachelor of Arts degree at National Taiwan University, the leading university in Taiwan, Chen came to the United States to get her Master of Science degree in accounting from the State University of New York at Binghamton. The next five years were spent earning her Ph.D. in accountancy at the University of Illinois, Urbana-Champaign. Chen has never forgotten her adviser's remark, "Seeing the growth and accomplishment of a student is the most rewarding experience of being an educator." "This enlightened remark reinforced my desire to choose teaching as my career," Chen says.

Chen taught at San Francisco State University from 1973 to 1975, and then moved to Canada as an associate professor at the University of Calgary for two years. After three additional years of teaching in Pennsylvania, she finally returned to California when she was offered positions at three California universities, and chose CSU, Fresno, mainly because of its rapidly growing business program. Since arriving here, she says she has been impressed by "the dedicated business faculty, the promising accounting curriculum, and the excellent community support of our School of Business and Administrative Sciences. I also enjoy the international atmosphere on our campus."

How do you define accounting?

To define accounting is not easy because accounting is a financial language of business that is responsive to changing business environments. Several decades ago, when the size of a business was small and its ownership was held by only a few individuals, it was quite common to consider accounting as nothing more than bookkeeping. Nowadays, however, it is generally conceived that accounting is a social service to provide useful quantitative business information to help users in making their investment decisions. Accountants measure business performance in terms of profit and report their financial status in terms of assets and liabilities. This information will then be used by creditors and stockholders to decide whether to buy or to sell that company's bonds or stocks.

What are your teaching and research interests?

My primary teaching interest is in financial and managerial accounting. I usually teach upper-division courses, such as intermediate, advanced, and cost accounting. I am currently interested in developing some new courses, such as international accounting and not-for-profit accounting, which I hope will be offered soon. On the other hand, my research interests are in the behavioral aspect of accounting, accounting history, and managerial accounting. For example, I had investigated the historical development of the stewardship concept regarding management's responsibility to the owners of a business. I did considerable research on Frederick Winslow Taylor's contributions to financial and cost accounting systems that he developed in the 1890s. His studies still have significant influence on modern accounting practices. I developed an approach to integrate the learning-curve concept to flexible budgeting. Furthermore, I have been constantly

attempting to improve my teaching effectiveness by continuing personal research and using innovative teaching approaches, such as the box method for financial statement consolidation.

What is the box method?

My husband, Dr. Sheng-Der Pan, and I created over the last 12 years the box method, which is a unique approach to the consolidation of the financial statements of a parent company and its subsidiaries, whose voting stock is substantially owned by the parent company. For financial reporting purposes, these legally independent companies are considered as members in a single corporate family, so their financial statements should all be consolidated. There are several different accounting theories leading to different methods of consolidation. Under the box method, various matrices are prepared for these theories. Under each theory, accounting data are systematically analyzed and placed into various boxes within the matrix. This method is logical and easy to understand. Most important, the method simplifies the process of consolidation. A typical comment from many students' evaluations reads: "The box method for business combinations was far superior to the method in the text."

How does accountancy differ from that in your native Taiwan?

The United States has the best accounting system in the world, which is based on a double-entry system of debit and credit. It has been borrowed by many foreign countries as near as Canada and as far away as Taiwan. Generally speaking, large and publicly owned companies in Taiwan have adopted this accounting system. They use the same conceptual framework and even the same accounting principles as those prescribed by the accounting profession in the United States. For small and family-owned Taiwanese companies, however, the traditional century-old Chinese single-entry accounting system is still in vogue, although the number is decreasing. Accounting education has been playing an important role in Americanizing accounting systems in Taiwan. Many accounting professors were educated in the United States, and many prominent universities have been adopting American accounting textbooks for more than three decades.

Can you say something about having a spouse who is also a professor of accountancy at the university?

Having a couple, like Dr. Sheng-Der Pan and me, work at the same institution has become a common phenomenon in recent years, although it might be somewhat unusual to have a husband and wife hired by the same department, as full professors on the tenure track, at the same time, teaching the same accounting subjects, and sharing the same office. The major advantage of having a couple working together is in the sharing of professional expertise, research, and teaching methodologies. However, there is a disadvantage. After working the whole day in the same office on campus, we still have to share the same office at home to continue our unfinished professional debates. Alas, we have no choice!

What advice do you have for students majoring in accounting?

In general, I would say a good accounting student must be a hard worker. I tell my students, "You must push your pencils hard, do your homework, and try again and again." Accounting is not an easy academic field, but rather it is a difficult professional discipline. Generally speaking, only those students who push their pencils hard and persist will succeed. In particular, accounting students must realize that their chosen career is a service function. You are going to work with people, so you have to be cooperative, honest, and responsible. All these necessary characteristics of a good accountant should be established when you are still a student.

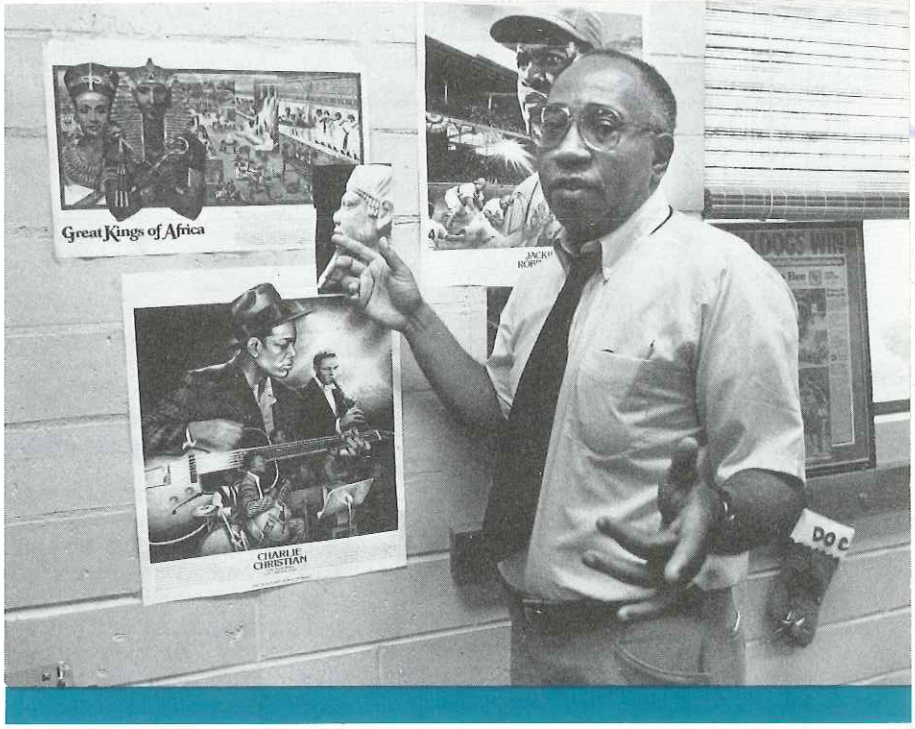
What do you do for relaxation?

I have a wide-range of hobbies, including Chinese classical music, landscaping, calligraphy, and painting. I also collect ancient artifacts, such as coins, paintings, and pottery. My husband, however, is not impressed by my ceramic collection, which he calls "junky stuff." Also, for greater efficiency, we establish responsibility centers at home. While I am responsible for preparing meals and taking care of the laundry, my husband is in charge of yard work, and more important, keeping books, consolidating bank statements, and preparing income tax returns. In this aspect, I feel fortunate to have a spouse who is a Fresno State accounting professor.

James H. Rogers

"Society at large should understand the vast resources of creativity, intellect, and contributions to our society by Black Americans and other minorities."

JAMES H. ROGERS
Professor of Ethnic Studies



To Dr. James Rogers, the ideal classroom is filled with students from every ethnic background. Rogers enjoys sharing significant information on African and Afro-American cultures with classes that reflect the cultural and sociological diversity of the university.

The Ethnic Studies Program is aimed not just at the cultures being studied — Black, Native-American, and Armenian — but at the student population as a whole. "The most important value we provide to students taking ethnic studies is to understand and respect the cultures, religions, histories, and human contributions to society of all people on earth," Rogers says.

Rogers's desire for equal opportunity and racial equality for all peoples led him to involvement in the Civil Rights Movement of the 1960s. He was a member of the Student Non-Violent Coordinating Committee and the Congress of Racial Equality. He registered Black voters in Mississippi in 1965. "That's how I got my consciousness raised," he says. "Several times I was beaten up by Southern racists opposed to Black voter registration."

While pursuing his Masters of Fine Arts degree in creative writing and English at the University of Iowa, Rogers established that school's Afro-American Studies Program. Says Rogers, "I was instrumental in creating Afro-American studies there in 1968; I wrote the proposal, and following consultation with the president of the university, the proposed program was later approved." Rogers also earned his Ph.D. in American civilization at the University of Iowa. After teaching at Portland State University (where he was named Outstanding Black Educator in Oregon for 1974), St. Cloud and Moorhead State universities in Minnesota, and Simpson College in Iowa, he came to CSU, Fresno. "Fresno is a community that is both racially and professionally challenging because, historically, minorities have played a subservient role in agriculture and the labor market here," he says.

Others say Dr. Rogers has very strong opinions, particularly concerning racial equality and opportunity, and the need for nuclear disarmament. An outspoken critic of the public schools' curricula, which he charges exclude contributions by minorities in business, arts and sciences, and civil politics, Rogers urges emphasis in ethnic studies early in a child's development. "In the San Joaquin Valley, we live in a multicultural community. We have one of the largest Asian and Chicano communities in America," says Rogers. "Nevertheless, very little is taught here about Asian and Chicano experiences in the valley. It's absurd!"

Rogers is also active in theatre at CSU, Fresno and has written several plays, including "The Love Song of Winnie Mandela," which premiered in the Satellite College Union. Previously, Rogers was the recipient of drama awards at the University of Missouri in 1964 and at the University of Iowa in 1966. He plans to earn a master's degree in theatre at the University of Oregon shortly. His poetry has been published in various magazines, including ***Concerning Poetry, Impulse,*** *and* ***Iowa Review.*** *He was a member of MENSA, the national organization for people whose I.Q. test scores are in the top 2 percent of the population. Rogers, however, believes that I.Q. examinations are a limited and inaccurate measurement of creative and critical intelligence. He has also been a member of the American Civil Liberties Union, People for the American Way (a recently formed national organization opposed to religious ceremonies in public schools), and the National Association for the Advancement of Colored People. Now, however, he says that he has lost interest in organizations of all kinds recently as he concentrates on creative and scholarly writing.*

When Dr. Rogers isn't teaching or writing, he's reading. A voracious reader, he normally reads 10–12 new books a month, including fiction, poetry, and history. He especially enjoys autobiographies of eminent achievers. According to the Kennel Bookstore, Rogers orders twice the number of books of any professor on campus. But, for a change of pace, Rogers plays chess or basketball on weekends with former Bulldog athletes. "They call me 'Doc,'" he says. "And they always treat me charitably."

What is ethnic studies?

Ethnic studies is an academic specialization that embraces primarily the minority ethnic cultural groups. Ethnic studies attempts to supplement information in the university that normally has been eliminated by mainstream cultural studies. It includes history, political science, literature, drama, and theatre, but from an ethnic minority perspective. Under

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the CSUF Ethnic Studies Program, there are Native-American studies, Black studies, and Armenian studies. At one time, there were also Asian-American studies and Chicano studies, but they moved into separate programs.

How has ethnic studies evolved?

Ethnic studies is becoming much more demanding and much more scholarly than it was 15 years ago. Then, the emphasis was on raising consciousness. The emphasis today is on producing scholarly involvement and studying minority ethnicity. We want to educate students to become cognizant of all the new changes in minority/majority relationships in society. Society at large should understand the vast resources of creativity, intellect, and contributions to our society by Black Americans and other minorities, which historically, before the creation of ethnic studies, were ignored by educational institutions.

How are students affected by ethnic studies?

I believe that an ethnic studies program is essential for all students because of the failure of the public school system to teach students significant facts about minority cultures — all minority cultures. In California, a minor in ethnic studies is essential information for business majors, social science majors, even physical science majors, because of the variety of ethnic groups that students will be working with. For minority students in the valley, Fresno State offers tremendous opportunity for professional and personal growth.

What community activities is the ethnic studies program involved in?

There is the Rosa Parks Distinguished African-American Award, which recognizes outstanding achievements of students and community leaders, regardless of ethnicity. Ms. Rosa Parks was a courageous civil rights worker who in the early 1950s refused to give up her front seat in a segregated bus in the South. [The significance of this civil protest was that it led to the Montgomery, Alabama, bus boycott against the Jim Crow laws, southern laws that called for separate public facilities for Whites and for Blacks.] We brought her to CSU, Fresno in the spring of 1981, although she was turning down about 20 offers each month to speak. We have brought to campus some of the outstanding change makers in society, including Willie Brown, California assembly speaker; Tony Brown, nationally syndicated T.V. talk show host; James Farmer, founder of the Congress for Racial Equality; Yvonne Braithewaite-Burke, California congresswoman, and others.

In spring 1986, I created the Black Theatre and the Talent Showcase as vehicles for both Black and other students interested in theatre and performance to have exposure in Fresno. For our first production, we had a standing-room-only crowd in the Satellite College Union. It was a chance for our students to act, dance, and sing; the production included "The Love Song of Winnie Mandela." The multiracial production was co-funded by the Cultural Arts Committee of the Fresno City Council and by the CSU, Fresno Associated Students.

When did your interest in creative writing begin?

Even as a very young child, at about 10 years of age, I decided to be two things: a teacher and a writer. I think it is the most important public service you can perform in society, to communicate vital ideas and concepts to the uninitiated and the young. The most important undertaking of the intellect is to communicate ideas. I'm interested in producing writing, and that's my focal point right now — literature and creative writing. I am currently working on a scholarly study of the seminal writer Charles W. Chesnutt, as well as a book of poetry, a play, and a collection of short stories. All of my writing is an appeal to expanding consciousness.

What is your philosophy?

I would like to be remembered as a professional who cared deeply about communicating subject matter and increasing awareness of cultural variety in American society. I believe I am fair and open-minded in academic matters. I welcome opinions of students and others. I teach that all cultures have equal value, that Anglo-Saxon culture is no more important than Chicano or Hindu culture, and it's no more important than American-Indian culture. We try to develop a truly multicultural perspective on the evolution of human kind. I have very strong opinions. I have been described by others as intense, controversial in political issues, opinionated, and also highly knowledgeable concerning Black culture. I totally disagree with many social-racial perspectives of institutional racism in both educational programs and society at large. I do perceive that as the years have passed, ethnic studies is becoming a permanent program in the university, broadly accepted by both faculty and students.

Berta Gonzalez

"Teaching is a very demanding profession that requires current expertise in the curricular content, enthusiasm, patience, and good listening skills."

BERTA GONZALEZ
Associate Professor of Education



The migrant farmworker lifestyle was an integral part of Berta Gonzalez's early upbringing as she and her family traveled between Texas and California working in the agricultural fields. Knowing through her personal and professional experience that ***education*** *is one key to a better life for many people, Dr. Gonzalez nowadays trains students to become future elementary and secondary school teachers.*

Acknowledging the supportive role of her mother, Gonzalez says, "I certainly know that without my mother's constant encouragement for me to continue in my education, I would still be a part of the migrant field hands in this country. The contribution that my family [two brothers, three sisters] now makes to society in our various professional roles [nursing, education, psychology, and staff development] is with a strong recognition and value of our early migrant upbringing."

Gonzalez's long-standing commitment to educational issues and equal opportunities for Hispanics, limited-English-speaking persons, and youth in general shows in her expertise, awareness, and sensitivity in training future teachers. A few years ago, her college students presented a plaque to her that reads: "The mediocre teacher tells. The good teacher explains. The superior teacher demonstrates. The great teacher inspires!" And, because of Gonzalez's enthusiastic teaching and cultural and educational experiences, many of her teacher education students view her as a role model.

Dr. Gonzalez, an associate professor of education, graduated from Sanger High School in the San Joaquin Valley. She earned her Bachelor of Arts degree at California State University, Fresno and her Master of Arts degree at California State University, Chico. She was awarded her Doctorate in Education from the University of the Pacific in Stockton in 1979.

Gonzalez has taught at every grade level from pre-school to university, which also includes returning early in her teaching career to her hometown of Sanger to teach at an elementary school. After leaving the Sanger schools, Gonzalez was hired as the coordinator of the California Mini Corps Program at California State University, Chico, where she also taught in the Department of Teacher Education. The Mini Corps Program focused on preparing former migrant students to become elementary and secondary school teachers. Later, as director of bilingual education programs at Fresno Pacific College, she taught for eight years at the undergraduate and graduate level. She has also directed state and federally funded programs with Fresno County's Department of Education. Among her numerous professional awards, Gonzalez was named one of the "Outstanding Young Women in America" and last year received recognition as an "Outstanding Educator" from the Sanger community.

At CSU, Fresno, Gonzalez's current work is multifaceted. She is associate professor of elementary curriculum and coordinator of Clinical Supervision Training Institutes for Master Teachers. In addition, she directs the Master Teacher Scholarship Program. During her summer vacation from the university, however, she usually makes it a point to go back to the elementary or secondary classroom or to pursue her own professional developmemt. In recent summers, she has worked as an elementary school teacher in Parlier and as school principal in Firebaugh. This past summer at Yale University, she enrolled in post-doctoral coursework that focused on critical thinking skills. "I do believe that as a teacher trainer I must stay in touch with the reality of the classroom and current research because education is a life-long learning process," Gonzalez says.

What do you see as your specific role in preparing new teachers?

I view myself as a person who imparts knowledge about educational theory and practice as it relates to the elementary classroom. I expect my students to be clear in defining their views about educational issues discussed in class. We live in a changing society, and I believe that our new teachers will be the builders, movers, and agents for positive educational change in our communities. We are constantly improving, molding, and developing human potential in our prospective teachers. Teaching is a very demanding profession that requires current expertise in the curricular content, enthusiasm, patience, stamina, and good listening skills. As a professor preparing new teachers, I must share these concepts and classroom realities with students pursuing teaching as their chosen profession.

How important are curriculum and instruction to a prospective teacher?

The curriculum and instruction course is a required course in the professional preparation program of prospective teachers. In this course, I facilitate the process in which prospective teachers acquire knowledge about the curriculum and various teaching methods that are used in kindergarten through eighth grade level in California schools. I help prospective teachers develop skills in preparation of subject content, as well as planning lessons and evaluating student progress. For many prospective teachers, the teaching-learning process is often viewed as both a science and an art. The Multiple-Subject Credential candidate must take the curriculum and instruction course in education. This course is helpful because it gives students the necessary background to identify their own views about teaching and putting curriculum and instruction into practice in the classroom. The course provides prospective teachers with basic educational theory that is reinforced in the curriculum and instruction coursework as they become acquainted with transferring learning theory into practice.

Do your students become teachers directly after taking your classes?

Not necessarily. The elementary curriculum course is one of the final courses that prospective teachers take prior to their student teaching practicum. When students leave this course, they are prepared to provide small group and large group instruction in schools under the direct supervision of a master teacher with the cooperative assistance of a university supervisor.

What are some of the problems that these young prospective teachers face?

Prospective teachers often have difficulty with managing a classroom, relating to parents, and keeping informed about educational changes. In classroom management, prospective teachers in their first-year teaching are trying out many strategies. Prospective teachers must practice and be consistent in developing an effective classroom management plan that stimulates a positive learning environment. I believe this type of management plan needs to be closely related to their own belief system on handling major disruption in the classroom or modifying student behavior. Relating to parents, prospective teachers as well as first-year teachers often confront parents who are from a different language and cultural background than their own. Therefore, a first-year teacher must be sensitive and cognizant of what to say and basically know how to relate to various people.

There is a dire need in teacher education to prepare our prospective teachers in the area of cross-cultural awareness and enpowering them with the confidence, knowledge, and sensitivity to cope with the multi-ethnic school environment. For example, an awareness might be in acquiring knowledge of the variations in lifestyles, socioeconomics and belief systems of particular ethnic groups. With respect to staying current professionally, first-year teachers are often so committed to the teaching profession during the first few years of their employment that professional development becomes obsolete. They are so busy organizing their classrooms, teaching, and understanding the school organizational plan that the current changes in education are not addressed.

How can you get more culturally diverse students into the Teacher Education Program?

I believe that we need to move forward and move aggressively in our recruitment efforts. That is, begin a recruitment effort by targeting elementary-level students of different cultures in terms of career preparation programs available at CSU, Fresno. Using graduate students who represent the culturally diverse population as liaisons would be a possible way to begin the recruitment process. Current teachers who also represent diverse cultures at the elementary school sites would make excellent recruitment personnel. Role modeling, encouragement, and support are critical to elementary- and secondary-level students who may wish to attend CSU, Fresno. I view parental involvement in the early stages of recruitment efforts as critical. Often, parents are uninformed of the potential educational opportunities that the university has to offer their children. If we are to sincerely prepare young people who will cope with our pluralistic society, then we must not be complacent in our recruitment efforts.

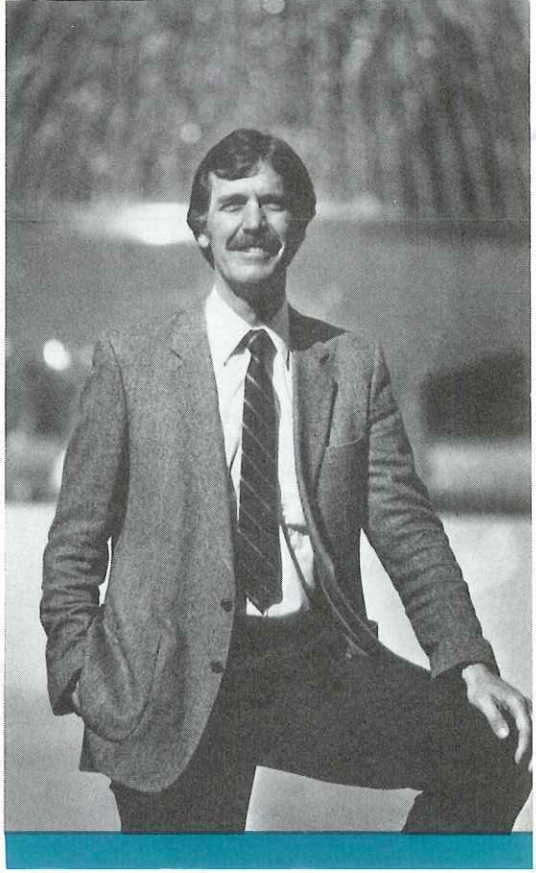
Do you ever hear from former students?

After 18 years in the teaching profession, I have a large extended family of former students across the country and abroad that I have stayed in touch with over the years. These people often remind me of the reality of my years in the profession because many of them are now in leadership positions. I am glad to say many of my former students are now in the teaching profession and our conversations often focus on classroom experiences.

What do you do when you are not teaching?

I really enjoy time alone or with a few friends or family members. I love to read fiction, biographies, and books on cultural history. I enjoy the outdoors very much and make every effort to spend time in the mountains or on the coast. I also enjoy traveling, so I spend much of my time traveling nationally and internationally. I find that traveling and taking pictures in the back roads of California is a real joy to me when I am not teaching at the university.

Robert Hatmaker



"I enjoy practicing social work and keeping my skills sharp, but my first love is teaching. I love to work with students and feel most comfortable in the classroom."

ROBERT L. HATMAKER
Professor of Social Work

How does a street-wise kid from Detroit, coming from a family of six children, whose father was a West Virginia coal miner and then a door-to-door Detroit milkman, end up a professor of social work at California State University, Fresno? "Often, I wonder about that myself," Professor Robert Hatmaker says. "I couldn't have made it without the encouragement and support of my parents and teachers along the way — the kind of help that many people get from social workers today," he says.

Hatmaker credits equal educational opportunity, encouragement and support from family and friends, and a little bit of good luck for his being a professor today at CSU, Fresno. As a teenager, Hatmaker was active in a church youth group, and his pastor there urged him to go to college. "No one, however, in my family had ever gone to college, so that was a big deal for me," Hatmaker says. "The basic orientation in our family was hard manual labor — not education." Despite the odds against him, Hatmaker earned his Bachelor of Arts degree in theology and philosophy from Wheaton College in 1961. The chair of the Department of Sociology at Wheaton College took Hatmaker's class on a tour of correctional institutions in Minnesota and later recommended that Hatmaker get a Master of Social Work (M.S.W.) degree. Hatmaker explains, "Doing social work fit in with my religious beliefs. My faith was part of my education."

In 1963, Hatmaker earned his M.S.W. degree from the University of Michigan, where he focused on juvenile delinquency. "Growing up on the streets of Detroit, Michigan, and having extensive experience working for a church that dealt with street gangs in Chicago prepared me well for my studies and early career working with teenagers," he says. He later became the clinic director of Boy's Republic, a Michigan residential treatment program for delinquent boys. A few years later, Hatmaker moved to Colorado Springs, Colorado, to practice social work in the public schools.

Hatmaker worked in Colorado Springs until a CSU, Fresno professor urged him to consider working at Fresno State. "You could get a university teaching position without a doctorate in those days," Hatmaker explains. So at 29 years of age, he began teaching on the Fresno campus in 1969. He later earned his Ph.D. at the University of Southern California (1977). According to Hatmaker, "I wanted the doctoral degree not to be a better social worker, but rather to learn to be a better teacher." In 1981, he took a sabbatical leave and, with his wife, Janice, a clinical psychologist, studied sexual therapy at the Center for Marital and Sexual Studies in Long Beach, California.

Nowadays, the Hatmakers enjoy a popular and successful private pychotherapy practice. "We have a specialization built around my teaching interests and our practice in marital and sexual counseling," he says. For relaxation and self-therapy, Hatmaker, a private pilot for 15 years, flies his Cessna 172 to his Pine Mountain Lake retreat, where he and his wife enjoy sailing, walking among the pines, golfing, and leisure reading. They have two children, Cindy age 23, and Doug age 21.

Do you see yourself more as a professor or as a social worker?

I am a professor foremost. I enjoy practicing social work and keeping my skills sharp, but my first love is teaching. I love to work with students and feel most comfortable in the classroom. The give and take with students in the learning process is, for me, very stimulating, challenging, and satisfying. Teaching in a university setting is the best job that I could dream of. University teaching is the best combination of working for someone else and having or running your own shop. Self-employed people have to worry about their business, whether their lights are on or not, quarterly income reports, staff, etc. I don't have to worry about any of that because somebody else takes care of the shop. Yet, I have the freedom of a self-employed person. I manage my schedule and make my own appointments, and I'm expected to fully manage my professional life. I have a lot of

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freedom to be creative and inventive. Being a professor is the greatest job that I could think of. It's fantastic!

What is Social Work Education?

Social Work Education prepares students to help others with the stressful problems of living by means of counseling, advocacy, education, and referral. The field includes problems dealing with mental health, family relations, child welfare, unemployment, marital and sexual difficulties, and alcohol or drug abuse. Although these are very serious problems, I teach my students how to confront these social and personal problems with confidence, competence, and even humor. Social work education is characterized by a balance of classroom and field training. Social workers were originally trained in social agencies and later moved to the university for classroom instruction. Today, we continue to have field studies in agencies as part of social work education.

Can you say something about the history behind these agencies?

Social workers began around the First World War to work in these social agencies, especially in helping immigrants. The famous places were like Hull House in Chicago with Jane Addams [1860–1935], which was called a settlement house. There were settlement houses all up and down the Eastern seaboard and some in the Midwest. Social workers were the employees of these "agencies." Other private and governmental agencies were established during the Great Depression to assist people in need. As that work matured, social work education developed its own body of knowledge and skills, even began teaching people in the agencies. Then the universities began to take it over more and more — the educational part of it. But the agencies continue to be a major part of the education. Our students today spend about half of their time in agencies practicing social work. As a result, our students get a good balance of learning theory and developing their skills. I, therefore, believe social work education is very practical.

What motivates people to go into social work?

I think the majority of the persons who go into this field have done some work with people and liked it. They have been a parent aide in a classroom, volunteered to answer a hotline, worked in a church or hospital, and so forth. From these experiences, they decided to work with people, rather than things, in their careers. As they looked around at the different possibilities for working with people, social work stands out as an ideal choice because both the education and potential employment emphasize direct person-to-person contact.

What attributes make for a good social worker?

Helping people with the complex issues of life is an extremely complicated task that requires intelligence and training. Just relying on one's limited social experience and background without education and training is inadequate. So just being a good guy is not going to do the job. Let me give you an example. A 24-year-old woman goes to work for a social service agency, and she gets as her first case an emergency response situation in which a grandfather is accused of molesting his granddaughter. The grandfather is the employer of the girl's father and has made it clear to the father to, in his words, "Shut that girl up, or I'll fire you!" The father puts pressure on the daughter not to tell. But the daughter has already told some of her girlfriends and school personnel. The social worker is called upon to investigate the case, appear in court, provide services, and, if appropriate, reunify that family with as little disruption as possible. Handling this type of case takes a lot of knowledge, social work skill, and personal strength. Unfortunately, this case is not unusual. It is almost a garden variety case in many agencies. And I don't think people realize the kinds of complexities that the average social worker faces — legal, ethical, social, psychological, and personal complexities. Therefore, being a social worker requires an intelligent, dedicated, and well-trained individual.

Which areas of social work are you particularly interested in teaching?

Self-esteem and human sexuality. Think about it, what is more basic to our personality than our view of ourselves [self-esteem] and our sexuality? My goodness, that permeates so much of our character, our life, our existence, and I have the good fortune to teach about those things. I did my doctoral dissertation on self-esteem. I'm interested in what causes low self-esteem and how to raise it, improve it, and feel better about yourself.

How do you get good self-esteem?

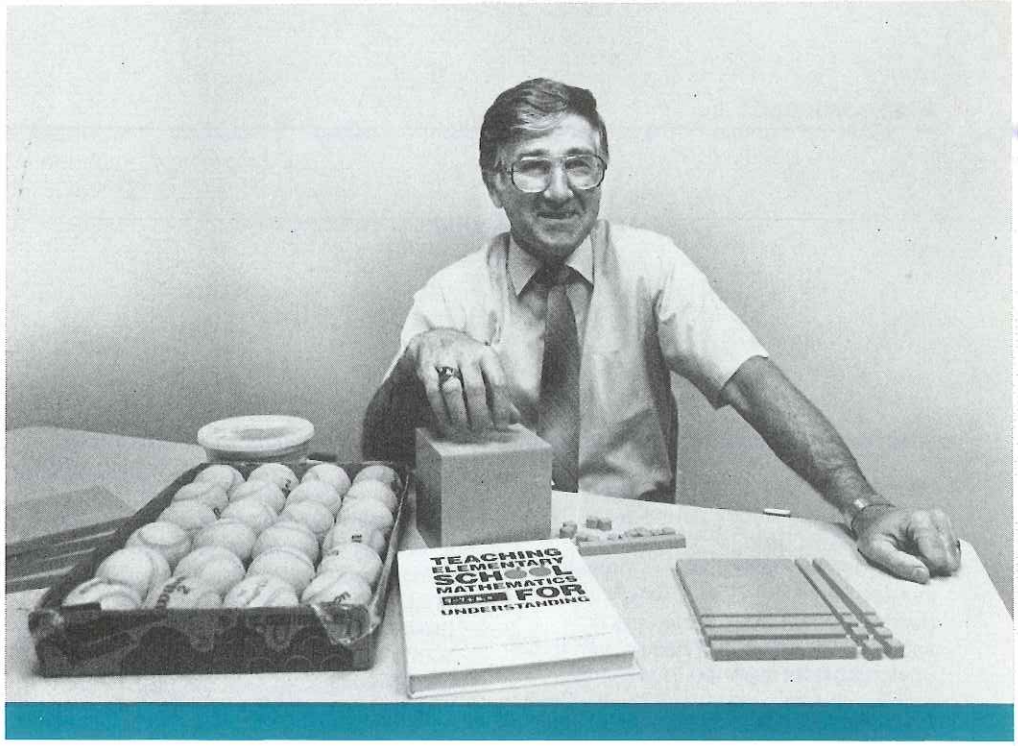
You must value who you are and what you are. In a nutshell, value yourself and conduct your life in such a way that you are positively reinforced — because self-esteem is, in part, developed by how people treat us. If all you hear is that you are no good, you will likely evaluate yourself negatively and feel depressed and self-conscious. Supporting and valuing yourself involves positive thinking, positive behavior, and helping other people to treat you with respect and dignity, including respect for your cultural background, social status, and chosen lifestyle. When I give a lecture on self-esteem, I get a lot of students nodding their heads and agreeing with me.

Can you say something about your experience teaching here?

Fresno State is a great place to teach! The university and the California State University system emphasize teaching, as opposed to research. I believe that classroom education at CSU, Fresno is outstanding because that is our mission and that is what we concentrate on doing well. I am proud and pleased to be a part of this fine university and the California State University system.

Arthur A. Hiatt

"I felt that something as fundamental as mathematics should inspire a little more excitement."



ARTHUR A. HIATT
Professor of Mathematics

Despite his own great love for mathematics, Dr. Arthur Hiatt is well aware many students do not share his affection. He attempts to convert his students by demonstrating the practical application of mathematics to daily life. "I got my doctorate because I was concerned about the poor status of mathematics education and wondered why so many students have difficulty learning mathematics, and why so many students don't like mathematics," says Hiatt, whose Ph.D. dissertation was ***Assessing Mathematical Thinking Abilities of Sixth, Ninth, and Twelfth Grade Students.*** *"I felt that something as fundamental as mathematics, which has applications to everything you do, should inspire a little more excitement."*

Hiatt's entry into the field of mathematics was not an easy one. One of 15 brothers and sisters from a very poor family, he started college as an engineering major because he thought engineers made a great deal of money. During his last two years of high school, Hiatt worked 23 hours each week and lived with several different brothers and sisters, staying in five different places in his senior year. Although Hiatt, an outstanding football defensive halfback and track runner in high school, had athletic scholarship offers, he entered San Jose State University determined to become an engineer.

Hiatt married at age 18 and had his first child in his junior year of college. He decided to change his major to mathematics when he felt an engineering degree would take too long, and he needed to support his wife and child. "I have never been unhappy with that decision," He says. "I love teaching mathematics." Hiatt managed to graduate in less than four years, and his track career earned him All America honors. He was named on four different world track and field lists and once ran the fifth fastest time in the world for 220 yards. All this was accomplished while he worked at least 20 hours each week. He then went on to earn his master's degree from San Jose State University and his Ph.D. from the University of California at Berkeley.

Nowadays, as CSUF's coordinator of Secondary Mathematics, Hiatt works with teachers on methods to motivate students to learn mathematics. His efforts to get teachers to make mathematics more interesting to students have been widely recognized. He was awarded a $20,000 National Institute of Education Grant in 1978 to study the effects of handheld calculators in a predominantly black high school. A Chancellor's Grant of $22,000 followed, to develop a general mathematics class for liberal arts students at CSU, Fresno involving calculators and computers. In March 1987, Hiatt was selected as a consultant for the largest National Science Foundation Grant ever awarded for calculator research — $812,000.

Hiatt has been a full-time high school teacher in Santa Clara, a director of curriculum and research, and a consultant on two national mathematical experiments, enabling him to provide his students with insights on what makes mathematics exciting. "Essentially, I've spent most of my life trying to help teachers on how to present mathematics to students in a way that would be more interesting," Hiatt says. He also has given numerous workshops for kindergarten through 12th grade teachers throughout the U.S. and has written or co-written several articles and books on mathematics, including ***Teaching Elementary School Mathematics for Understanding,*** *now in its fifth edition.*

How difficult is mathematics for university students?

We find students with three years of college-preparatory high school mathematics who can't pass the Entry Level Mathematics (E.L.M.) test that the state now gives at all our campuses. The test covers only ninth grade algebra and some geometry. Some logical reasons for their not being able to pass the E.L.M. are grade inflation, cheating, and lack of rigor and enforcement of homework assignments. Most school districts have a rule that makes it permissible for students to take any mathematics course provided they have a ***D*** or better. Most students lack study skills. Students who enter with less than adequate mathematics training find our remedial courses very difficult because of the necessary pace. [180 hours in high school versus 45 hours in college.] This pace contributes to the mathematics anxiety of some students.

Why have mathematics skills eroded?

Several curriculum developments happened in the '60s. There were "New Mathematics," and "Individualized Instruction for Mathematics." Conceptually, individualized instruction, which was designed to go at your own pace, sounded very nice, but has proven to be unworkable as reported in research articles. To teach mathematics you have to use concrete materials; there has to be an interaction between something physical that the learner sees, touches, or smells, and discusses with the teacher. For example, fractions should be taught by folding paper or working with concrete objects, rocks, marbles, beans, etc. With "New Mathematics," young students were given a more axiomatic approach, such as, "give an example of the commutative property for addition."

What have you done to help teachers adapt to the changes in the mathematics curriculum?

Over the past several years, I coordinated the mathematics department and education department's efforts to develop meaningful content courses in mathematics and a useful methods course for elementary school teaching candidates. Our elementary school teaching candidates rate their mathematics education as one of their most positive learning experiences at CSU, Fresno. They find the information learned transferable to their classroom teaching situations. In addition, I have conducted several Extension Program courses on methodology for secondary school teachers. My published works have concentrated on problem solving in geometry, problems and theorems for calculators, and ways to motivate students to learn mathematics. In the last two years, I have been the site coordinator for the University of California and the California State University system diagnostic testing project. As of June 1987, my office has processed more than 15,000 tests for high schools. The results provide students with a letter specifying their strengths and weaknesses. My most recent research paper was presented at the National Council of Teachers of Mathematics national conference in April 1987.

How do you approach mathematics to make it more interesting?

I try to find useful applications for the students. As a simple example, we explore the reasons that gas trucks are elliptically shaped. This easily leads to many ideas requiring calculus. To learn mathematics, you must experiment. If you have some triangles, you measure, you calculate, you make a chart, you organize your information, then you formulate your conclusions. What makes mathematics exciting is discovering mathematics, however trivial the discovery might be. A child who is taught $5 + 5 = 10$ and then figures out on his own that $5 + 6 = 11$, because $6 = 5 + 1$, is using reasoning to discover a mathematical truth, and that's the exciting part.

Have you ever worked with minorities?

Before coming to CSU, Fresno, I developed a mathematics program [K–8] for a school district that was more than 50 percent Hispanic. The program was based on concrete manipulative materials for each mathematical concept. This made the learning of concepts less dependent on the English language. Consequently, the average growth of the Hispanic children was greater than that of the Anglo children. While at CSU, Fresno, I had one of only three research grants in the U.S. to study the effects of calculators on learning mathematics. This study took place in a predominantly Black high school. With specially designed lessons covering geometry, trigonometry, and some elementary calculus, the students averaged in the 7th percentile at the start of the semester and averaged in the 35th percentile at the end of the semester. The calculator is an exceptional tool in the hands of a competent teacher. I have written several problems for calculators and many of these have been published in books or leading mathematics journals.

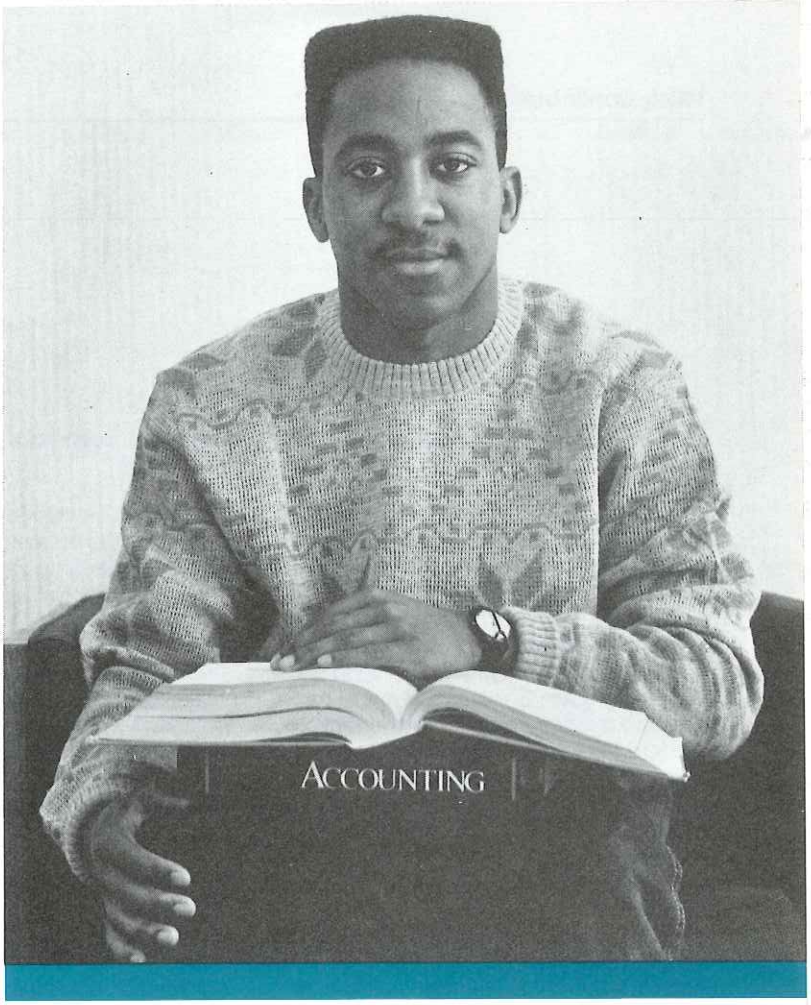
What are your hobbies?

My wife, Dr. Charlotte Hiatt [associate professor in the Department of Information Systems and Decision Sciences], and I just finished a home in Cambria [on the Central Coast of California]. We did 90 percent of the work including tiling floors and putting in some wood floors. We enjoy going to the coast and walking along the beach. We also enjoy traveling in our camper. We have been to several countries and every state in the U.S. but three. I like most sports and try to play tennis now and then. My wife tries to force me to read non-mathematics books and magazines, but it is a real struggle. However, I just completed *The Prodigy* and have nearly finished two other novels. We love animals and have an 11-year-old cat. We have owned dogs and horses. Charlotte is trying to encourage me to get another dog. I use the excuse that with our new granddaughter, Rachel Marie, I will not have time for a dog. Dogs need a great deal of love and attention. In addition to a fine collection of Oriental rugs, I just purchased a 1937 Dodge coupe. I intend to make a street rod out of it and in the last year have read several car magazines in preparation for the project. When I retire, I would like to get more active in antique cars and street rods.

Lewis Wiley

"There's help at Fresno State if you need it. You're not all alone here. There's always people here to help you out."

LEWIS W. WILEY, JR.
Freshman



*Courage is not a requirement for college admission, but that is what Lewis Wiley needed before he applied to California State University, Fresno. "For a long time, I had feared that if I didn't get straight **A's** in high school, then I wouldn't be able to go to college," he says. "I always thought of myself as not being smart enough."*

Wiley, a 19-year-old freshman business major, is the first member of his family to go to college. He was born in Fresno and wanted to attend a college near home, so he came to CSU, Fresno. Preceding his first semester here, he attended the four-week-long Summer Bridge Program, which introduces high school graduates to CSU, Fresno by offering a facsimile of an academic semester, courses on academic skills techniques, culture, and mathematics, and an orientation to the campus. During the Summer Bridge Program, much of Wiley's fears about college were alleviated. "I found out that college is like high school, but is much more demanding and requires more work," says Wiley. "I learned that the instructors wanted you to think and to express your thoughts more."

At Merced High School, Wiley earned a 3.0 grade point average. And during the Summer Bridge Program, he regained his academic confidence. He discovered that there is academic help at several places on campus, such as the Developmental Learning Resource Center, the Educational Opportunity Program, and the library. "There's help at Fresno State if you need it," he says. "You're not all alone here. There's always people here to help you out."

As a standout basketball player at Merced High School, Wiley had a chance to pursue an athletic career in college. During his senior year, his basketball team won the California Interscholastic Federation's San Joaquin Section Championship at Arco Arena in Sacramento, before losing in the Northern California Tournament of Champions at the Oakland Coliseum. In basketball, Wiley played in front of college scouts, but was discouraged when he didn't get any big athletic scholarship offers, except from community colleges. Finally, he says, "I just knew I had to go to college somewhere. Not for basketball, but for educational reasons." Wiley now believes that playing intercollegiate basketball and pursuing an academic degree at the same time is too demanding. "It's not easy to get a degree in four years and play basketball at the same time at this level," he says. "I don't think I could do both."

Nowadays, Wiley concentrates primarily on his university studies. "The energy that I would have put into playing basketball, I'm channeling toward academic work now," Wiley says.

What is the biggest difference between high school and college?

At Fresno State, I don't have to go to class every day. I see my professors every other day here. Therefore, I don't get tired of my classes. In high school, there's the constant pressure of having to hand assignments in the next day. Here they treat you more as an adult and give you more responsibility, which can be a disadvantage because there's less parental-teacher pressure to get homework assignments done on time and to get good grades. You are more on your own, so you feel a little more relaxed. College is much more laid back, too. There's pressure, but it's different from high school.

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How did you develop your interest in business?

I've always been a yuppie type, preferring the business-type atmosphere in which one wears a business coat and tie. I like Hewlett-Packard's commercials on "What if . . ." And, both my parents influenced me to go to college. My mother told me that school was very important, so to strive for good grades. She pushed me all the time and made sure that I hit the books. She told me that without college, you couldn't get a well-paying job nor comfortably support a family. My dad also influenced me to go to college. He wanted me to get a degree through a military program, but I wasn't ready for a commitment of several years of military service. I want to get a college degree and start working.

Do you have any pressure on you to succeed?

I know what's good for me. But, I also want my parents to be proud of me. It's not that I'm going to college for my parents, but I probably want to excel because I mirror my parents' desires in many ways. I also want to set an example for my 15-year-old sister. She's going to high school, and I want her to see that with a college education, you can accomplish a lot of things. I want to graduate, having had a good university experience here, so that I can tell her that college is demanding but rewarding.

What has been your biggest challenge this year?

My biggest challenge has been to get over my fears of going to college. I felt that I wasn't as smart as all the other people in the classroom. But having realized, "Hey, I'm as smart as the person sitting next to me," I no longer had my fear. I was a *B* student in high school, but high school was easy for me. The thought that college is all work and no play was so ingrained in me that that's all I thought about.

How did the Summer Bridge Program help you?

If you see a movie about college on T.V., what you'll frequently see is a college student sitting at a desk and studying alone in a dark room with a desk light on, saying, "Oh, I'm having trouble with this class. What am I going to do? I'm going to flunk!" But, Fresno State is not really like that at all. There are people here who can help you. The Summer Bridge Program introduced me to the college curriculum and to General Education and graduation requirements. Therefore, when I came here this fall, I wasn't lost. Also, the library is a "beast" if it's your first time in there. But over the summer, I was oriented to the library, and they gave me a tour to show me where references and other materials could be found, such as photocopiers, typewriters, and maps. So during your first week of classes, if you get a homework assignment that requires library research, you are already ahead of the person who didn't go to Summer Bridge and learn about the library. You can ask the Summer Bridge people any question that you have about college. And, they'll often answer your questions before you ask.

Did you find it easy to meet people?

I have met a lot of people here with the same major and with similar backgrounds. They might be from Los Angeles or San Jose, but I've made friends with them. Summer Bridge helped me, too. For example, you're not just seeing a lot of unknown people the first day of school. I've had other friends who didn't go to Summer Bridge ask me, "How did you know him?" And I said, "I met him at Summer Bridge."

What are you hoping to do after you earn your degree?

Ultimately, I'd like to run a bank. It doesn't have to be anything big. I'd just like to be the one in charge. I would like to make loans, handle balance sheets, and do other banking procedures. My aunt works for the Bank of America, and I always used to go there and watch what went on. The bank's business procedures interest me because they insure that the bank runs smoothly.

What advice do you have for incoming freshmen?

Make sure that you have an understanding of the basic skills of English writing and mathematics, because you're expected to know it here. But, if you feel your skills are not strong enough, be sure to seek help at the university. They will help you improve your academic skills. But then again, don't worry about it because there are tutorial services on campus that can help you if you're still a step behind. The Developmental Learning Resource Center has a walk-in mathematics laboratory, and there are usually tutors there. They'll take you through mathematic problems step by step. You can also sign up for English tutors. You can designate a day and time to go see them, and they'll work with you.

Editor's Note: The Summer Bridge Program that was helpful to Lewis Wiley is administered by the university's Educational Opportunity Program Office, (209) 294-3021.

Jodi Baker



"I think you should try everything. Even if you do think you've found your major, you have to be open to different suggestions."

JODI L. BAKER
Sophomore

Sophomore theatre major Jodi Baker had planned to attend Cornell University in New York, but that was before she had experienced the California sun. "I always thought I would be a lawyer because that's a very practical thing to do," she says. She applied to Cornell and other universities in her home state of New York, but when her mother and stepfather, Dr. Corrinne Hales and Dr. John Hales, came to CSU, Fresno to teach English, Jodi followed. "I figured I'd fly back to New York and go to school there, but I kept putting it off. I really liked the weather out here," she says.

Baker initially planned to attend CSU, Fresno for only one semester. She remained, but her interest in law did not. "I took an acting class just for fun," Baker says. "I thought I would be concentrating on political science." Instead, the class meant a new career. "I started giving all my attention to Introduction to Acting (Theatre Arts 32)," she says. "I became very interested, and pretty soon I realized that this was what I really wanted to do."

Baker, who is 19 years old, has pursued this new interest passionately from small parts in CSU, Fresno productions "Butley" and "Telethon Fool" (Fresno State's entry in the American College Theatre competition) to a leading role in Tennessee Williams's "The Glass Menagerie." Baker was nominated for the prestigious Irene Ryan Award for her performance as the withdrawn, painfully shy Laura. "I think that in five years I would play Laura quite differently," says Baker of the complex role, which requires portraying a person whose physical handicap represents a deeper disability — an emotional one. Brad Myers, assistant professor of theatre and director of "The Glass Menagerie," says of Baker, "There's a quality about Jodi that you cannot teach. She's special. Having acted in several major roles in her freshman and sophomore years at CSU, Fresno is quite a significant accomplishment. Jodi is intuitive, sensitive, and what is most impressive — disciplined. When seeing Jodi on stage, the audience wants to like her and be with her. She exhibits an innate compassion that draws an audience toward her." Baker found that the many opportunities she has had as a freshman and sophomore at CSU, Fresno have not been routine. "There are some programs [at other universities] in which students are not allowed to be in any production until their third or fourth year," says Baker. "Fresno State isn't like that. Here, there is always the opportunity for on-stage experience, and that's great for a beginning actor."

Last summer, Baker was an apprentice with Western Stage, a regional theatre company in Salinas, California. Baker appeared in "West Side Story," "Chorus Line," and "Wheels" (a children's musical). She also worked on production aspects such as stage construction, lighting, and costuming. The apprenticeship also gave her a glimpse of professional theatre life. "I know I want to act more than anything right now, but later I might want to direct or stage manage, and it's good to learn some of that now."

Baker is pleased with the way her university education is turning out. Says Baker, "High school is a very strict environment. College is more open. I don't think it matters as much what your goals are at first; you just need to take in as much knowledge as you can about everything. Then once you've found your specific goal, you can incorporate everything you have learned into that. The political science classes that I took may help me with an acting project sometime. Everything relates, I think."

Is being a theatre major what you expected?

I think it requires a very different personal time schedule and a different lifestyle from other majors. It's a whole different kind of work. The people are different and the atmosphere is different and the homework is different. You have to go home and memorize a scene while others may be memorizing mathematic formulas. The classes are very hard. A lot of people think, "I'll take an acting class because it will be easy; I won't have any homework." But you have to bring all of yourself to every class. You can't ever tune out like you might do in some classes. Often there isn't a textbook, and you have to be there every class, and also make yourself very vulnerable to criticism. It takes a lot of commitment, especially during your college years when you're taking other classes simultaneously.

What kind of commitment?

It takes time. Rehearsals take up a lot of time. This year, for example, I've been trying hard to get a part-time job. It's very hard to find a time you can work, with school all day and rehearsals every night. We take about a month and a half to do an entire show. There's not much time for anything else. When we did "The Glass Menagerie," we only had three weeks of rehearsals, so we had to rehearse weekends, too. Sometimes we'd stay past midnight. And then we would have to get up the next morning and come to class.

Does your personality lend itself to drama comfortably?

I used to be more shy than I am now, and that's the reason I took my first acting class here. When I was a kid, I was a showoff, but as I grew older, I withdrew more. I knew that I wanted to do something important, but I didn't have the ability to communicate very well. Acting has really helped. The first acting class I took was from Brad Myers in the theatre department. His specialty is voice instruction. He really helped me technically: articulating, getting my voice out, and learning breath support. He practically held my hand during auditions. Today, I feel more in control of what I'm doing, especially on stage now that I've been able to do some shows. I believe a teacher's job is to lead you in a direction so that you can find what works for you. Fresno State has a great faculty — an exceptional group of people with diverse specialties. There's so much to learn from them. You take in everything, and you sift out what you can use, and then throw away what you can't.

What have you enjoyed the most about acting here?

Probably the work I've done with the Experimental Theatre Company. Playing the part of Sunny in "Juvie," an E.T.C. production, was my first acting performance. E.T.C. is a student-run company of actors that has its own board with one faculty adviser. I've been able to be on the E.T.C. board for two years now [freshman, then sophomore representative], and it's been a great experience. E.T.C. is all student-run. We choose a play. We choose a student director. We do it all ourselves.

How has the E.T.C. been important in your development as an actress?

I believe getting support from your fellow students is just as important as getting support from your faculty, because everyone strives for the acceptance of their peers. E.T.C. is both a great opportunity for people just coming into the department or for seasoned actors and actresses who have been here a long time. We have an extremely limited budget, and the plays are not extravagant by any means. They are very simply produced, and we do them in the lab school theatre. That's why it's called experimental, because we can take a lot more risks, I think, than the main stage can. The main stage administrators have to satisfy the financial needs of the department, and E.T.C. really doesn't. Throughout the years, E.T.C. has a history of taking chances, with things like subject matter, casting, and costuming.

What other interests do you have besides theatre?

I cross-country ski, and I draw a little. This past spring, I spent four months in England and Europe with Fresno State's London Semester program. I went to lots of plays, museums, and art galleries. I got to see all those famous places I'd always heard of. It was great. While in London, I auditioned [against more than 3,000 other actors and actresses], and shockingly, made it into The National Theatre of Great Britain's summer acting program. This means I'll be in New York this summer for a few weeks. It's all very exciting, but a little scary.

What advice do you have for students just beginning at CSU, Fresno?

Don't limit yourself in any way. I mean, don't say, "This is what I want from life," because right out of high school, there are very few people who really know what they want to do. I think you should try everything. Even if you do think you've found your major, you have to be open to different suggestions. You really can't be narrow-minded at all during this time in your life.

Cindy Roldan

"If you come from a small town, you are familiar with everything and everyone there. Fresno is a large enough city to be exciting, but it's not so large that it's scary."

CYNTHIA L. ROLDAN
Junior



Like many students on campus, Cynthia Roldan transferred to CSU, Fresno after attending one of the community colleges in the San Joaquin Valley. Citing many reasons for choosing the community college education route, she says her main reasons were wanting to "ease into college life" and to save some educational expenses.

As a liberal studies major at the College of the Sequoias in Visalia, 21-year-old Roldan could have gone to any number of schools to obtain her bachelor's degree. She came to Fresno, however, because she wanted to avoid being thrown into a totally new educational and living environment. "At least I had some familiarity with Fresno, and CSUF is a fine school," Roldan says of her decision to continue her college education here.

Being close to her family is important to Roldan. Until this year, Roldan lived with her family in Orosi, California (population 4,075), which is approximately a 50-minute drive from Fresno. While living at home, she often helped out at the family-run hardware store. Although she doesn't need to work, Roldan still goes home occasionally to help out with the store when she needs extra cash. "We have a closely knit, loving family, but we can be close even at a distance," she says. Since her hometown is nearby, remaining "close" will be easy. "Plus, if I go home, I get free gas. My parents also own a service station," Roldan adds with a laugh.

Roldan's family ties and her way of thinking things through strongly influence how she adapts to changes in her life. She also has definite educational goals for herself. "I want to force myself to go out there and meet people and do things. I don't want to have to say at the end of an academic semester that I didn't meet any new friends, etc., and that I'm disappointed in my university experience here. I think that if you don't like school, it is because you didn't try hard enough. The university is a good place to grow intellectually and to make new friends." With that attitude, Roldan began her junior year — her first at CSU, Fresno.

Did you form any expectations of what the university would be like?

I think everything that I expected has come true because I tried to prepare myself for my next two years at Fresno State. I talked to my liberal studies counselor early, so I didn't have to worry about not knowing the requirements for my major, scheduling my classes, and adjusting to the university. I visited the campus before Summer Orientation and asked questions. I had already had a taste of college life and the Fresno area, so I wasn't nervous about coming here. I prepared myself, so my transition was easy.

Were you ready for a large university at the beginning of the school year?

It's like everything else: you think it's going to be hard, but you're able to face most problems or situations because you have matured and learned from previous experiences. In high school, I thought "Oh, the College of the Sequoias is going to be so hard." But, I was prepared. My only hope was that I was prepared for Fresno State, too. I was anxious about it.

What fears did you have about coming to Fresno and the university?

The main concern that bothered me was possibly not getting the courses I wanted and then not knowing where the classrooms were. At the College of the Sequoias, it wasn't much of a problem scheduling or taking the classes that I wanted. I have many friends who had attended CSU, Fresno, and they talked with me about the university and life in Fresno. Also, I have a lot of friends who

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transferred from the College of the Sequoias with me. Together, we are overcoming our fears and anxieties about being here at Fresno State.

How do you feel about moving from such a small town like Orosi to a larger place like Fresno?

If you come from a small town, you are familiar with everything and everyone there. When I moved to Fresno, everything was different and new. Fresno is a large enough city to be exciting, but it's not so large that it's scary, like Los Angeles or San Francisco. Still, you don't get that personal feeling right off as you do in a small town. And Orosi really is a small town! [There's only one stop signal in the town]. In Orosi, many people know me or my family, so I feel secure and comfortable there. In Fresno, I'm just another stranger. I have to work harder to impress people to gain their trust and respect. People in a larger city like Fresno tend to be more difficult to get to know. I still like Fresno though. It just takes getting used to.

Did you have any problems adjusting to living in Fresno?

At first, I thought "Mom, I'm gonna starve! My goodness, I have to cook for myself every night." However, cooking and other living adjustments weren't a problem because my roommates helped me adjust to the new environment. They have all graduated now. They don't bother me while I am studying; in fact, they often type my papers for me. And to make my apartment more comfortable, I brought almost everything from home, including my dresser that I've had since I was seven years old and the same bath towels that I had at home, so I am physically surrounded by my "home" up here, too.

What differences have you found between the community college you attended and CSU, Fresno?

The reputation that a community college is academically easier than the university is a myth. The teachers are about the same in their teaching methods, in grading, and in assigning homework. I had feared that the instructors would be less accessible to me here, but I had no problems meeting them. During the early weeks of my first semester here, I did have problems finding their offices. But, I kept knocking on wrong doors until I finally found or unwittingly "bumped into" my professors.

Why did you decide to become a teacher?

Since my elementary school days, I think I have always believed that I would enjoy teaching and that it would be something that I would be good at doing. I like talking and working with people, so someday I hope to teach in elementary school because that's where children are most influenced and need guidance. Young children are extremely impressionable. By reinforcing their positive behavior, we can help children someday become responsible adults. I think motivating children to be enthusiastic learners is important, too. If they don't learn when they are young that reading and writing can be exciting or that school is fun, then later on they probably won't enjoy learning for their own self enjoyment or cultural enrichment.

If you had your college career to do all over again, would you do it the same?

Yes, I would do it the same way. I made many friends at the College of the Sequoias. Also, it would have been unfair to ask my parents to pay a higher "tuition" during my first two years of college when they didn't need to. I might have tried to go to Fresno State immediately after high school if the cost had been the same, but I'm not sure I was mature enough to have done it then.

What advice do you have for transfer students coming here?

Don't be afraid to ask questions in order to get help on selecting courses, scheduling classes, or choosing professors. Prepare yourself by asking questions, and don't be intimidated by the size and unfamiliarity of the university environment. For instance, if you are looking for reference books in the library, you have to go in there and ask! Don't let too many extracurricular distractions interfere with your academic goals. But at the same time, what's more important, don't shut yourself off from new friendships and experiences.

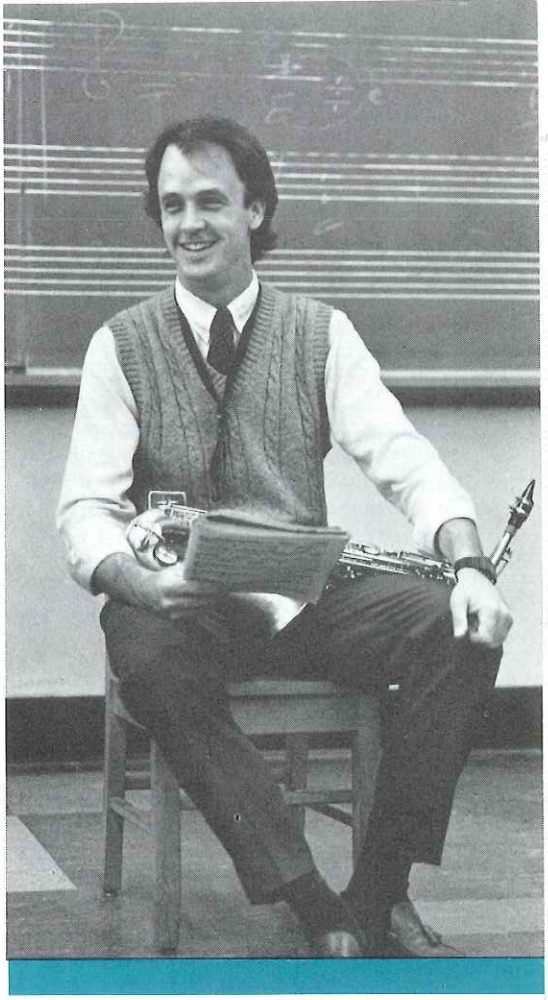
What do you do for relaxation?

I like riding my bicycle and playing racquetball. I enjoy waterskiing at Kaweah and Pine Flat reservoirs and on the Kings River. On long weekends and in the summertime, I like to travel to the coast to Pismo Beach, Carmel, and Monterey. I also like to write letters to my friends in various cities.

Gordon "Doug" Thornburg

"Make sure you take time to just sit down on the lawn, 'shoot the bull' with friends, and soak up the sunshine."

GORDON D. THORNBURG
Senior



"My biggest weakness is I like to do everything, and unfortunately, I can do almost anything that I've undertaken moderately well," says Gordon "Doug" Thornburg. This "weakness," along with a small-town background, led Thornburg eventually to California State University, Fresno. Having graduated from high school in 1981 with numerous academic honors, $15,000 in scholarships, and a virtual "ticket" to almost any university in the country, Thornburg, nevertheless, experienced a shaky start in college. He was enrolled in three institutions of higher learning during his first year of college.

Following graduation from high school in Bishop, California, a small town of approximately 3,500 persons, Thornburg enrolled at the University of Southern California (USC) in spring 1982. But at USC, Thornburg felt he didn't fit in with the faster-paced Los Angeles lifestyle, the commuting routine, and the on-campus Greek system. He left for Boston's Berklee College, one of the most noted jazz music schools in the United States. However, that locale didn't work out either because, in Thornburg's words, "I found I was still a boy from the sticks inserted into an urban environment. I was really naive and very homesick." Finally, as a matter of chance and good fortune, Thornburg enrolled at California State University, Fresno, where he has successfully pursued a multidisciplinary college career.

Today at California State University, Fresno, Thornburg, a senior liberal studies major with a 3.9 grade point average, is a model of success. He has recently been named the 1987 Dean's Medalist for the School of Education and Human Development and is a member of several national academic honor societies, including the Golden Key National Honor Society, and ***Phi Kappa Phi.*** *He also was named to the 1987 edition of* ***Who's Who Among Students in American Universities and Colleges*** *and in* ***Outstanding Young Men of America.***

Aside from his many academic achievements, the multitalented Thornburg works as public affairs director for the university's KFSR radio station and has played saxophone and flute for the university's "B" and "C" Jazz bands and the Swing Band. He played musical accompaniment for the cast of CSU, Fresno's 1982 production of ***Cabaret,*** *took an acting role in the Experimental Theatre Company's fall 1985 production* ***Shades of Gray,*** *and played a part in the fall 1986 mainstage production of Charles Dickens's* ***A Christmas Carol.*** *He also managed to participate in the London Semester and served a five-month writing internship in Texas with the San Antonio Institute for American Studies. He worked as an English tutor at the campus tutorial center and as a reporter for the* ***Fresno Daily Report.*** *Thornburg jokes, "The things that have let me survive have been my organization and a meal card at the dorms."*

After graduation, Thornburg plans to take it "easy" for a while before entering graduate school to work again in one of three areas — music, writing, or drama. In Thornburg's words, "I feel pretty harried this year. I'm going to have to stop and breathe, as I did after high school, and think things over before I make a next move — simplify things."

Why did you choose to be a liberal studies major?

Both my parents are teachers. My dad teaches 6th grade, all the disciplines. My mom teaches high school English and drama. Sometimes, I look at them, and seeing how diverse they are, I feel as if I'm a "natural" offspring; maybe, being multidisciplinary is genetic. When I entered the university, I declared a liberal studies major because I didn't know what I wanted to do. I knew, however, that the liberal studies major was the most diverse major on campus, requiring upper-division coursework in English, mathematics and sciences, humanities, and social sciences. And, because my biggest goal in life since high school has been to affect people's attitudes and improve people's lives through writing, music, or drama, the liberal studies degree was a perfect solution. I remember seeing as a kid the movie *The Elephant Man* and that just did it to me, wrenched me for hours. I decided at that point that I was going to affect people as that movie affected me. What interested me in the movie's presentation was the way its separate parts were put together — the script, the camera angles, the technical and writing elements, and then, of course, the acting. That

multidisciplinary approach to movie making compares roughly to my career in college. I've done bits and pieces of work in all different areas, and I feel that my biggest strength is because of that. I think I'm able to synthesize approaches to problems, putting together ideas drawn from several disciplines. That's where I feel I excel.

How has CSU, Fresno helped you to develop your multidisciplinary interests?

The reason that I've stayed here is more because of social and emotional needs than academic. I felt a sense of community here that I didn't feel at other schools. People in the Central Valley and in Fresno have been incredibly warm, incredibly open. I've formed all sorts of friendships that have kept me here for my four years. At Fresno State, I met professors who involved me in different groups. The moment I got here I was approached by a music professor I had for a jazz band course who immediately asked me if I wanted to perform in the combo that backed up the drama performance of *Cabaret*. I met a whole new host of musicians and of actors, and I got involved in backing up a portable dance troupe concert. Again, I met all sorts of people. Professors here have taken an academic interest in me or have "prodded" me into various extracurricular activities that augmented my formal academic work in liberal studies. That's how my network of friends has emerged, too.

Can you say something about your internship with the San Antonio Institute for American Studies?

The San Antonio Institute for American Studies is a non-profit research and educational institute in San Antonio, Texas. The institute needed a writer with a multidisciplinary background who could field most any assignment. I approached the Cooperative Education Program people and friends in the political science and sociology departments, and we put together an independent study program. (That's another one of the Fresno State high points. There are enough resources here so that you can do almost anything you would like to.) At the institute, which is closely affiliated with the mayor of San Antonio, Texas, I did everything from outfitting the office in furniture to entertaining diplomats from foreign cities. I wrote articles for local tabloids, newsletters, and an autobiographical narrative. I floated back and forth from the institute to the mayor's office as a volunteer for the city and then to the mayor's political action committee. Again, it was kind of a multidisciplinary job; wherever I could fit in and get something accomplished, I did. I came back knowing much more about southwest Texas and about Chicano culture. I learned about what happens in U.S. cities and about the frequent inefficiency of the public sector. I got a feel for the political scene and learned I was a little idealistic and rosy-eyed when I had earlier considered politics as my possible profession.

How did you get involved with KFSR radio?

Disc jockeying and public affairs work came naturally to me, and I've always had a penchant for letting people know about different social programs that exist. At KFSR, I got started with the help of some friends who worked there. I am a jazz aficionado, and I started disc jockeying my own jazz show. I wound up working in public affairs, too. I had a history of public speaking and acting, and I was comfortable in front of a microphone. As the public affairs director for KFSR, I am responsible for putting out campus and community oriented information. For two hours weekly on Sunday afternoons, I produced a talk show. We've had a diverse selection of topics, both political and academic. We've had President Haak and aired programs on Central America. We cover social services and health issues and have aired information on organizations such as the Easter Seals Society, the American Diabetes Association, and Alcoholics Anonymous. We broadcast educational programs and ran a series on the aging of America, posing questions about what's happening as our demographic base switches to progressively older ages. So it's an academic, public service, and politics oriented two-hour program every Sunday.

What are your biggest fears?

I'm fairly well developed academically and intellectually, but that has come at a cost. One of my fears is that I'm going to continue in my perfectionistic, busy life, and that I'm never going to slow down. For as mature as I may be in a cerebral way, when it comes to emotions and personal relationships, I think I'm still a bit immature. I've been a really flighty kid, and I have traveled a lot to pursue academic interests. But at times, I wonder also if I'm not running from particularly magnetic relationships that seem to be drawing me toward a particular person or group of people. My biggest fear is that abstract side of me, the more emotional, the personal-relationship side, the more expressive, creative side. That's why I'm making a conscious effort next year to clear the agenda, to remove myself from more academic pursuits and confront my fears.

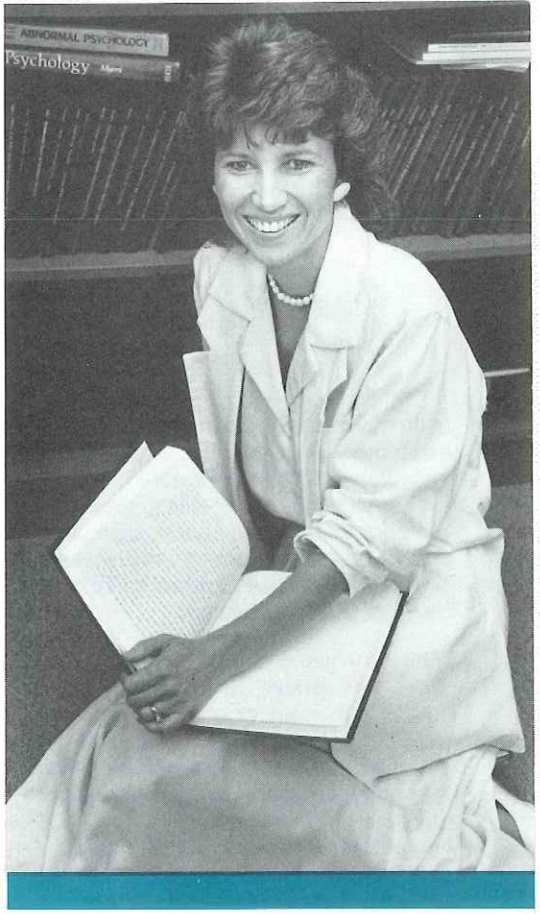
Do you have any advice for incoming students?

Well, I would encourage people that haven't chosen majors to look into liberal studies. Liberal studies and liberal arts degrees are becoming more desired by employers as we speak. More important, I've learned how exciting this campus can be and how many opportunities there are, primarily from reading my catalog. I badmouthed Fresno State for a long time until I learned exactly what it offered, and what I could do here. I think I was not badmouthing Fresno State so much as I was badmouthing my own passivity. There's so much offered here. And, I would add one more word. Make sure you take time to just sit down on the lawn, "shoot the bull" with friends, and soak up the sunshine. Make sure you enjoy yourself while you are here.

Beverly Stanley

"Sometimes it is like being a little kid again and asking yourself, What should I be when I grow up?"

BEVERLY J. STANLEY
Graduate Student



Graduate student Beverly Stanley has dedicated herself eventually to earning a Ph.D. in psychology, a personal goal requiring almost as much traveling as class time. Currently, she commutes twice a week from Lemoore to California State University, Fresno to work toward her master's degree.

As a reentry student, the 35-year-old Stanley has had to divide her time between her graduate studies and her home life. Having been married for 17 years and having a 16-year-old daughter and a 12-year-old son, Stanley has frequently had to schedule her academic program to accommodate her family's needs. She plans, for example, to wait a year after completing her master's degree before moving somewhere to start her doctoral work at another university so that her daughter can finish high school. "My daughter's senior year is a very important time for her, and I don't want to take her out of high school before she graduates," says Stanley. She continues, "But, the following fall semester, I hope to enter a Ph.D. program in developmental psychology. My daughter will be going on to college at that time, and my husband will be retiring after 20 years in the Navy. It will be a better time for the whole family to make the big move."

Stanley married immediately after graduating from high school — where, she confesses, "I never tried to do well, but I still received good grades." Previously, in elementary school, she had been placed in a group designed for slow readers, making her feel that "I must not be very smart. I labeled myself (not so much that other people did it) a failure, believing I couldn't compete. That belief stuck with me for a very long time."

Stanley ventured into higher education in 1980, while her husband, a Navy man, was stationed in San Diego. "I started with a course in American history, and I earned an A in it," she says. "I was surprised that I could do well. Something snapped inside me and I said, "I know I can do this."

Stanley earned an Associate of Arts degree at West Hills Community College in Coalinga, California. And upon graduation, she received recognition from the Social Science and the Humanities divisions for her outstanding academic achievement. The 66-mile roundtrip to Coalinga started her many years of commuting for her education, which has continued on to CSU, Fresno. "I have never been able just to go down the street for my college education. I've always had to drive a long ways," she says. "I'm used to it." Living in Lemoore, Stanley regularly logged 85 miles roundtrip to CSU, Fresno for three days each week. She estimates that she has driven about 70,000 miles pursuing her college education. In 1985, she earned her bachelor's degree from the university, receiving the prestigious Dean's Medal from CSUF's School of Natural Sciences. As that school's outstanding graduate, Stanley achieved a 3.96 cumulative grade point average. She also was the recipient of the Dr. E.V. Tenney Outstanding Graduate Senior Award from the psychology department.

Nowadays, besides being a graduate student, Stanley teaches three Extension Program classes for West Hills Community College. Before that, Stanley was head teaching assistant at CSU, Fresno for Psych. 10 (Introductory Psychology) laboratories. From that experience, she became interested in teaching psychology at the university level. "I love communicating ideas to other people, and I try to challenge them to grow intellectually," she says.

In what area of psychology are you most interested?

I have specialized mainly in developmental psychology. I became interested in developmental psychology as an undergraduate when I did an independent study on social cognition with Dr. Joel Grossman. Social cognition refers to an individual's understanding of social situations. I am interested in children's conception of friendship. For example, a 5-year-old child often sees a friend as just a momentary playmate, while a 12-year-old may see friendship as a long term relationship that requires time, effort, and commitment.

What's the focus of your research?

Most of my research has been done in the area of competition and cooperation. Initially, I worked with a group of graduate students, CSUF faculty members, and several developmental psychologists from the Child Development Project in San Ramon, California. We wanted to look at the differential interpersonal and intrapersonal outcomes for elementary students working in a highly competitive school system versus a school system that stresses cooperative learning activities. We specifically examined cooperative/

competitive behaviors in various experimental settings. For example, we observed children's behavior in experimental games involving tower building, paper chain construction, and puzzle design. Our primary focus was the interpersonal skills that these children develop and typically use.

During the same period, I also worked with Dr. Alexander Gonzalez on a competition scale for adults. These are statements that deal with competition. We wanted to see if we could rate people on their attitudes about competition. From that scale, I developed my own competition scale for children. I am curious about the way an individual sees himself or herself in relation to other people, whether opponent or rival, or potential co-worker. For many individuals, the school experience communicates that they must think of others as competitors for such things as attention, praise, or grades.

What was it like being a teaching assistant?

That was a wonderful opportunity for me as a graduate student. I had had limited working experience because I married immediately after graduating from high school and had been a full-time homemaker until I came back to school. That was the first time in years that I was presented with a job opportunity to test myself. I started as head teaching assistant (TA), which is a demanding position. The head TA for Psych. 10 [Introductory Psychology] coordinates laboratory materials and supervises other TA's. Once a week, I met with Dr. Barbara Basden, the faculty supervisor for Psych. 10 labs., to go over the following week's lesson plan. As a TA, I taught four laboratory classes each week and held office hours so students could come by and talk with me about the class, personal problems, or career opportunities in psychology.

What are you teaching now?

At West Hills Community College, I teach two Psych. 1A [Introductory Psychology] classes and one Psych. 10 [Child Psychology] class. One of the Psych. 1A classes was offered to high school students. In fact, this class was held at my daughter's school. When I first found out that I was going to teach this class, I asked my daughter if she would mind my teaching on her campus. She said it was okay, as long as she could check what I wore every morning, so that I wouldn't embarrass her.

What's it like to be a reentry student?

I wish I could say that it's easy to go back to school, but it isn't. Sometimes it is like being a little kid again and asking yourself, "What should I be when I grow up?" And yet, you're 35 years old and you're talking about what you're going to do when you grow up. It's paradoxical and kind of silly, and yet, it's really true. You come to a point in your life when you say, "I'm not satisfied with the way I am. I want to do something else with my life and going back to school is how I'm going to do it." With a college education, I'll have career opportunities and options that I didn't have before. It's exciting, but it means facing some real challenges and making sacrifices.

Has it been difficult coming to school with your family in Lemoore?

I think there are sacrifices that you have to make to go back to school. And your family makes sacrifices, too. You need your family's cooperation. Luckily, my husband has been very supportive, but there have been times when it has been very difficult, and he's let me know that. At one time or another, the whole family has helped do things around the house. It's been good in a lot of ways for them to take on household responsibilities. But I know it's been a sacrifice, too.

Do you have any advice for reentry students?

If you have a family, discuss with your spouse and children the possible strains that might result from the reentry experience. They have a right to know what to expect and to have input into this decision. Your decision to return to school will affect them significantly, and you need as much positive support as you can get. Also, don't overload yourself the first semester. Some reentry students jump right in and take 18 units their first semester here. If you've been out of school for a while, it would be a good idea to take it a little slower the first semester to get acclimated to the university environment. You have to learn to study again and discipline yourself. Give yourself some time. Not only are you adjusting, but your family is adjusting, too. This situation can cause a lot of pressure if you're so overwhelmed by what's happening at school that you have nothing left to give to your family. You need some energy left, not only for your family, but also for yourself.

What do you do for relaxation?

Something that I have done for myself each semester is to take one fun class. Usually this was a physical education class like racquetball or aerobics. I felt I needed the physical exercise, and I looked forward to that class each day. I also have taken piano lessons for several semesters. These classes served as a reinforcement for me to keep going when things got tough, and some have led to new interests. Racquetball lessons have led to a new hobby. I try to play racquetball twice a week and have recently participated in several tournaments. Also — this is a little crazy — but I love to chew Hubba Bubba bubble gum, which helps to reduce tension when I'm driving home after a long day at the university. Sometimes, I blow a huge bubble as I am passing another car on the freeway. Well, can you imagine the stares I get?



SOURCES / RESOURCES

Activities and Student Development

Student Programs Office
Student Affairs/CSUF Association
College Union, Room 306
(209) 294-2741/294-2938
Director, Cleo Bash

Involvement in your college life means that you take part in shaping your learning experience. When you apply your academic training to areas outside the classroom, meet new friends, and explore campus life, you expand your personal skills. Participation in campus and student activities can satisfy many of your social, educational, and individual development goals.

As you begin your associations in this new environment, the rich diversity of 19,000 students, faculty, and staff will extend your understanding of yourself and your world. Active involvement can give you practical experience in working with peers, faculty, and community leaders and provide broad opportunities for developing life-long friendships and professional associations so that you can make the most of your college years.



Student Programs Office

The Student Programs Office is situated in the center of the campus in the College Union. The office is responsible for the College Union and Satellite College Union, co-curricular student activities, recreation, and intramurals. The staff works directly with student government officers, College Union Program Committee, and members and officers of student clubs to develop a well-balanced program of student activities that serves both the campus and the larger Fresno communities.

Staff are responsible for the operation of the College Union and Satellite College Union (both of which are funded primarily by student fees) for the programs that occur in and around these areas, as well as throughout the campus, and for the recreation and intramurals program that provides organized and recreational physical activity for more than 10,000 persons annually.

This is the primary office providing information about student groups and major student programs. The office issues permits for use of the Activities Plaza and Free Speech Area, recognizes student organizations, reserves campus facilities for student use, and assists students and their groups in planning activities and developing their programs.

A strong emphasis in *hands-on* learning means students create programs while learning leadership, personal development, and management skills. Programs staff and other university group advisers, faculty, and staff serve as resources and facilitators to maximize student success.

Student Organizations

More than 170 student organizations provide CSUF students ways to make new friends, create programs of special interest, develop leadership skills, and work together toward common goals. Students clubs are responsible for their own financial management, operation, and development of activities. A faculty or staff adviser provides assistance and continuity as needed. Approximately 70 student groups are directly related to academic majors and programs, and a wide range of religious, political, cultural, and special interest groups give you many avenues for participation.

As a participant in a group created for its members interests, you will have front-line opportunity to shape its direction, learn to work with other segments of the university, explore new interests, manage finances, develop compromising and teamwork skills, and make new friends.

Organizations can be contacted at the College Union, Room 306, by watching for advertising and information tables in the Activities Plaza, and by attending the Club Faire held in early September at the College Union.

Recreation and Intramurals

Funded jointly by your Associated Students fees and the university, the intramural and recreation program is designed to serve the recreational and physical fitness needs of the students, faculty, staff, active alumni, and at limited times, the general public. A full range of recreational and competitive sports programs are offered to supplement your academic world. Exercise, the fun of learning a new sport, and joining friends on a team or in the pool will all expand your leisure skills and habits so that physical well being becomes part of your overall lifestyle during your college years and beyond.

Seven team sports are offered: flag football, volleyball, soccer, basketball, softball, bowling, and inner tube water polo. In addition to team sports, individual and dual sports are offered, including track, swimming, racquetball, tennis, golf, and freethrow. Approximately 6,000 students participate in one or more sports offered through the intramural program.

Open recreation and use of the physical education facilities are available most of the year, including semester break. Use of facilities includes a pool, weight room, two saunas, gymnastics room, two gymnasiums, six racquetball courts,

twelve tennis courts, and all-weather track, one soccer field, and athletic fields. The office and sign up forms are in the North Gym 294-2526.

College Union and Satellite College Union

The College Union facility is the "living room of the campus" designed to encourage the university community to meet and share talents, interests, and ideas in an action-learning setting. The College Union is primarily supported by student body fees. Therefore, students play an active role in the governance of the union by serving on the College Union Board and/or one of its committees: budget, program, or services and facilities. Through cooperative governance between boards, committees, and staff and through the provision of cultural, social, and recreational programs, there is the opportunity for expanding your intellectual, creative, and communicative capacities. The College Union is involved with the educational life of the university, sharing goals of academic and personal development. Through the management of its physical and human resources, the Union encourages interaction of diverse people, ideas, and values to assist your development as a concerned and responsible citizen.

Facilities in the College Union include: a leisure center that has billiard tables, 12 bowling lanes, pinball and video games, television, table games, and an outdoor recreation area; a lobby where students can use a ride exchange board or meet friends; a coffee shop, known as "The Pit," provides a relaxing atmosphere in which to enjoy food or refreshments; the Country Store provides gourmet coffees, fresh baked pastries, and fresh snacks; a lounge on the second floor, which provides a living room atmosphere for study and relaxation; the information desk, where you can buy tickets for campus and some community events, obtain money orders, and reserve rooms in the College Union; and, on the third floor, conference rooms and offices, with conference rooms ranging in size to accommodate groups up to 100 persons.

The first phase of the Satellite College Union, Whitfield Hall, opened in the spring of 1984. It is an all-purpose entertainment and cultural room able to accommodate approximately 900 persons. Most programs occur in the Satellite College Union. The next phase of expansion is in the planning stages.

College Union Program Committee

The College Union Program Committee, a unit of the College Union Board, is a group of 12 students charged with scheduling, promoting, producing, and evaluating a wide range of student programs. Classical arts, contemporary music, films, drama, and social dances are among the many programs offered during the year. From Julian Lennon to the Philharmonic, the College Union is involved in presenting the very best in professional entertainment at the lowest possible cost. Many activities and programs are presented to students free of charge.

Applications for positions on the program committee are available the first part of April in the Student Programs Office.

Vintage Days

The annual celebration of spring occurs during Vintage Days, a four-day event planned by a student committee for the CSUF and Fresno community. Various campus departments and the student program's staff provide assistance to these committees. An estimated 50,000 campus and community persons participate in competitive events, T-shirt competitions, talent show, fun run, carnival, casino night, special events, and a crafts faire with more than 125 vendors. You can be part of the planning of this event or participate through your living unit or club, or even form a group just for Vintage Days. Applications for committee positions are available in late September in the Student Programs Office. Planning begins in October for this late April event.

Fraternities and Sororities

Fraternities and sororities have existed nationally for more than 200 years and for more than 50 years in Fresno. Once you are a member of a fraternity or sorority, you are a member for life. Membership in a fraternity or sorority places you in a network of friends and associates throughout the country. Each group has its own traditions and each stresses friendship, helping, and belonging.

There are 14 fraternities and 9 sororities at Fresno. Most of the sororities and most of the fraternities have houses close to the university. Housing is available to members on a limited basis. Each group plans or participates in events throughout the year for alumni, charitable organizations, the university, other organizations, and for its own members.

The primary membership drive for sororities occurs before classes begin in August. For the fraternities, the membership drive is shortly after classes begin in September.

Fraternities	Sororities
Alpha Gamma Rho	Alpha Xi Delta
Alpha Phi Alpha	Delta Gamma
Delta Sigma Phi	Delta Zeta
Delta Upsilon	Kappa Alpha Theta
Kappa Alpha Psi	Kappa Kappa Gamma
Kappa Sigma	Phi Mu
Lambda Chi Alpha	Alpha Kappa Alpha
Phi Beta Sigma	Delta Sigma Theta
Phi Gamma Delta	Sigma Phi Beta
Pi Kappa Alpha	
Sigma Alpha Epsilon	
Sigma Chi	
Sigma Nu	
Theta Chi	

Associated Students

The Associated Students of CSU, Fresno is a nonprofit corporation chartered by the Trustees of The California State University to operate a student government and its sponsored activities. As a student, you are automatically a member of the Associated Students. The membership fee, which is mandatory and paid at the time of registration, is $15 each semester. The fee supports recreation and intramural sports activities, publications, music, drama, and other cultural programs, a child care center and a variety of multicultural festivals, programs, and publications for students.

The Associated Students' executives and the student senate exert budgetary control and determine management policy for all operations, services, and activities sponsored by the Associated Students. Students who participate in the Associated Students obtain experience in leadership, development, group decision making, and social competence. They also play an active role in developing and recommending university policies and in supervising the affairs of the various auxiliary organizations. For more information about how you can participate in student government, call the Associated Students Office, College Union, Room 316; 294-2656.

Campus Children's Center

Information about the Campus Children's Center may be obtained through the Student Activities Office. The center can accept a limited number of children, ranging in age from six months to six years, for care during the school day. The central office for the center is situated just south of the Residence Hall Dining Facility. Telephone: 294-2652

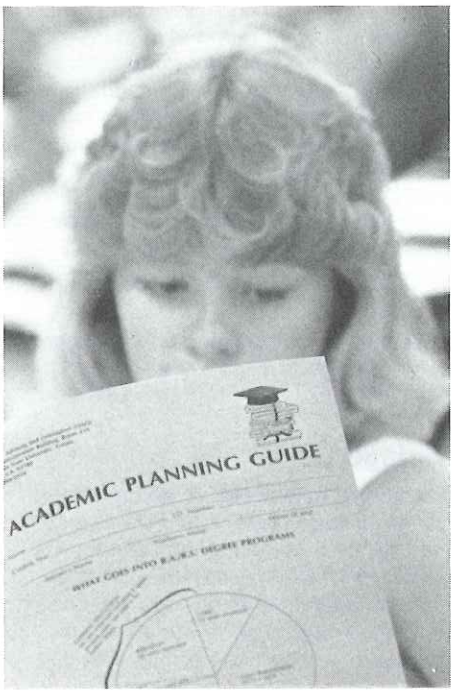
Advising and Orientation

Student Affairs
Office of Advising and Orientation
Joyal Administration, Room 219
(209) 294-2924
Director, J. Richard Arndt

The Office of Advising and Orientation provides a variety of services designed to help you achieve your educational goals and effectively use the resources of the university. The office staff assists you in undergraduate academic advising, undeclared major advising, new student orientation, academic petitions procedures, change of major services, general academic problem solving, and appropriate referrals. You may also come to our office when seeking answers regarding university policies and procedures. In other words, the Office of Advising and Orientation is a resource to help you understand, enrich, and succeed in your academic experience.

Advising

The Office of Advising and Orientation works primarily with undergraduate students, especially undeclared majors. Advisers are available by appointment, and peer advisers are generally available on a walk-in basis. Peer advisers can help you interpret your transfer evaluation, answer questions related to policies and procedures, and explore with you how the General Education and major requirements and elective units complement each other. Advising in specific requirements for a major, minor, or teaching credential is done by the various departments. You should meet with your faculty adviser at least once each semester before you register for classes. Depending on your major department's procedures, an adviser will be assigned to you or selected by you. A close working relationship with your major adviser and other department faculty can help you determine your program and choose appropriate experiences related to your academic and career goals. However, the ultimate responsibility for knowing and meeting all graduation requirements is yours. (See *Baccalaureate Degree Requirements, pp. 98–101.*)



Undeclared Major

There are approximately 1,200 undeclared majors at CSUF at this time. If you are an undeclared major, you are encouraged to seek assistance in the Office of Advising and Orientation. An adviser in our office can suggest faculty contacts in the academic departments who will help you determine which resources on campus to pursue. Remember that you can use courses in General Education to explore your interests for up to three semesters. Experienced vocational counselors are available in the Career Development and Employment Services Office and in the Counseling Center. You will be assisted on an individual basis with the appropriate use of vocational testing when necessary.

Note: *You are not required to declare a major by a certain time, except that you cannot graduate without a major. Also, you will not be allowed to enroll in major courses in some departments unless you have officially declared an area in that department as your major.*

New Student Orientation

All newly admitted undergraduate students should attend the new student orientation program provided by the Office of Advising and Orientation.

One-day programs are conducted each summer for new students who plan to enter in the fall, and two Advising Day orientations in November and January are held for students entering in the spring semester. These sessions include academic advising; information on degree requirements, General Education requirements, transfer evaluation procedures, university policies and procedures, registration procedures; and an overview of student and instruction-related services.

Academic Petitions

Students should file academic petitions in the Office of Advising and Orientation. For further information, see *Student Academic Petitions, page 93.* Grade Correction Request forms are also submitted to this office for processing.

Note: *Petition forms for repeating a class and substituting the new grade are obtained in the Registrar's Office (see Repeating Courses, p. 92).*

Change of Major

If you want to change your major, initiate the procedure in the Office of Advising and Orientation. Graduate (including all post-baccalaureate students) and international students should process major changes in their respective offices.

Special Major

An undergraduate student interested in designing a special major (i.e., a major composed of courses from several departments) initiates the process with an appointment to obtain an application form in the Office of Advising and Orientation. A graduate student interested in establishing a special major at the master's level should consult the Graduate Dean. (See *Special Major for the Bachelor of Arts Degree, pp. 98–99,* and *Special Graduate Programs—Special Major, p. 454.*)

Exit Interview

If you are considering leaving the university at the end of the semester for any reason other than graduation, check with the Office of Advising and Orientation to make sure of your options and to complete the necessary administrative procedures.

CSU, Fresno Alumni Association
Joyal Administration, Room 148
(209) 294-ALUM
Director, Barbara A. Christl

The CSU, Fresno Alumni Association serves as a vital link between the university, its alumni, and the greater Fresno community. Its primary purposes are to develop and apply its funding and volunteered-time resources toward the advancement of higher education and enhanced communication among alumni, campus administration, students and friends. Its continuing goals are to provide scholarships to both undergraduate and graduate students, and to support campus improvement projects. The Alumni Association is governed by a volunteer board of directors.

In addition to sponsoring student scholarships and the annual reception for Alumni scholarship recipients, the Association hosts a yearly Golden Grads Reception to honor those who graduated 50 or more years ago and celebrates at an annual homecoming tailgate party for all alums and friends. Its major membership drive, the *Scholar Dollar Alumni Search* occurs every spring. Alumni Loyalty Fund appeals are mailed out every September to encourage alumni support of association projects.

The CSUF Alumni Association has grown and matured along with the university. This past year, the association was able to double the number of scholarships that were awarded. The Alumni Association network links together more than 7,000 members at this time. CSU, Fresno alumni represent 56 academic areas of study and have migrated to every state in the nation.

Membership is open to both graduates and friends of the university. Annual dues are $20, single membership, and $25, joint membership (husband and wife). Life memberships are $200 and $300 respectively. Business memberships are available at $100 and $250, with half of each amount going to a special business student scholarship fund.



Contact/Alumnac

Contact/Alumnac is a quarterly news magazine that is mailed to all alumni with whom the association is in touch. Each issue features a section titled "Alumni on the Move" that highlights the accomplishments of CSU, Fresno alumni. *Contact/Alumnac* also details events and activities that have recently taken place.

Student Services

The Career Exploration Network. The Career Exploration Network was established by the Alumni Association to create opportunities for you to explore different careers. The network is comprised of community professionals who provide students the opportunity to gather information, receive candid answers to job questions, observe a specific work environment, and assess both the pitfalls and the benefits of a particular profession.

Student Alumni. A Student Alumni auxiliary is being formed in the near future. Student alumni will pay dues to the Alumni Association and will have full benefits of membership. Any monies raised through this joint student/alumni venture will benefit campus projects of the student club's choosing. Telephone 294-ALUM for further information.

Yearbook Program. The campus Yearbook Program is coordinated by the Alumni Office. If you are a senior, be sure to watch your mail or the Daily Collegian for notices of *when* and *where* photographs will be taken for the Yearbook. Photographs are taken once each semester, free of charge. You can purchase your yearbook for about $16 (includes postage).

Scholarships

Students at CSU, Fresno may apply for Alumni Scholarships through the Financial Aids Office. Awards are made to both undergraduate and graduate students based on need, scholarship, leadership, and activities. Funds for scholarships are managed by the CSU, Fresno Alumni Trust Council. The Trust Council oversees the investment of contributions and funds of the Alumni Association.

Your Alumni Association is a dynamic, moving organization whose programs and services are designed to meet the variety of needs and interests of its alumni while providing support to the university. If you are a person who has an interest and commitment to the growth and future of CSUF and the community it serves, call the Alumni Association. They believe *you* make the difference! Telephone 294-2586.

Athletics

Athletic Department
School of Health and Social Work
North Gym, Room 146
(209) 294-2644
Director, Gary A. Cunningham

Academic excellence and athletic accomplishment go hand-in-hand at California State University, Fresno. The intercollegiate athletics program, with eleven men's teams and seven women's teams, provides student athletes with opportunities for high-level competition while pursuing a quality education.

In an effort to ensure academic development, CSU, Fresno (known in the athletic world as Fresno State) has instituted a counseling system designed specifically for student athletes. Services include academic advising, guidance and counseling, monitoring of progress, and daily study halls.

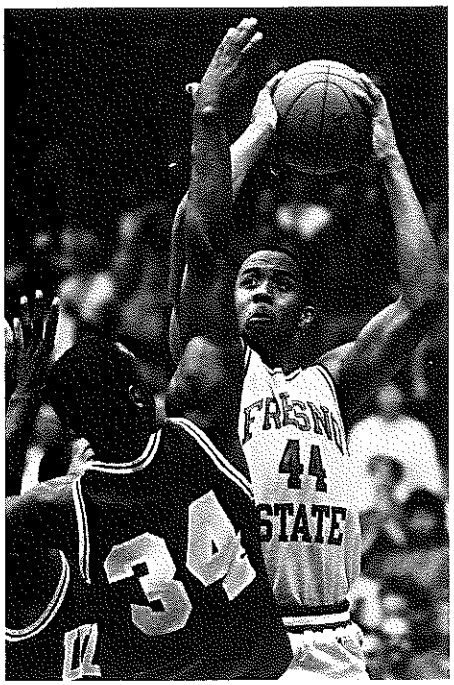
The Fresno State athletic programs draw record attendance and enthusiastic support from San Joaquin Valley residents—also known as "The Red Wave." The fine facilities and the excellent coaching enable student athletes to develop their abilities to the fullest.

Facilities

Community support and donations have enabled Fresno State to establish one of the finest athletic complexes in the country. Facilities include Bulldog Stadium, featuring a 30,000 seat capacity; Beiden Field, a new 3,575-seat baseball stadium that is ranked as one of the largest collegiate facilities in the nation; completely renovated softball, and track and field facilities; two gymnasiums; an indoor/outdoor swimming complex; plus two weight training rooms, twelve tennis courts, six indoor handball/racquetball courts, two putting greens and driving areas complete with sand traps for golf.

Men's Intercollegiate Athletics

Baseball. Fresno State has earned a national reputation for having one of the finest baseball programs in the country, regularly winning more than 40 games a year. Coach Bob Bennett's Bulldogs are consistently ranked in the Division I Top 20, and more than 100 players have gone



on to professional baseball. Since 1941, the Bulldogs have pocketed 20 conference championships and advanced to the N.C.A.A. playoffs on 16 occasions.

Basketball. The Bulldogs are under new leadership of longtime FSU assistant Ron Adams, one of the nation's well-known young minds of the game. Adams has been a part of FSU's recent basketball success that saw them win 20 games or more in five consecutive seasons along with five consecutive post-season berths. In 1983, Fresno State was put on the map nationally with the National Invitation Tournament (N.I.T.) Championship. Records of 25–4, 27–3, 25–8, 25–10, and 23–9 were in order during that period.

Fresno State has dominated P.C.A.A. play and has competed nationally with basketball powers such as Oregon State, Memphis State, Michigan State, Purdue, Houston, and Louisville. Sold out Selland Arena is the site for 10,132 screaming Red Wave fans as the basketball facility has traditionally been sold out for the past seven years.

A nationally known coach, with a nationwide schedule and top flight recruiting, has given the Bulldogs one of the top collegiate basketball programs in the country.

Cross Country/Track and Field. Fresno State is building a track P.C.A.A. dynasty. Red Estes has coached the Bulldogs to four consecutive P.C.A.A. titles and 20 dual meet rankings the last four years. In 1986, FSU placed 10th at the N.C.A.A. Championships, and five athletes earned All-America honors. Home meets are at Warmerdam Field. The cross country team, P.C.A.A. champions in 1981 and 1984, holds home meets at Woodward Park.



Football. The Bulldogs compete for the P.C.A.A. Conference championship and a trip to the California Bowl, hosted annually in Bulldog Stadium. They continually provide students and the community with action-packed football in a winning tradition. Under the direction of head coach Jim Sweeney, the Bulldogs captured the conference championship in 1977, 1982, and 1985 and went on to win the California Bowl title in 1982 and 1985. The 1985 Bulldogs were the only undefeated team in major college football, finishing the season 11–0–1 and ranked 16th by U.P.I. Fresno State has also produced many N.F.L. prospects.

Golf. The Fresno State golf team has won the P.C.A.A. championship three of the past seven years. Their success

enabled the Bulldogs to host the prestigious N.C.A.A. Championships in 1983 at the San Joaquin Country Club in Fresno. Several graduates of Fresno State who were ranked as All-Americans include top pros Jerry Heard, Tim Norris, and Ed Luethke. Coached by Mike Watney, the Bulldogs finished 12th in the nation in 1983 and 13th in 1986.

Soccer. Since Jose Elgorriaga assumed the head coaching duties in 1980, he has guided the Bulldogs to a Pacific Soccer Conference championship in 1982 and 1985, a P.C.A.A. championship in 1983 and three N.C.A.A. regional appearances. Under Elgorriaga's leadership, the Bulldogs also have enjoyed tremendous success at the turnstile, having played before over 99,000 fans at Bulldog Stadium from 1981–85. Matches are scheduled with some of the nation's top soccer teams, including USF, UCLA, Indiana, Florida International, SMU, Nevada-Las Vegas, and Clemson.

Swimming. Fresno State's long history of success in swimming continues under current head coach Harold Zane. N.C.A.A. qualifiers have been frequent in this program that boasts an indoor-outdoor facility on campus and sends teams to compete in one of the finer swimming conferences in the country. The program has produced All-Americans such as Art Ruble who holds several school sprint records.

Tennis. Former player and first-year coach Brad Stine coaches another growing program that has produced over 165 wins in the past 15 years. The team plays at one of the West's finest tennis facilities—Sierra Sport and Racquet Club in north Fresno—which features a sunken center court that seats up to 3,000 spectators.

Water Polo. Consistently ranked in the Top 20 nationally, the Fresno State water polo team is now striving for its first berth in the nationals after posting its highest national ranking (8th) in both 1984 and 1985. Head coach Harold Zane is also responsible for the development of several All-Americans. In addition to the fine swimming complex on campus, the team has access to the excellent Clovis West High School Olympic complex pool, where the U. S. National Longcourse Championships have been held.

Wrestling. Fresno State wrestling first cracked the national rankings in 1984–85 and has been consistently ranked in the Top 20 ever since. Dennis DeLiddo, two-time conference Coach of the Year, has led the Bulldogs to two consecutive league titles with school record win-loss marks coming the last four seasons. Fresno State has produced such All-Americans as Fred Little and Sylvester Carver, along with a total of 12 individual conference champions in DeLiddo's five-year reign.

Women's Intercollegiate Athletics

Basketball. Bob Spencer arrived at Fresno State in 1981 as the winningest active women's basketball coach in the country, and after five seasons at the Bulldog helm, is already the winningest in FSU history as well. Spencer has compiled 462 career wins in 20 years and 82 victories at FSU, including four consecutive all-time win records as a Bulldog and 19 winning seasons. While at Fresno State, he has also produced two consecutive 20-win seasons (1985–86), two All-Americans, three Freshman All-Americans, and numerous All-League performers, in addition to guiding the Bulldogs to the Womens National Invitational Tournament in 1986.

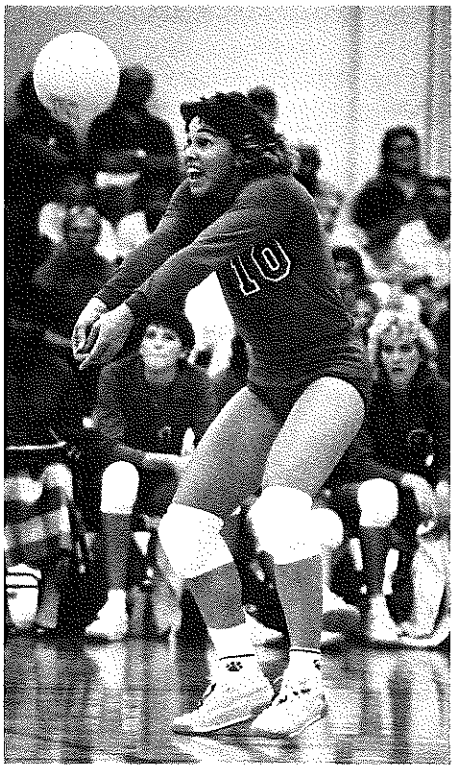
Cross Country/Track and Field. In just four years, head coach Tom Pagani, who will coach the U.S. men's Olympic throwers in 1988, has built a powerful track and cross country program at Fresno State. Seven track athletes have earned All-America honors, while nine have capture NorPac or P.C.A.A. conference crowns. FSU placed 15th at the 1985 N.C.A.A. Championships, earned the No. 19 dual meet rank in 1985, and No. 24 listing in 1986.

Softball. Fresno State softball, coached by second-year coach Margie Wright, exploded onto the scene in 1979 and the intercollegiate softball community hasn't been the same. In seven short years, the Bulldogs have grown into a national power and have recorded five conference championships and have appeared in eight consecutive regional playoffs. The 1982 season produced 43 wins and a second-place finish at the N.C.A.A. Softball College World Series. The 1984 team returned to the Omaha Classic and posted a school record 49 wins, a record that was shattered in 1985 with an impressive 53–15 mark. The softball complex was recently upgraded with additional seating, a concession area, a pressbox building, and a new scoreboard.

Swimming and Diving. Dedication and hard work are characteristics of a solid swimming and diving program under 14th year coach Billie Poston. With those traits, it is no wonder that Fresno State has produced All-America talent in one of the most competitive swimming conferences in the West. The team trains and competes in the fine indoor-outdoor facility on campus.

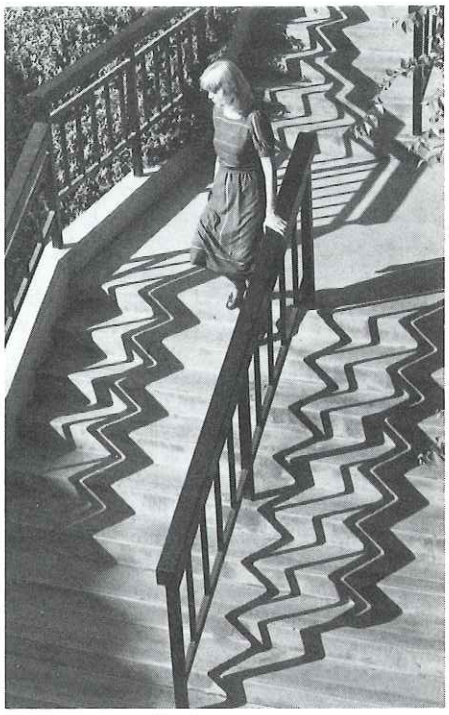
Tennis. The women's tennis program is coached by former touring professional Cynthia Doerner, in her first year as the Bulldog boss. The new home court facility situated at Sierra Sport and Racquet Club in north Fresno also has enhanced the program.

Volleyball. Bulldog history was made in 1984 when 16 year coach Leilani Overstreet led her squad to 26–13 overall and 11–1 league records and a tie for fifth at the N.C.A.A. Championship, earning league and national Coach of the Year honors in the process. Competing in a league that has established itself as one of the strongest in the collegiate ranks, the Bulldogs face Top 20 teams annually, and the program has branched out internationally as well. Overstreet has been instrumental in bringing world-class volleyball to the San Joaquin Valley, scheduling international powers from Japan, People's Republic of China, and Brazil.



Auxiliaries

Auxiliaries
College Union, Room 302
(209) 294-2574
Director, Earle L. Bassett



The Office of the Chancellor for The California State University system has authorized each campus to establish nonprofit organizations to assist the campus in administrating areas where funds are generated from non-state sources. The following auxiliary organizations provide both direct and indirect services for CSU, Fresno students.

The Agricultural Foundation of California State University, Fresno

The Agricultural Foundation of California State University, Fresno was organized in 1954 to operate the university farm and student project program for the School of Agriculture and Home Economics. The Agricultural Foundation leases the 1,200 acre farm from the university and, in addition, operates the San Joaquin Valley Experimental Range of more than 4,000 acres situated on Highway 41 south of the town of Coarsegold. It is governed by a board of governors consisting of the university president and 24 members of the community, nominated by the university president and elected by the board of governors.

The Agricultural Foundation provides the funding, the land, animals, orchards, vineyards, etc. for students to receive practical experience in agriculture. Students in the student project program receive units of credit for their experience and also participate in any profit earned from their projects. In addition, the Agricultural Foundation, by maintaining herds of cattle, both dairy and beef, horses, sheep, swine, and by growing all types of crops on the university farm, provides the laboratory experiences needed by students in the School of Agriculture and Home Economics. This must be done on a self-supporting basis with the income from the farm meeting the costs of its operation.

California State University, Fresno Association, Inc.

The CSU, Fresno Association, Inc. is a nonprofit corporation, organized in 1921, which functions strictly to enhance the educational goals of the university. Through the operation of the Kennel Bookstore, the College Union, and the campus Food Services, as well as through the support of various university projects, the association is a major contributor to the university; and so are you when you patronize these campus facilities. The money you spend, after expenses are met, is directed right back into university projects.

The association is governed by a board of directors that includes the university president or his designee, vice president for administration and university relations, dean of student affairs, director of budget and finance, president of the Associated Students, a faculty member, and a layperson. The board must meet at least once each quarter, and anyone is welcome to attend. The paid staff operate the facilities in accordance with the rules and regulations established by the board of directors.

In addition, there is a College Union board, a bookstore advisory committee, and a food service committee to assist those areas in their operations.

Surplus funds that are generated in excess of required reserves for working capital, capital replacements, and future operations are used for the benefit of the entire campus. When you see the following facilities and services, think of the CSU, Fresno Association, Inc.:

- The College Union Building, the Satellite College Union Building, the Kennel Bookstore, the Keats Campus Building.
- Ramps, automatic doors, and elevators for use by the handicapped.
- The Residence Hall swimming pool.
- The all-weather track.
- The campus amphitheater.
- Campus lighting and beautification projects.
- Signs and landscaping on Maple Avenue.

The California State University, Fresno Athletic Corporation

The California State University, Fresno Athletic Corporation was organized in 1982 as a nonprofit corporation to administer the men's and women's intercollegiate athletic programs of this university. The board of directors, composed of faculty, administrators, laymen, and students, exerts budgetary control and determines management policies.

California State University, Fresno Foundation

The California State University, Fresno Foundation was organized in 1931 as a nonprofit corporation to promote and assist the educational interests and services of the university. It is governed by a board of governors consisting of the university president and 12 members of the community who are nominated by the university president and elected by the board of governors.

The foundation actively seeks additional funding for those activities necessary to maintain excellence within the university, but for which state monies are inadequate or nonexistent. Additional activities of the Foundation includes the administration of grants and contracts, endowments, scholarships, grants and loan funds.

Career Development and Employment Services

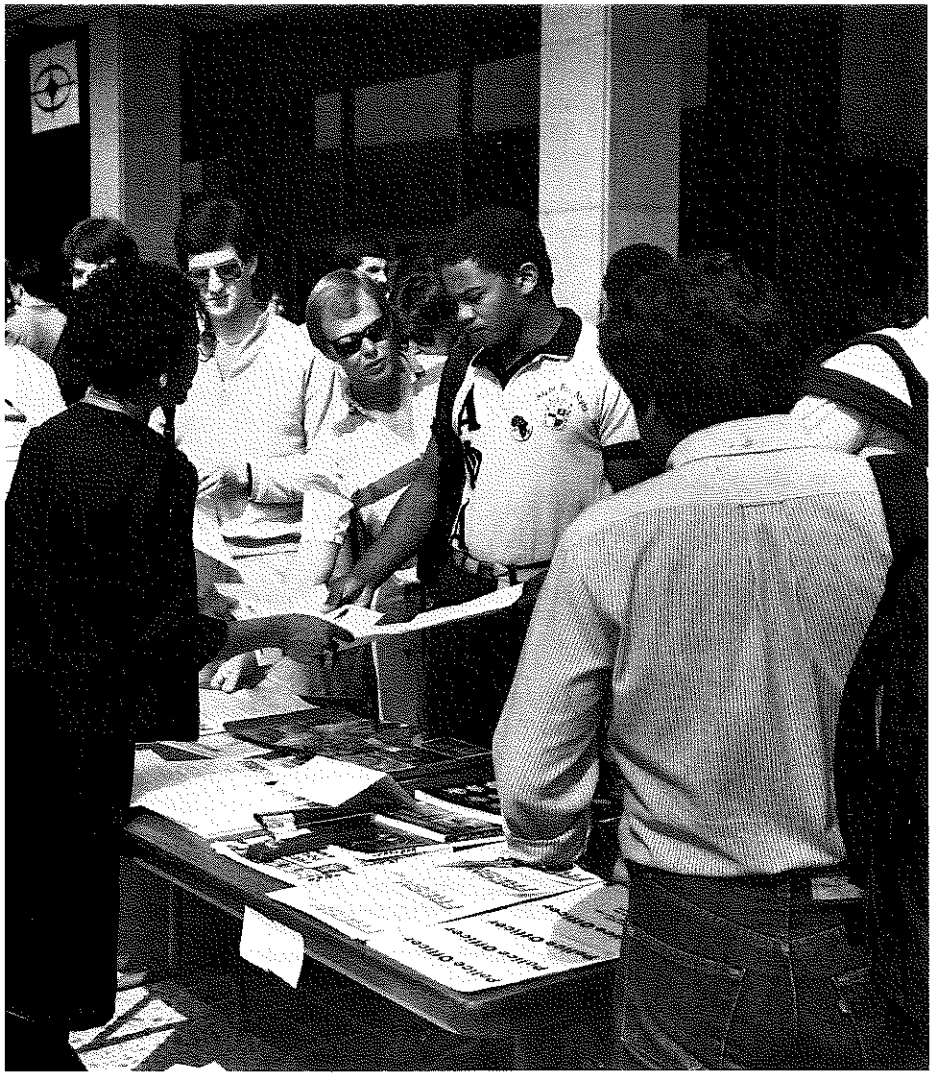
Student Affairs
Career Development and Employment Services
Joyal Administration, Room 267
(209) 294-2381
Director, James F. Kelly

The Career Development and Employment Services Center assists you in formulating a career development program that will permit you to put your education to work in a satisfying and rewarding career field. The center provides employment services for students seeking part-time work, as well as career counseling and job referrals for alumni needing assistance in furthering career opportunities.

Career Development and Employment Services is a centralized program of education-oriented career development, career environment, and employment programs. Its services are free to enrolled students and are available to alumni for a small fee. To receive career counseling assistance, telephone 294-2381 for an appointment.

Career Exploration

Ideally, the career decision-making process should begin as soon as you enter college. Opportunities are available to talk with career counselors, to join in self exploration and career exploration classes and workshops, and to use the career information resource facilities. Testing, computerized assessment, and programmed career exploration are also important tools used by the center to help you evaluate and select possible career goals, and then correlate academic choices with career interest. The ultimate goal is to help you formulate career plans that will be compatible with your academic pursuits. Well defined career plans become an important motivation for completing your academic program, as well as establishing a career direction upon graduation. This kind of planning insures you maximum future employability.



Career Information Resource Center

The Career Information Resource Center provides information on career exploration and decision making, on requirements for careers, on specific employers, and on job search and employee selection through books, periodicals, and audiovisuals materials. Two computer-assisted guidance systems are also available to aid you in making career decisions. The System of Interactive Guidance and Information (SIGI), helps you identify and prioritize work values, suggests occupations that meet those values, gives specific information about occupations of interest, provides an overview of entry-level requirements, and aids in weighing the risks of entering an occupation against the satisfactions it would provide. The computerized California career information system, called EUREKA, can help you learn more about occupations that relate to your interests and abilities. EUREKA's memory banks are filled with information covering more than 400 occupations (including job descriptions and employment outlook), training programs to prepare for specific occupations, and colleges and universities offering desired areas of study.

Cooperative Education

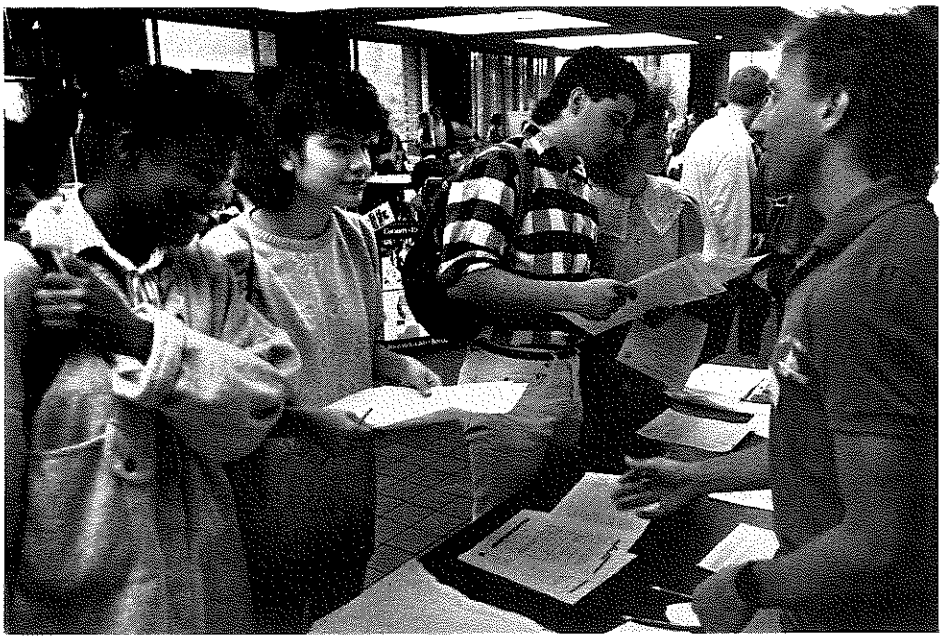
Beginning with your second year, you should take advantage of the Career Development and Employment Services Center's facilities to further reinforce your career decision through cooperative education classes and work environment experiences. In addition to giving you the opportunity to gain marketable work experience, you are able to test your career decision. To prepare you for the co-op experience (and also for entry into the employment market), the center offers a continuous program of personal job search, career planning development, employment communication skills development, and interview skills and techniques education. Additionally, the center can provide you with the opportunity to interview with employer representatives from business, industry, government, and educational organizations. These representatives are invited to our campus and are hosted by the center to give you the broadest and most direct access to the job market.



Employment

Through its professional staff, the Career Development and Employment Services Center provides placement counseling and employee selection education for any student desiring career employment. Hundreds of national and local business, industry, and public service organizations actively recruit through the center each year. A computerized job match system is also on line to provide information on current employment opportunities to graduating seniors and alumni.

If you are interested in part-time or summer employment, the *Student Employment* section can assist you. You are encouraged to review the employment listings frequently because information on new positions is received daily. (See *College-Work Study Program* and *Graduate Assistantships, p. 84.*)



The center also maintains an active program designed to effectively assist teachers and other education professionals in obtaining positions throughout all levels of education. Career development professionals in this area can provide you with the necessary information, career counseling, and preparation to obtain a position in your area of specialization in the geographical area you prefer.

Alumni Assistance

The Career Development and Employment Center offers a full range of services to alumni for an annual fee. Alumni are defined as persons who have completed requirements for a degree, a credential program, or a minimum of 24 units of credit at CSU, Fresno.

Center for Information Processing
San Ramon 4, Room 131
(209) 294-3923
Director, James R. Morris

The Center for Information Processing serves the computing and information processing needs of the university by providing a wide range of computing resources and services. Dedicated to providing the most recent and effective technology, the center maintains a significant array of hardware facilities and laboratories. In addition to the instructional resources and services provided to students and faculty, the center is involved in providing the campus with technical services, administrative computing, and office automation support. Looking forward, the center, in conjunction with the Registrar's Office, is currently planning for a touchtone telephone registration system that you should be able to use by fall 1988.



Instructional Computing Resources

You can use a number of laboratories operated by the center throughout the campus (in addition, a number of academic departments have special purpose computing facilities, depending on your major). Most of the center's laboratories provide access to the general use instructional computers on campus:

Microcomputers. Microcomputers in several laboratories provide today's newest and most popular computing resource. Types available include the IBM-PC compatible, Apple II, and, available for the first time this fall, the Macintosh. While some of these are stand-alone, many have communication capabilities with the mainframes and minicomputers listed below.

VAX 11/785. This super-minicomputer is one of the most popular found in education and industry, and is mostly used for teaching computing languages.

Prime 9755. Also a super-minicomputer, this is primarily used for specialized applications in statistics and graphics.

Cyber 720. This is a mainframe computer used for languages, statistics, simulations and other special applications.

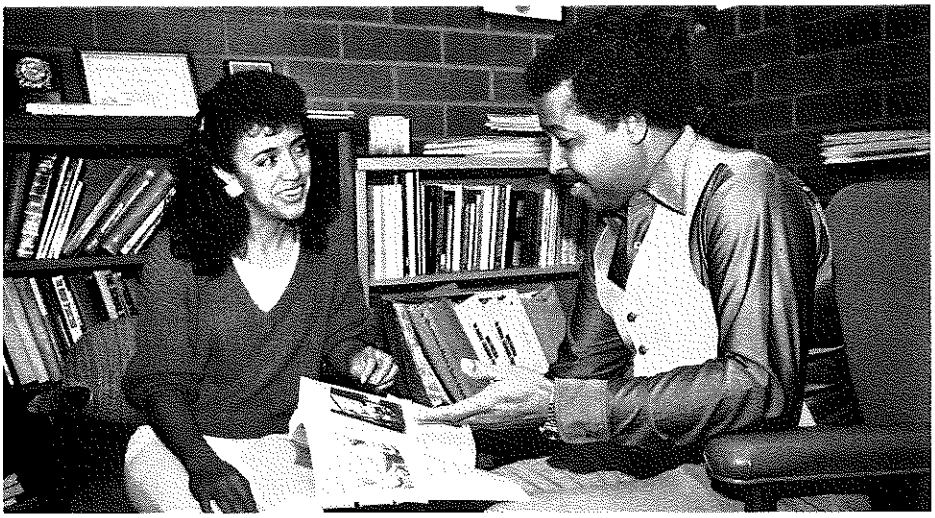
Central Cyber 760 (in Los Angeles). This mainframe (which is shared by all the CSU campuses) supports large data bases and very specialized applications.

Computing laboratories. Currently, the center supports eight student instructional laboratories, two of which are staffed extended hours for your convenience, with specially trained student consultants.

For faculty and staff, the center operates three laboratories, provides consultation, and presents a series of survey and in-depth workshops on a variety of computing topics.

Counseling Center

Student Affairs
Counseling Center
Health Center Building, Area *E*
(209) 294-2732
Director, Esteban Steve Sena



Counselors at the Student Counseling Center assist students in acquiring a wide range of skills in life management, career and life planning, and personal growth and development. Through both individual and group counseling, the center provides opportunities for students to discover more about themselves, where they want to go, and better ways of getting there.

What is Counseling?

The Counseling Center offers assistance in managing academic responsibilities and successfully completing educational goals through the following specialized activities:

Personal Counseling. Personal counseling provides opportunities to explore anything that is experienced as a need or concern. For example, many students seek help with:

- Relationship concerns such as developing friendships, communicating with others, being assertive, dealing with parents and children, dating, and handling the breakup of a relationship.
- Stress management.
- Dealing with feelings and emotions, including anger, grief, loneliness, anxiety, lack of self-confidence, depression, and suicidal feelings.
- Fears and worries about such areas as sexuality, academic responsibility, independence, eating patterns, drug use, and cultural differences.

Counseling sessions typically are scheduled for 50 minutes; every student is eligible for 15 individual sessions each academic year.

Career Counseling. A variety of career counseling services are available. These include:

- Career life planning strategies.
- Vocational testing.
- Decision-making skills.
- Self-concept and career choice.

Groups and Workshops. Each semester a variety of counseling groups and programs are offered. Telephone or stop by for information on current offerings. Groups typically available include stress management, assertiveness, reentry support, eating disorders, and career planning.

Who are the Counselors?

Counselors at the center are professionally trained in counseling, psychology, social work, and rehabilitation. Our staff represents diverse theoretical styles and a variety of ethnicities. You may request to talk with a particular type of counselor, such as a male, female, or ethnic minority. Regardless of the type of concern or extent of counseling, you can expect to be treated with respect.

Is Counseling for You?

Studying, going to classes, and completing degree requirements are only a part of what it means to be a university student. Life has many facets that must be balanced to give the time and energy needed to pursue educational goals. Physical and financial needs must be met, but there are also emotional, social, vocational, recreational, political, and spiritual needs to attend to. As if these weren't enough, many people find that student life provides the kinds of stimulation that foster personal growth and development. In capitalizing on the opportunities and challenges, you may go through transition periods in which decisions are no longer automatic, and you find yourself questioning who you are, how to act, or what to do. Although the diverse perspectives and multiple alternatives presented in a university environment can provide a fertile field for learning, change, and growth, they also can be overwhelming. If you feel the stress is getting to you, if you want to explore your options, learn decision-making skills and better ways to cope, or just want an objective person to listen, you may want to see a counselor. You don't have to have a serious problem; the normal concerns that accompany the student role are very appropriate to discuss in counseling.

Is Counseling Confidential?

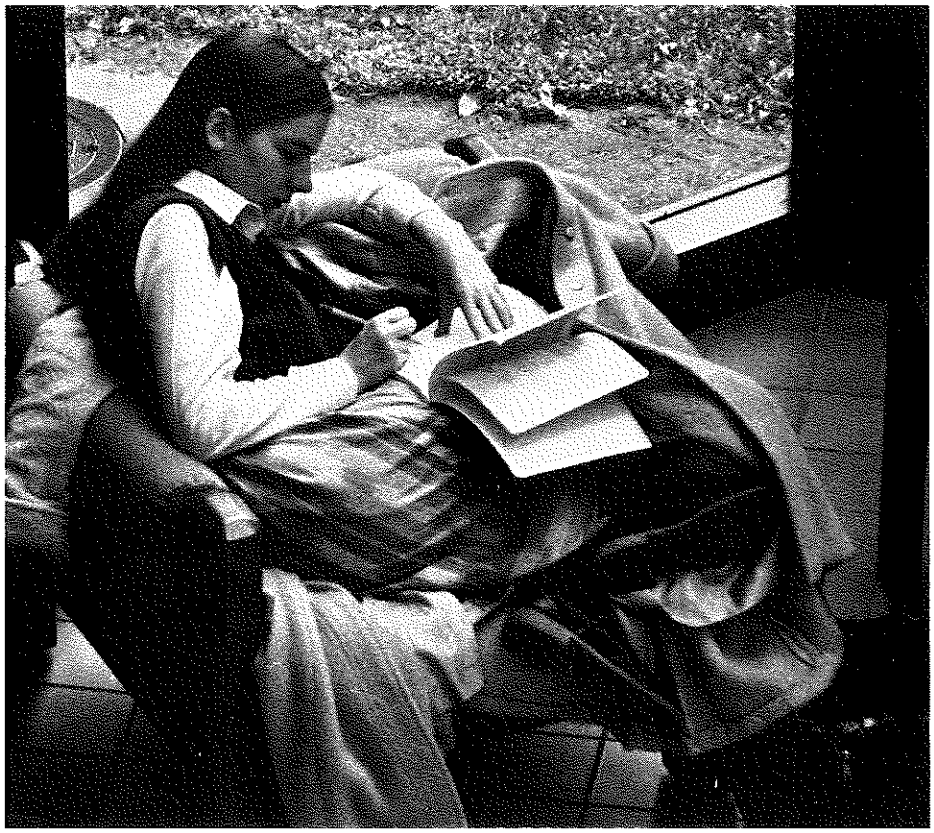
All information is confidential and can only be released with the student's written permission. There are some legal and ethical exceptions to this policy, which will be explained during your first visit.

How Do You Use Our Services?

Come by the center any time between 8:00 a.m. and 4:45 p.m., Monday through Friday (7:30 a.m.–3:45 p.m. during the summer) or call 294-2732. The Counseling Center is situated in the Health Center Building, Area *E*. All services are free of charge.

Dean of Student Affairs Office
Joyal Administration, Room 224
(209) 294-2541
William H. Corcoran, Dean
Thomas P. Boyle, Associate Dean
Manuel P. Perez, Associate Dean
Gary L. Riley, Assistant Dean

The Dean of Student Affairs Office provides leadership, support, and resources to the many offices and programs in the Division of Student Affairs. Included in the division are offices that deal with outreach, reentry, admissions, housing, student activities, intramurals, veterans, disabled student services, international student matters, counseling, advising and orientation, testing, health services, financial aid, and career development, and employment. (Detailed descriptions of these programs are found on pp. 42–66.) The Dean of Student Affairs Office is also responsible for administering student grievance procedures, student discipline, and maintaining liaison with other administrative and academic areas of the university.



Student Conduct

The Student Code of Conduct *(see full text in University Administration and Policies Section, pp. 477–480)* is designed to insure that the normal processes of the university—both instructional and administrative—can occur unhindered. In addition to the code, there are a number of local policies that apply to specific groups of students—such as those living in the residence halls. University, trustee, and state regulations governing student conduct are described in the *Handbook for Student Organizations* and the *Student Rights and Responsibilities Manual.* Copies of these, as well as the policy statements relating to cheating and plagiarism, are available from the Dean's Office.

Student Grievance Procedures

A grievance could arise out of a decision or action in the course of official duty by a member of the faculty, staff, or administration of CSU, Fresno that is alleged to be discriminatory, contrary to accepted academic relationships and procedures, or restrictive of the rights of any student of the university to fair treatment. The purpose of the grievance procedures is to provide a mechanism for students to have a third party review of the situation.

The student must first make a good faith effort to solve the matter informally by talking directly with the individual concerned, the individual's direct supervisor (or department chair) and the director of the unit (or school dean). If resolution is not effected through the informal procedures, students should contact the Dean of Student Affairs Office for assistance and for a copy of the formal procedures for filing a grievance.

Cheating and Plagiarism

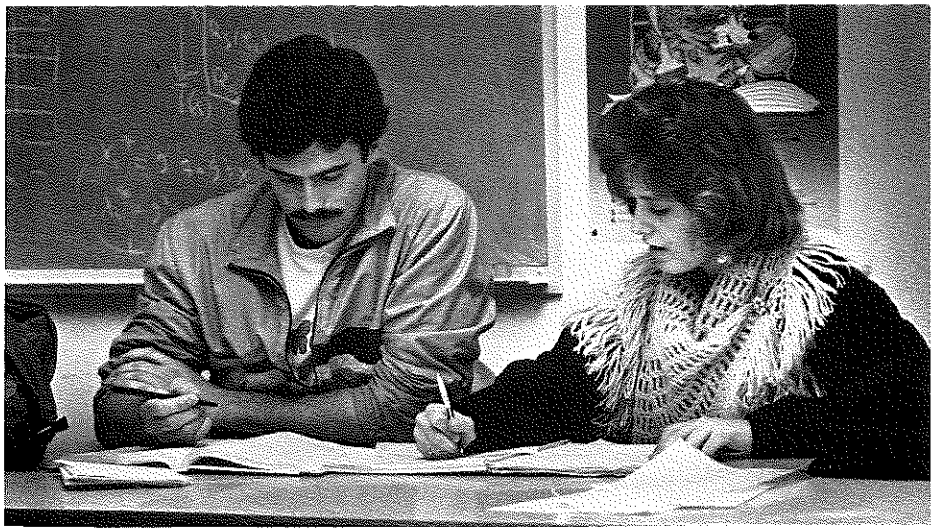
Also available from the Dean of Student Affairs Office is the full text of the university Policy on Cheating and Plagiarism. Definitions of what is considered cheating and/or plagiarism are found in the *University Administration and Policies Section,* pages 479–480.

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, may be reported to the Counseling Center **(294-2732)**, 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.

Developmental Learning Resource Center

Academic Affairs
Learning Resource Center
Keats Campus Building
(209) 294-3052
Director, David A. Bezayiff



The Developmental Learning Resource Center (D.L.R.C.) provides services to all students in the university who would like to become more independent and efficient learners.

The D.L.R.C. houses the Tutorial Center, the Progress and Advancement through Special Services (PASS), Intensive Learning Experience (I.L.E.), and the CORE Student Affirmative Action-Retention programs.

The center's staff works closely with schools and departments to provide academic support. The following courses are offered by the above departments in coordination with the D.L.R.C. for credit/no credit *(CR/NC)*. These courses count toward the baccalaureate degree.

Reading Skills: (TEd AR) Emphasis given to vocabulary development, comprehension, and reading rate (see *School of Education—Interdepartment Courses,* p. 278).

Basic Mathematics Skills: (Math ILR) *Two-semester* review of mathematics concepts, elementary algebra, and elementary geometry. Instruction is personalized and at a slower pace than Math AR. Prerequisite: E.L.M. score below 25.

Study Skills: (Spch AR) Development of communication skills necessary for successful learning in a university. (See *Communications Arts and Sciences Department—Speech Communication Program Courses*, p. 434.)

College Planning Skills: (TEd 001R/Soc Work 001R) College Planning Skills: A seminar designed to address the educational needs of those students who may be experiencing difficulty in their academic and personal adjustment to college life.

Tutoring Skills: (TEd 101) Practicum in Tutoring: Development of skills in tutoring individuals and small groups and methods on how to train tutors. TEd 101 counts toward a B.A. degree.

Non-Credit Refresher Course: The D.L.R.C. offers non-credit workshops to help students prepare for various standardized examinations including the California Basic Educational Skills Test (CBEST), the Graduate Record Examination (G.R.E.), the Entry Level Math Examination (E.L.M.), and the Upper Division Writing Examination (U.D.W.E.).

Tutorial Services

The Tutorial Center provides free tutorial assistance in all courses to any currently enrolled student. Tutees are matched in small groups with other students enrolled in the same course. Student tutors are hired through faculty recommendation to tutor specific courses. Drop-in laboratories are also available in accounting, computer science, decision science, math, and physics.

Intensive Learning Experience

The Intensive Learning Experience (I.L.E.) provides additional assistance to students who scored at or below the lower quartile on the English Placement Test (E.P.T.) and the Entry Level Math Examination (E.L.M.). This program features a teacher-student ratio of one to twelve per class and special counseling and advisement.

Writing Program: Students should enroll in English *A* if they scored below T151 or if they have an essay score of less than E8 on the E.P.T. In addition, students who scored T141 or below on the E.P.T. should enroll in the English *A* Writing Lab (Engl ARL) to get individual help with writing assignments. They should also enroll in Reading Improvement (TEd AR).

Progress and Advancement Through Special Services (PASS)

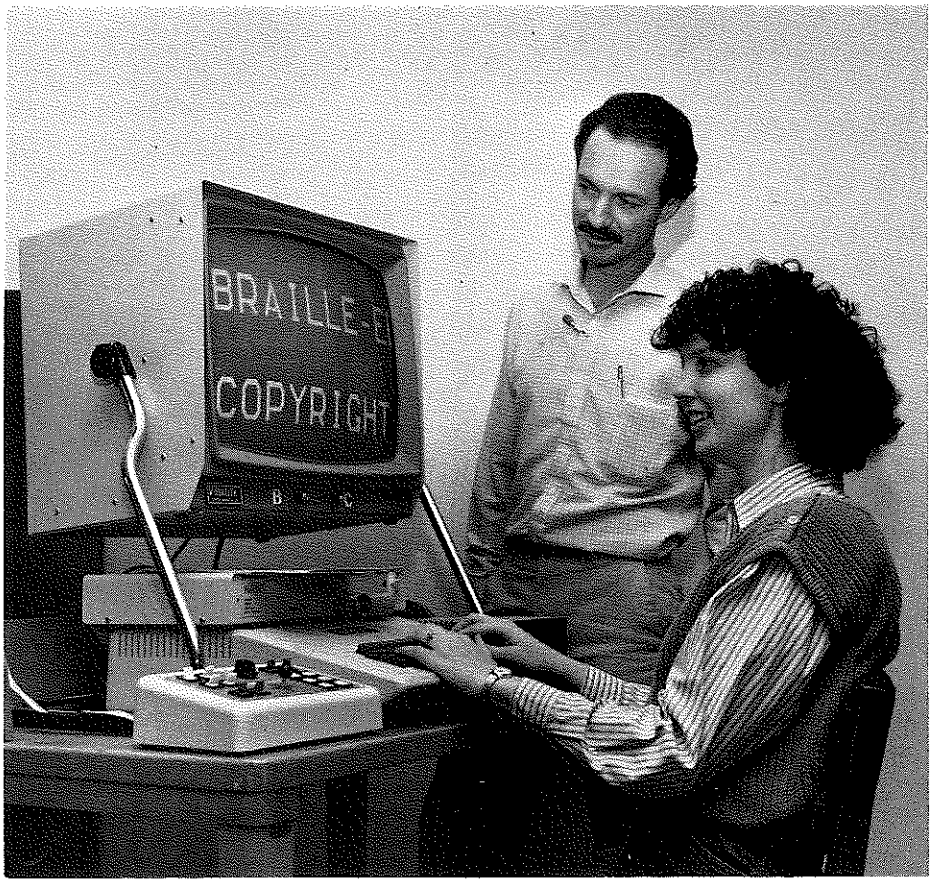
The PASS Program is a free student retention service designed to improve reading, writing, and study skills. Students may participate in study groups, receive individualized assistance, or enroll in specific courses taught by PASS program specialists. Students must meet eligibility requirements at the time they request services.

Student Affirmative Action—Retention:

The S.A.A. Retention Program provides a variety of services designed to assist students from non-traditional backgrounds in achieving their educational objectives. The staff provides direct services to students, including academic counseling and advising, or refers students to the unit on campus that can best help them. After the students have been served, the retention staff will send the faculty member a summary of the services provided.

Student Affairs
Disabled Student Services
Main Cafeteria West, Room 125
(209) 294-2811
Coordinator, Weldon W. Percy

Disabled Student Services provides specialized assistance and resources that enable students with physical disabilities to achieve maximum independence while they pursue their educational goals. Staff specialists constantly interface with all areas of the university to eliminate physical and attitudinal barriers. Disabled Student Services takes a personal interest in meeting the special needs of our students. If you have a temporary or permanent disability that may affect your academic function, you are eligible for a variety of unique services.



Accessibility Services

Fresno is one of the most accessible university communities in California. The climate is moderate and the flat terrain affords optimum mobility. You can move freely throughout CSU, Fresno's instructional facilities and related areas. Accessible restrooms, drinking fountains, and telephones are provided across the campus. Portable science laboratory stations and other specialized academic equipment are available for students who are in wheelchairs. Swimming, wheelchair tennis, weight training, and other physical fitness activities are available through the Mainstream Adaptive Physical Education Program. Other services include special parking permits, access maps, and wheelchair loans for those with temporary needs.

Disabled Student Study Center

The new study center, situated in the Henry Madden Library, is the most efficient and extensive of its kind in California. It contains five study rooms, a large main room with special tables and materials, and a room for equipment storage. The study center offers academic support services to students with visual impairments or learning disabilities. Staff specialists can arrange for blind or partially sighted students to use reader services, taped textbooks, testing modifications, and adaptive equipment. The center has video enlargers, variable speed cassette players, a large print typewriter, a talking calculator, a Braille typewriter, and a Perkins Brailler. We can also arrange for readers, notetakers, and scribes; help you pre-plan next semester's schedule, and interface with your professors to ensure academic adaption.

In addition, a peer support group meets regularly to share practical strategies and develop insights on how to succeed as a student, both academically and socially.

Deaf and Hearing Impaired Services

Our deaf services specialist acts as a liaison between student and faculty and coordinates your interpreter and notetaker needs for classroom activities. Services also include T.D.D., amplified telephones, and speech pathology-audiology referral.

Priority Registration and Assistance

Disabled Student Services can grant you priority status through early registration that will facilitate your requested class schedules. In addition, student aids are available to assist you during late registration walk-through.

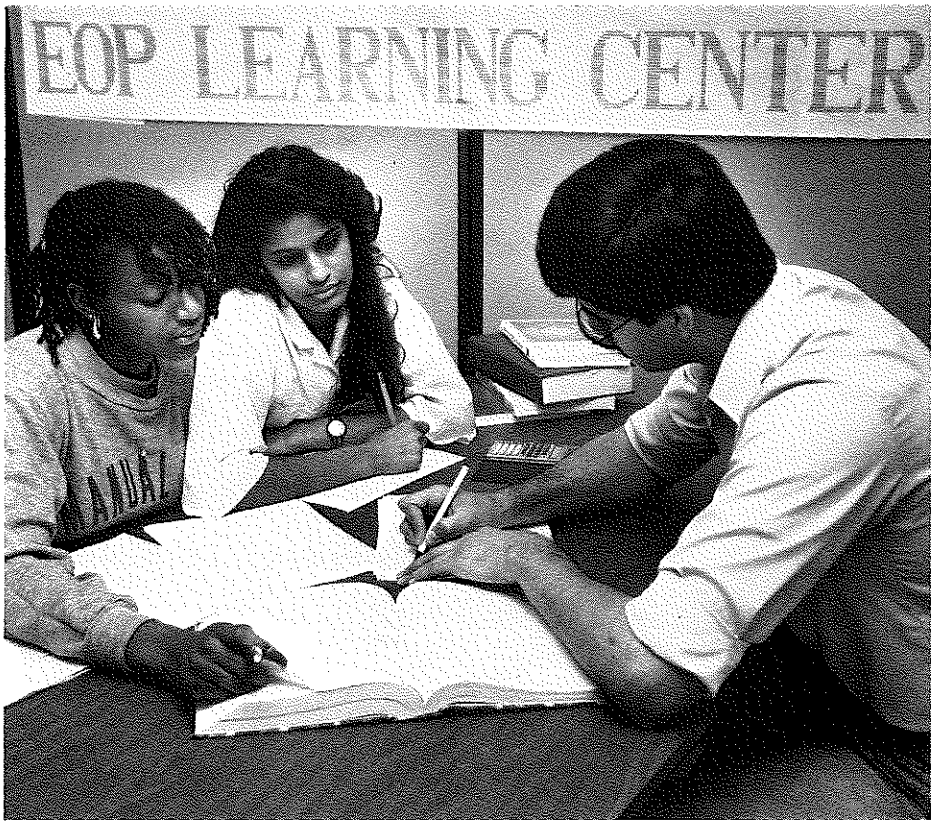
Student Responsibility

It is your responsibility to arrange for services that are outside the scope of our program. This includes attendant care and special sources of financial aid. However, we do provide referrals to appropriate universities, and state and community agencies.

Independence for the disabled has become a reality on our campus. We are convinced that your creativity, coupled with our resources, will result in an extremely rewarding educational experience.

Educational Opportunity Program

Student Affairs
Educational Opportunity Program
Joyal Administration, Room 238
(209) 294-3021
Director, Robert P. Hernandez



The Educational Opportunity Program (E.O.P.) is designed to make higher education a possibility for economically and educationally disadvantaged students who have the potential and motivation to achieve academic success with the assistance of comprehensive support services.

Eligibility

To qualify for the E.O.P., you must be an undergraduate student with a history of low family income. In addition, you must demonstrate academic capabilities and be motivated to achieve your educational goals. If the combination of your grades, test scores, and high school courses do not meet criteria normally required for entrance to the university, special admission may be offered. E.O.P. also admits regularly eligible students with specific economic and educational support needs.

Services for E.O.P. Students

Special services designed to support and assist the E.O.P. students in developing their academic potential include the following:

- Pre-admission counseling
- Orientation programs
- Special summer program—a three and one-half week, intensive session that focuses on the development of essential academic skills.
- Diagnostic testing
- Financial aid follow-up
- Academic advising
- Tutorial services
- Learning assistance workshops
- Counseling
- Career planning
- Recreational activities

Financial Assistance

The E.O.P. Grant is available to eligible students in the amount of $200 to $1,000 each academic year. You may apply for the grant by using the standard financial aid application forms and procedures required by the Financial Aids Office.

How to Apply for E.O.P.

When you apply for admission through E.O.P., you are required to submit additional forms and materials. This process enables E.O.P. to select the most qualified applicants to fill the limited number of enrollment openings available each year.

Admissions Materials to Submit to the Office of Admissions and Records

Pick up a copy of the CSU system-wide application booklet and the E.O.P. application from the Admissions or E.O.P. Office of any CSU campus, or from your high school counselor, and submit the following:

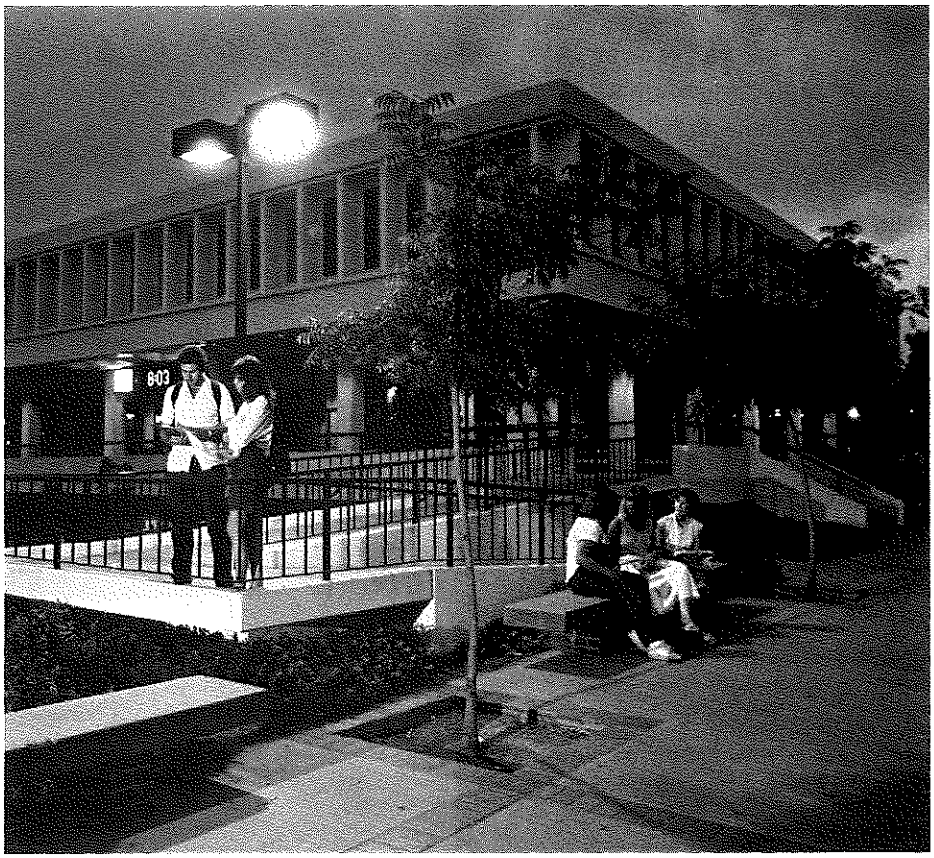
1. Part A—the Application for Admission/Readmission
2. $35 Application Fee or Fee Waiver Application Form
3. High school and/or college transcripts, or G.E.D. score
4. S.A.T. or A.C.T. test score.

Application Materials to Submit to the E.O.P. Office

1. Applicant Information Form
2. Nomination Form
3. Autobiographical Statement
4. One Recommendation Form

Extended Education
San Ramon 3, Room 141
(209) 294-2524
Dean, (To be appointed)

The Division of Extended Education offers a variety of classes and programs designed to enhance and enrich the quality of life of individuals and their communities through the acquisition of skills, experience, and knowledge. Programs are offered to all students, whether they are enrolled in the university or not. Classes may be taken on a credit or non-credit basis.



Extension Programs

Various academic departments offer institutes, workshops, seminars, and courses at several sites throughout the CSU, Fresno service area through the Division of Extended Education.

The financially self-supporting Extension program offers a variety of courses in all disciplines to meet the growing demand for continuing education. To provide flexibility and to better serve the needs of the entire community, regular university courses are offered for credit, as well as other programs for noncredit.

Concurrent Enrollment

Concurrent enrollment provides an opportunity for those individuals who are not admitted to the university on a *regular status* to enroll in regular courses as an Extension student.

Weekend University Courses

These offerings are short but intensive courses designed to meet the academic needs and interests of matriculated students. Because of their brevity and intensity, the courses provide ideal conditions for academic expansion, as well as an acceptable means for meeting academic requirements. Courses are open to anyone in the community through the Concurrent Enrollment Program.

Travel Study Programs

Travel Study Programs feature the most pleasant and rewarding methods to learn through travel and study. The instructors responsible for the program offerings design the courses to include a variety of learning activities that provide a series of enriched travel study experiences.

Non-Credit Programs

Offerings in this area include specially designed programs developed to satisfy the needs of the specific participants or organizations involved. Professional conferences, seminars, workshops, and institutes are usually jointly sponsored by an academic department of the university and a professional organization, business, or community agency.

Summer and Winter Programs

The university offers short term summer session and winter session programs. A wide variety of programs are made available to regular college students, as well as others who wish to expand their general, cultural, or avocational interests and knowledge.

For more information, see the Division of Extended Education, pages 458–460, or call the **Extended Education office, 294-2524.**

Health Services

Student Affairs
Student Health Services
Barton and Shaw Avenues
(209) 294-2734
Director, Robert M. Paull, M.D., M.P.H.

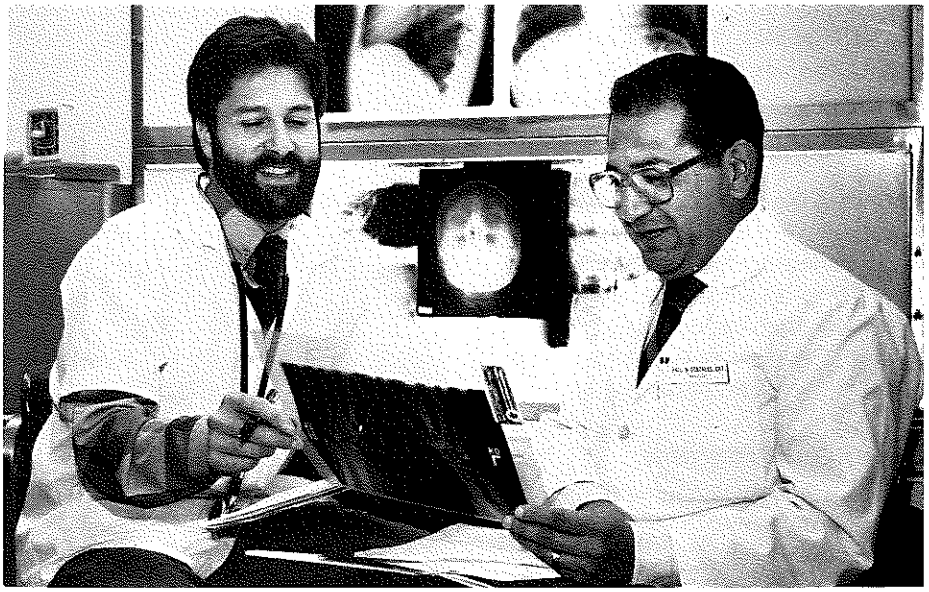
Student Health Services provide outpatient clinical medical care to students enrolled in the university in accordance with policies set by the Board of Trustees of The California State University. The Health Center is supported by a portion of the State University Fee paid by each student. These funds finance basic health care for students. In addition, each student may voluntarily pay an optional health fee which supports certain services and treatments not funded through the Student Services Fee. A brochure is available at the Health Center that gives a detailed description of basic health care and additional services available through payment of the voluntary health fee or on a fee-for-service basis.

Facilities

The Health Center features well-equipped doctors' offices and examination rooms, laboratory and X-ray facilities, physical therapy, nurses' treatment rooms, a pharmacy, business office, and waiting rooms.

The Staff

The staff is here to help you reach your educational objectives and to assist you in maintaining optimum health, both physically and mentally. We have full-time physicians (including specialists in family practice, internal medicine, and gynecology), part-time physicians, pharmacists, physical therapists, nurse practitioners, nurses, a nutritionist, clinical laboratory technologists, and X-ray technologists. The part-time physicians include consultants in orthopedics, dermatology, radiology, and psychiatry.



Appointments and Consent to Treat

You may make appointments in person or by telephone. If you are under the age of 18, we must have parental consent to treat you.

Family Planning

The Health Center provides a comprehensive family planning service that includes a complete examination, laboratory testing, pap test, birth control counseling, and consultation.

Pharmacy

Prescriptions and non-prescription medicines are available for a modest fee.

Physical Therapy

This service is available if you have paid the voluntary health fee or on a fee-for-service basis.

Immunizations

The Health Center provides immunizations when clinically indicated. This includes administering allergy shots to students who have their own medication. Some charges are necessary if the voluntary health fee is not paid. Be sure to bring your immunization record with you to the Health Center.

Summer Care

You are eligible for services in the specific summer session for which you are enrolled.

Health Insurance

You may purchase an insurance protection plan for emergency illness and accidental injury during hours that the Health Center is closed. Sponsored by the Associated Students, the program provides substantial coverage for hospital benefits, medical, surgical, and related services for any illness or accident. It is very important to have this type of coverage if you are no longer under your parents' insurance.

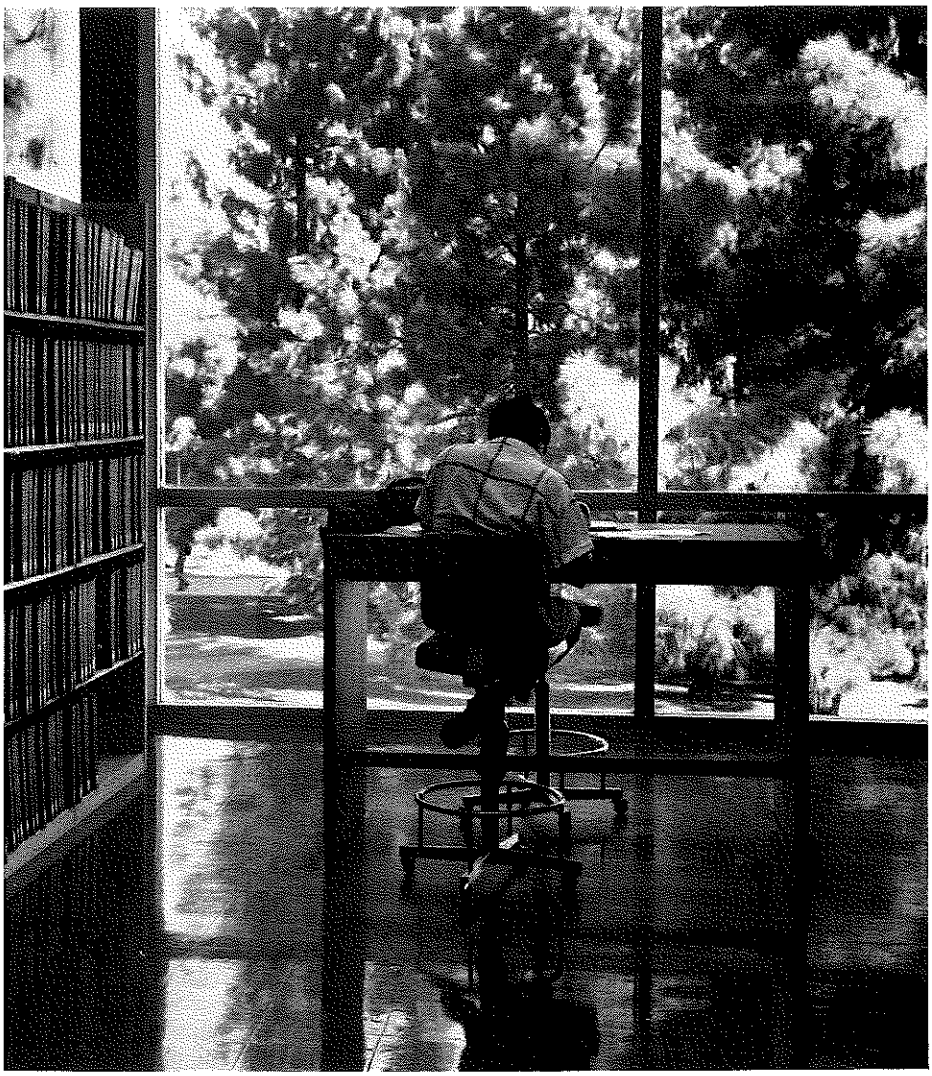
Health Education Information

If you are concerned with a health related problem, we encourage you to consult with the Health Center staff. They will either answer your questions or direct you to someone who can. Health education literature is available in the Health Center and in the College Union.

Henry Madden Library

Hours of Opening: 294-2596
Circulation Dept.: 294-2551
Reference Questions: 294-2174
University Librarian, Lillie S. Parker

The Henry Madden Library is a center for study, reading, and scholarship at CSU, Fresno. Its collections and services are basic resources supporting the undergraduate and graduate instructional programs. In the fall of 1980, a $5.8 million expansion and remodeling project increased student seating capacity to 2,000 study stations.



Collections

Books and Bound Periodicals. More than 750,000 books and bound periodicals are available for use. Arranged by Library of Congress number, they are listed in a carefully maintained catalog by author and title, and by subject in a separate section. The collection is diverse, up-to-date, and constantly expanding.

Periodical Subscriptions. The library subscribes to more than 4,000 periodicals from all over the world. The Kardex, a complete and up-to-date listing, tells you which journals the library owns.

Government Publications. Publications of the federal and state governments are received on deposit. Selected publications of foreign governments and international organizations are also received. The Government Publications Department houses more than 290,000 such documents.

Specialized Collections. Several collections of special materials are maintained separately. These include rare books, materials on local history, 112,000 sheet maps, 68,000 scores and recordings, and curriculum and juvenile materials. Each of these collections is a model of its kind.

Services

Learning about the Library. Numerous orientation programs are available each semester. A self-guided tour is available whenever the library is open.

Professional Assistance. A professional librarian is on duty in the Reference Department during every hour the library is open. Similarly, staff in other departments—music, curriculum, and juvenile, etc.—are professionals in their specialities.

Easy Check Out. A computer system makes checking out a book simple and fast.

Copies. Photocopy machines are available throughout the library. Copy Cards, reduction and oversize copying, and prints from microfilm and fiche are available.

Computerized Research. This fee-based service, available in the Reference Department, allows you to search the periodical literature of several fields via computer.

Interlibrary Loan. The library's Interlibrary Borrowing Service allows you to obtain research materials that are not available locally.

Disabled Student's Study Center. Special services, including listening and recording booths, braille reference books, and reading machines for the visually impaired are available here.

Typing. Typewriters are available for rent in three locations in the library.

Instructional Media Services

Instructional Media Center
Library North, First Floor
and Basement
(209) 294-2674

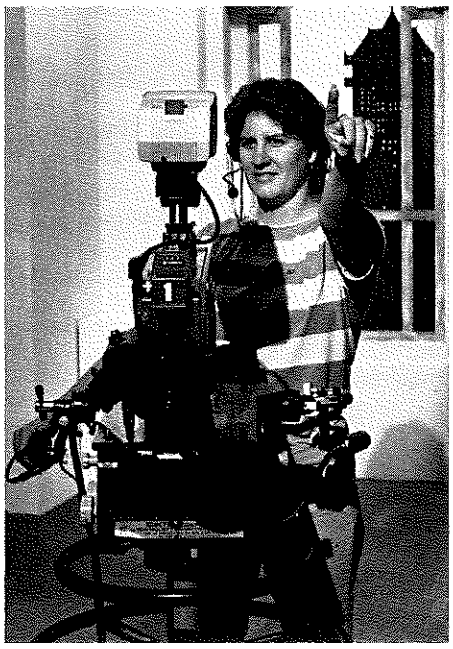
Instructional
Telecommunication Center
Speech Arts, Room 157
(209) 294-3066

Director, David F. Quadro

Instructional Media Services functions as an academic support unit of the university. Its primary mission is to improve the quality of instruction and research through the use of audiovisual and television resources. The Instructional Media Center and the Instructional Telecommunication Center are the two divisions. They provide three types of service.



Media Materials and Equipment. More than 9,000 programs (films, slide sets, filmstrips, audio and video cassette tapes, etc.) are available on campus. Besides our collection, off-campus resources provide access to additional materials via free loans, rentals, leases, and contracts. Commercial and public television programs may be recorded off the air and used for educational purposes, but only in accordance with copyright laws and congressional guidelines. Equipment may be booked for classroom and research uses and will be delivered to on-campus locations if ordered at least 24 hours in advance. Facilities are available for previewing materials.



Maintenance and Repair. Servicing of all campus audiovisual and television equipment and facilities is the responsibility of our technical staffs. They are also available to consult on the design and construction of media systems and facilities for general and special purpose uses.

Production. The Instructional Media Center has four major production services. Our graphic artists create and assemble course, research, and administrative materials, such as graphs, tables, drawings, brochures, signs, flyers, and forms. In our photoelectronic typesetting facility, we produce conventional camera-ready copy of the highest quality and certain types of electronically created finished artwork. Our photographic staff can accomplish studio, location, and copystand assignments with color, or black and white film of various types. In our sound recording and duplication facility, audiotape programs for use independently or in conjunction with other media (e.g., slide sets and filmstrips) are produced. High speed cassette duplication equipment enables us to reproduce tapes in a fast and efficient manner. Commercially produced audiotapes are duplicated only in accordance with copyright laws and congressional guidelines.

The Instructional Telecommunication Center's production capability centers on our studio complex, which contains radio, television, and duplication facilities. Location videotaping is also available. Materials that cannot be acquired from outside sources are designed, developed, and realized using these resources. Programs produced on campus are viewed in classes, on local cable channels, and on broadcast television. In addition, several classrooms are equipped with television camera-recorder units for instructional use. Activities such as student teaching, interpersonal interactions, faculty self-evaluation, role modeling, interviewing, and speech presentations can be taped and viewed.

International Student Services and Programs

Student Affairs: International Student Services and Programs
Southeast Asian Student Services • International Programs—Study Abroad
Joyal Administration, Room 211
(209) 294-2782
Director, Carol B. Munshower



California State University, Fresno, welcomes you as an international student, permanent resident, or immigrant student and provides a comfortable environment that allows you to make the most of your educational experience. CSU, Fresno attracts international students from more than 70 countries and has one of the largest foreign student populations in the CSU system, numbering more than 1,000. The university also enrolls nearly 1,000 immigrant and permanent-resident students. The university employs international and multiethnic faculty and staff, many of whom work with you directly to assist you in attaining your educational goals and making the critical personal and cultural adjustments necessary for success.

The International Student Services and Programs Office is primarily responsible for assisting you. Being an international staff ourselves, we understand your goals, ambitions, home country, and family expectations. Upon admission, international students will receive information regarding arrival in the United States, visa and immigration, housing in the Fresno area, and registration. After arrival, the staff will guide you through several mandatory preregistration workshops, post-admission English testing, and registration. You may be enrolled in English as a Foreign Language courses your first semester and will work closely with us. (See *International Programs—Special Programs Section, pp. 454-455.)* Some of the other opportunities available to you include the following:

Help with housing is available. An American family or a student from your country can meet you at the airport when you first arrive and provide some short-stay emergency housing. The International staff is available to assist you in obtaining housing.

Learn about Americans by making friends with families through our International Host Family Program.

Enjoy recreational activities with fellow classmates by participation in trips and activities.

Take advantage of opportunities to share your country and culture with the Fresno community and CSU, Fresno campus by speaking to small groups through our Speaker's Bureau.

Keep in touch with all the happenings through the monthly *International Newsletter,* written by the International staff with contributions from fellow international students.

Join The International Club or any of the 200 clubs available on campus. As many as 15 different international clubs are recognized.

Learn about travel and study overseas by using our resource library. (See *International Programs: Overseas—Special Programs Section, p. 455.)*

The International counselors take a personal interest in helping you get adjusted to the academic requirements of the university, as well as your own personal concerns, such as financial problems, immigration matters, counseling, and personal problem solving. Agency and foreign government sponsored students participate in our Sponsored Student Program.

Southeast Asian students obtain services to meet their special needs as permanent residents in the United States. **Southeast Asian Student Services** provides academic and financial aid advising, personal counseling, and support for academic success.

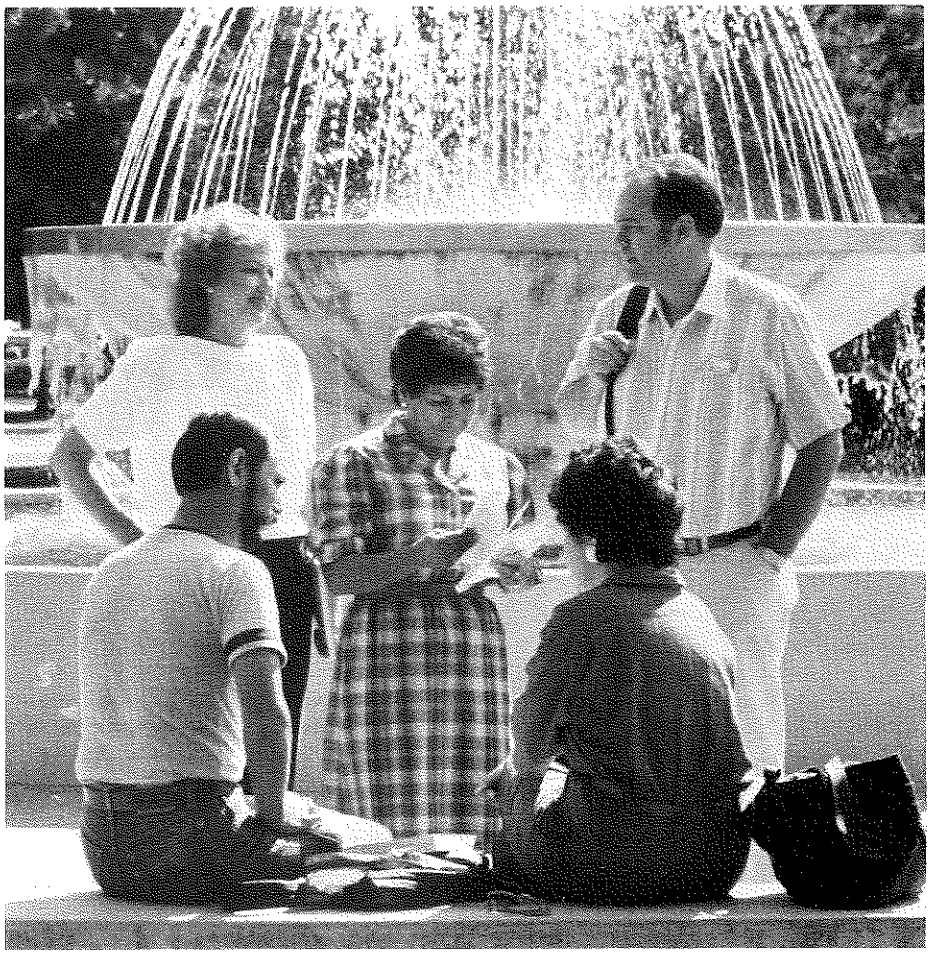
CSU, Fresno offers you more than good weather, a reasonable cost of living, and excellent selections in undergraduate and graduate academic programs. We care about your development as a whole person; that your stay and learning in the United States be worthwhile. We believe your experience and involvement in the United States will enrich your life, as well as our university. We look forward to sharing this experience with you.

Reentry Program

Student Affairs
Reentry Programs
Main Cafeteria West
(209) 294-3046
Director, Arlene L. Bireline

It is time that we had uncommon schools, that we did not leave off our education when we begin to be men and women.
— Thoreau, Walden

Education can be the key to a better life and a more secure future. The Reentry Program assists potential students, 24 years of age and older, who wish to begin or resume a college education. Transitions are difficult for people of all ages—changes in routines, adjustments to new surroundings, and relationships. We have a special interest in fulfilling the changing needs of adult learners.



Though many who have been away from the formal learning process are apprehensive, we find that the success rate among returning students is high. They possess certain assets that come only with age and experience. Older students tend to have strong motivations, coupled with a special eagerness to learn. Wider life experiences usually mean more effective coping skills. The staff helps the reentry student to make the best use of these advantages. At the same time, returning individuals are often faced with complicated circumstances which, while making further education desirable, also make it difficult to achieve. Our reentry staff can help when there are complex issues needing attention. Services offered by the Reentry Program:

- **Pre-entry advising** to help you with your initial questions about college. We can advise you regarding eligibility, courses, costs, deadlines, and services available.
- **Academic advising** to give you the information you need to make informed decisions about your academic career.
- **Evening Program** provides support services for reentry students with evening classes.
- **Peer support** for reassurance and building a feeling of belonging to the campus community. A student lounge in the Reentry Center provides a place for reentry students to meet friends or relax between classes with a cup of coffee.
- **Weekly support groups,** including a brown-bag lunch meeting, to provide emotional support and an opportunity for students to share concerns with other reentry students.
- **Coffee hours** scheduled weekly to provide informal information sessions for reentry students. Excellent speakers from the campus and community address a variety of interesting topics, such as time management, stress control, overcoming academic anxiety, etc.
- **Career exploration** and counseling to assist the older student in making well-informed, appropriate decisions when change is needed.
- **Workshops** offered in the evenings and on weekends to further assist reentry students with self-awareness, personal growth, relationship and family enrichment, and academic success.
- **Referrals** to campus services such as Career Development and Employment Services, Counseling Center, Child Care Center, and Financial Aids.

If you would like more information about the many opportunities for reentry students, we invite you to telephone 294-3046 or visit the reentry office.

Testing Services

Student Affairs
Office of Testing Services
Joyal Administration, Room 218
(209) 294-2457
Director, J. Richard Arndt

Taking a test may not be your favorite way to pass the time away, but test taking is very much a part of student life on a university campus. Many students take tests to "get in," others take tests to "get out." It is the overall goal of the Office of Testing Services to effectively and accurately measure your academic aptitudes and personal attributes as required or deemed desirable by the California State University system regulations, faculty, and your own personal needs and interests.

Our professional staff includes a test officer and a psychometrist, both of whom have special educational backgrounds and training, emphasizing tests and measurement, research, and computer applications. We work closely with other offices and faculty to offer you the following services:



Personal and Career Testing

Several psychological tests designed to measure vocational career interests, aptitude and achievement, and personality characteristics are available. If these are of interest to you, see a counselor in the Counseling Center for a referral if you have personal concerns or a counselor in the Career Development and Employment Services Office if you are interested in career testing.

Undergraduate Entrance Examinations

Your application for admission to CSU, Fresno, may require scores from the S.A.T. or A.C.T. While most students take the S.A.T. or A.C.T. on regular national testing dates, the office schedules special times during the year when you can take the A.C.T.

Testing Services also offers the Test of English as a Foreign Language (TOEFL), which is required of most international students seeking admission to the university.

Required Tests

Testing Service has information about tests you may be *required* to take, such as the CSU English Placement Test (E.P.T.) and the Entry Level Mathematics Test (E.L.M.), and the Upper Division Writing Examination (U.D.W.E.).

Graduate School Testing

This office also handles the administration of many nationally given tests, such as the Graduate Record Examination (G.R.E.), Law School Admission Test (L.S.A.T.), Medical College Admission Test (MCAT), the Test of English as a Foreign Language (TOEFL), the Graduate Management Admission Test (G.M.A.T.), the California Basic Educational Skills Test (CBEST), the National Teacher's Examination (N.T.E.), and others.

Test Scoring

An instructional test scoring service aids faculty in the development, scoring, and analysis of objective tests used in the classroom.

Consultative Services

Within the limits of available time, the staff provides assistance to students, faculty, or other university departments in the areas of test development and analysis research design, statistical analysis, test evaluation, and computer applications related to the aforementioned activities.

For more information about tests and services, stop by the Office of Testing Services and ask the people who work with tests the most—Ramiro U. Estalilla, Jr., secretary; Phyllis Redfield, psychometrist; William P. Stock, test officer.

University Housing

University Housing
Commons Lodge
(209) 294-2345
Director, John C. Wetzel

Living on campus can be an important part of your educational experience. All freshmen and transfer students, as well as other students, wanting an opportunity to meet and develop friendships and wanting to participate in the academic atmosphere of the university should consider living on campus. In addition to meeting your social needs, on-campus housing offers such benefits as providing excellent leadership opportunities, an academic atmosphere that promotes both studying and creation of study groups, a safe, clean, and secure living arrangement, and a quality dining program that provides you with a variety of options.



Residence Hall Living

On-campus housing meets the needs of many of our students. The convenience of being on the campus makes going to and from class easy. It encourages the use of campus facilities, such as the library, computer and science laboratories, along with attendance at such activities as dances, plays, lectures, and concerts occurring during evenings and weekends. On-campus residents frequently make use of the many recreational facilities available (i.e., tennis, basketball, and racquetball courts, and weight rooms) and participate in a variety of intramural sports competitions held during the school year.

The halls have a variety of interesting and enjoyable programs designed to add an exciting dimension to residence hall living in addition to providing a vehicle through which students can meet other students living in the halls. Social activities include dances, special hall and floor dinners, picnics, and concerts. A swimming pool is available for exclusive use by residence hall students. Other successful continuing programs include the Book Fair, Trivia Bowl, and film festivals. In addition, each semester there are special trips organized to take students to the mountains, amusement parks, and the beach. Educational and cultural programming include guest speakers from both on and off campus, seminars and workshops, and theater trips. Many other activities are planned by each hall government based on student interest and input.

Individual Halls

The housing complex consists of nine residence halls, an administration building, and the residence dining hall. Baker, Graves, and Homan Halls each house 212 students in a design that encourages building unity. The other halls are generally referred to as Commons although each building is named for easy identification. Birch, Cedar, and Sequoia surround the south quad, while Aspen, Ponderosa, and Sycamore surround the north quad. Each floor in Commons houses 53 students. A total of 1,272 students are living in on-campus housing.

Almost all of the rooms are shared by two students. Approximately 50 single rooms are available primarily for returning upper-class students. Rooms are comfortably designed to allow you to set up residence for the school year. You will be furnished with an extra-long single bed, desk, bookcase, dresser, and clothes closet. You are encouraged to bring posters and other personal items to decorate your room. Telephone service and rental of refrigerators can be arranged when you arrive.

Coed Residence Halls

For many years, most of Fresno's halls have been coed, although there remain three buildings (Sycamore, Aspen, and Ponderosa) that are all women. Coed buildings are characterized by men living on one floor or wing and women living on another floor or wing. This living arrangement has worked well, encouraging students to be more responsible and respectful of each other's rights. The demand for coed vs. non-coed housing has remained unchanged for the past several years. In almost all cases, you are able to obtain the living environment requested.

Staff

A full staff of trained professionals is available to help make your stay in the residence halls enjoyable. Specialists in programming will both develop and assist you in developing social, cultural, educational, and recreational programs and activities. Counselors are available to meet with students individually and as part of programming activities. Augmenting this staff are the senior resident adviser and resident adviser staffs. Students with previous residence hall living experience are selected to serve as student leaders on each floor. Their understanding of life in the residence halls is valuable in helping new and returning students adjust to *dorm living.* They receive training in such areas as counseling and first aid and understand the workings of the university so that they can assist students with academic related issues, emergencies, and personal concerns. Once you have lived here, you may want to consider becoming a resident adviser. You'll find this an excellent opportunity to develop valuable leadership skills while receiving free room and board.

How to Apply

The housing application process is completely separate from the process of being admitted to the university.

Applications are available starting in April for the fall semester and in November for the spring semester. You are urged to apply early as on-campus space is limited. Halls frequently fill in June and July for the fall semester.

All individuals applying to the university for the first time automatically receive a housing application. You should return your application as soon as you decide to live on campus. You need not wait until you are officially accepted by the university, and if for some reason you are denied admission, your deposit will be refunded to you once you notify us. If you are already attending the university and would like a housing application, you can contact the Housing Office either by coming by, writing, or telephoning **(294-2345).** An application will be sent to you as soon thereafter as possible.

All students must agree to live in the halls for the entire academic year. Returning students have priority in obtaining housing, although each year 60 percent of our residents are new. If you are applying for housing for the first time, your priority will be determined by the receipt date of your completed application. If after applying you decide that you would prefer to live elsewhere, a written request to Housing will enable us to refund your initial payment without any penalty if your notice is received 30-days prior to the opening of the halls.

Off-Campus Housing

Many students will elect to live off campus in nearby apartments or homes either initially or after living on campus for one or more years. The Housing Office can assist you in finding accommodations that meet your needs.

Each year an apartment brochure is prepared identifying apartments that have responded to a request to be listed. While the university can make no guarantees regarding the information listed in the off-campus housing brochure, our experience indicates that most students find this publication helpful in locating good, affordable housing.

In addition, a listing of local homeowners who have houses and rooms to rent is available in the University Housing Office. Occasionally, a homeowner will offer a room in exchange for light yard work or occasional babysitting. More information on this type of listing can be provided if you come by the University Housing Office.

Finally, a listing of students looking for roommates is maintained by Housing. If you want to live in an apartment, but don't know anyone in the area, this listing can be valuable in helping you find a fellow student in need of someone to share the rent.

Renting an Apartment

In most cases once you select an apartment you will be required to sign a lease, usually for the academic year. In signing any lease agreement, make certain you understand the terms of the lease. Be clear on how you can terminate the lease. Be certain to inspect the apartment to be rented and require that the manager provide you in writing a list of any repairs to be done as a condition of your lease. If you have any questions, you can contact the University Housing Office or the **Consumer Protection Agency at (209) 488-3860.**

Married Student Housing

There is no on-campus married student housing available at Fresno, although there are many apartments in the vicinity that are ideally suited for married students.



Veterans Affairs

Student Affairs
Office of Veterans Affairs
Joyal Administration, Room 240
(209) 294-2562
Director, Ernest G. Shelton



The Office of Veterans Affairs (O.V.A.) at CSU, Fresno is a federally funded program that provides a variety of services to veterans. The O.V.A. is your liaison with the Veterans Administration and the State Department of Veterans Affairs, and with the local and state Office of Vocational Rehabilitation, and other related agencies for the student population of the campus.

Eligibility

Most veterans who are honorably discharged are eligible for educational benefits if they have served a minimum of 181 days of active duty after January 31, 1955, but before January 1, 1977.

Veterans transferring to CSU, Fresno from other institutions are strongly urged to contact the O.V.A. and file a request for a Change of Place Training (VA 22-1995) at least two months prior to the beginning of the semester. Students who have never used the G.I. Bill should also apply through the O.V.A. at least eight weeks in advance. All enrollments must be certified by the Veterans Administration before any benefit checks are issued.

Veterans are not the only people eligible for G.I. benefits. Dependents of deceased or disabled veterans, and certain dependents of California veterans may qualify for benefits. Eligibility is established on a case-by-case basis. Contact the O.V.A. for detailed information and assistance in establishing your claims.

How to Apply for Benefits

You may contact the Office of Veterans Affairs by telephone, letter, or better yet, in person. The staff will give you all the necessary application forms. The educational assistance programs for which you may apply are:

G.I. Bill Educational Training for veterans of the post-Korean Conflict period and Vietnam Era, and service personnel.

Contributory Educational Assistance Program for veterans and service persons entering active duty on or after January 1, 1977.

Vocational Rehabilitation for disabled veterans of World War II, the Korean Conflict, the post-Korean Conflict, the Vietnam Era, and certain peacetime veterans.

Survivors and Dependents Education for children, spouses, survivors of veterans whose deaths or permanent total disabilities were service-connected, and for spouses and children of service persons missing in action or prisoners of war.

Chapter 106

Educational Assistance for members of the Selected Reserve, effective July 1, 1985; Chapter 106, Educational Assistance for members of the Selected Reserve is also referred to as the Selected Reserve Educational Assistance Program. Contact the campus Veterans Office for more information.

Services Provided by Office of Veterans Affairs

- Processing veterans application for educational benefits
- Processing and forwarding certification forms
- Processing application for advance pay
- Processing enrollment status, i.e., dropping of units, changing of majors, withdrawals, etc.
- Processing tutorial forms
- Processing of fee waivers
- Inquiries
- Academic advising
- Personal counseling
- Work-Study Program

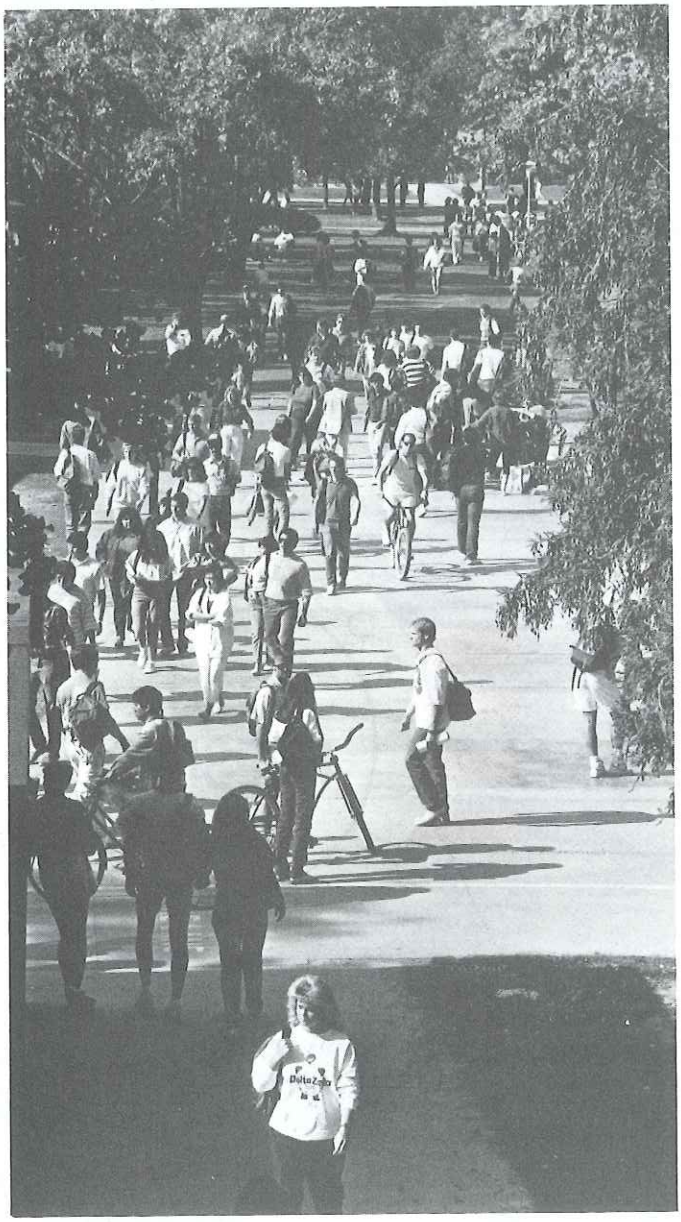


ADMISSIONS, FEES, AND FINANCIAL ASSISTANCE

Admission Requirements and Registration Process

Admissions Office
Joyal Administration Lobby
(209) 294-2261
Acting Director, Carroll C. Cotten

Requirements for admission to California State University, Fresno are in accordance with *Title 5,* Chapter 1, Subchapter 3, of the *California Administrative Code.* If you are not sure of these requirements you should consult a high school or community college counselor or the Admissions Office. Applications may be obtained from the Admissions Office at any of the campuses of The California State University or at any California high school or community college.



Importance of Filing Complete, Accurate, and Authentic Application for Admission Documents

The CSU advises prospective students that they must supply complete and accurate information on the application for admission, residence questionnaire, and financial aid forms. Further, applicants must submit authentic and official transcripts of all previous academic work attempted. Failure to file complete, accurate, and authentic application documents may result in denial of admission, cancellation of academic credit, suspension, or expulsion (Section 41301, Article 1.1, Title 5, *California Administrative Code*).

Applicants are required to include their Social Security account number in designated places on applications for admission pursuant to the authority contained in Title 5, *California Administrative Code,* Section 41201. The Social Security account number is used as a means of identifying records pertaining to the student as well as identifying the student for purposes of financial aid eligibility and disbursement and the repayment of financial aid and other debts payable to the institution.

Undergraduate Application Procedures

Prospective students, applying for part-time or full-time programs of study, in day or evening classes, must file a complete application as described in the admissions booklet. The $35 nonrefundable application fee should be in the form of a check or money order payable to The California State University and may not be transferred or used to apply to another term. Applicants need file only at their first choice campus. An alternative choice campus and major may be indicated on the application, but *applicants should list as an alternative campus only that campus of The California State University that they can attend.* Generally, an alternative major will be considered at the first choice campus before an application is redirected to an alternative choice campus. Applicants will be considered automatically at the alternative choice campus if the first choice campus cannot accommodate them.

For undergraduate admission to CSU, Fresno a student must:

1. Submit a current application with the nonrefundable $35 application fee to the Admissions Office.
2. Request institutions formerly attended to send 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. All transcripts submitted by students are retained by CSU, Fresno.
3. Take the S.A.T. or A.C.T. and request official scores be sent to CSU, Fresno, if a lower division applicant. TOEFL required of all foreign applicants and applicants who do not have at least three years of schooling, at the secondary level or beyond, where English is the principal language of instruction.
4. Take any additional proficiency or placement tests required.

In addition to the other documents required a veteran should file a copy of the *Notice of Separation* (DD 214) from the armed services with the Application for Admission. Academic credit will be awarded for service time and service schools completed as recommended by *A Guide to the Evaluation of Educational Experiences in the Armed Services.* Veterans who are California residents may be exempt from certain admission requirements. Special admission may be granted if applicant is judged likely to succeed academically. Standard admission procedures should be followed.

Applications will not be accepted after admissions categories have closed. Eligibility for admission cannot be determined until *all* required documents have been received. Due to staff limitations, an evaluation of transfer credit will generally not be available until sometime during the first semester's enrollment.

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 of credit is allowed toward the bachelor's degree for work completed in a community college. No upper division credit is given; however, community college credit in excess of 70 units may be used to satisfy subject requirements.

A maximum of twelve (12) semester units will be allowed for Agricultural Projects, Work Experience, and/or Internship courses. No more than six (6) semester units taken prior to junior standing will be accepted toward the degree.

Remedial course units are not accepted for degree credit.

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

Students desiring university housing or financial aid should file special applications with the appropriate offices concerned as soon as possible.

Provisional Admission. California State University, Fresno may provisionally admit first-time freshman applicants based on their academic preparation through the junior year of high school. CSU, Fresno will monitor the senior year of study of those provisionally admitted to ensure that those so admitted complete their senior year of studies satisfactorily, including the required college preparatory subjects, and graduate from high school.

Impacted Programs. The CSU designates programs to be impacted when more applications are received in the first month of the filing period than the spaces available. Some programs are impacted at every campus where they are offered; others are impacted at some campuses but not all. You must meet supplementary admissions criteria if applying to an impacted program.

The CSU will announce before the opening of the fall filing period which programs are impacted and the supplementary criteria campuses will use. That announcement will be published in the *CSU School and College Review,* distributed to high school and college counselors. We will also give information about the supplementary criteria to program applicants.

You must file your application for admission to an impacted program during the first month of the filing period. Further, if you wish to be considered in impacted programs at two or more campuses, you must file an application to each. Nonresident applicants are rarely admitted to impacted programs.

Supplementary Admission Criteria. Each campus with impacted programs uses supplementary admission criteria in screening applicants. Supplementary criteria may include ranking on the freshman eligibility index, the overall transfer grade point average, and a combination of campus-developed criteria. If you are required to submit scores on either the S.A.T. or the A.C.T., you should take the test no later than December if applying for fall admission.

The supplementary admission criteria used by the individual campuses to screen applicants appear periodically in the *CSU School and College Review* and are sent by the campuses to all applicants seeking admission to an impacted program.

Unlike unaccommodated applicants to locally impacted programs, who may be redirected to another campus in the same major, unaccommodated applicants to systemwide impacted programs may not be redirected in the same major but may choose an alternative major either at the first choice campus or another campus.

Graduate and Post-Baccalaureate Application Procedures

All graduate and post-baccalaureate applicants (e.g., master's degree applicants, those seeking credentials, and those interested in taking courses for personal or professional growth) must file a complete application as described in the admissions booklet. Applicants who completed undergraduate degree requirements and graduated the preceding term are also required to complete and submit an application and the $35 nonrefundable application fee. Since applicants for post-baccalaureate programs may be limited to the choice of a single campus on each application, redirection to alternative campuses or later changes of campus choice will be minimal. To be assured of initial consideration by more than one campus, it will be necessary for any applicant to submit separate applications (including fees) to each. Applications may be obtained from the Graduate Studies Office of any California State University campus in addition to the sources noted for undergraduate applicants.

Graduate applicants are encouraged to submit applications during the initial filing period (November for fall admission; August for spring). For additional information, see the *Division of Graduate Studies and Research,* pages 462–471.

Application Filing Periods. Each campus accepts applications until capacities are reached. Most campuses accept applications up to a month prior to the opening day of the term. Some campuses will close individual programs earlier.

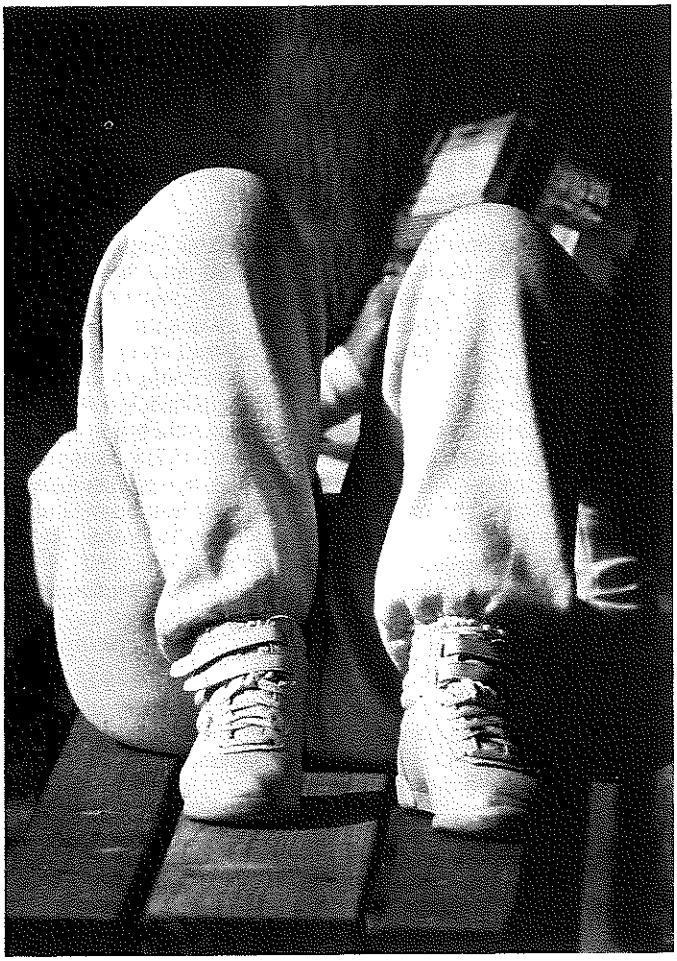
- Applications for the 1987 fall semester or quarter are first accepted on November 1, 1986. Student notification begins on December 1986.
- Applications for the 1987 spring semester or quarter are first accepted on August 1, 1987. Student notification begins on September 1987.

All applications postmarked or received during the initial filing period will be given equal consideration within established enrollment categories and quotas. There is no advantage in filing before the initial filing period. Applications received before the initial filing period may be returned, causing a

delay in processing. With the exception of the impacted undergraduate program areas, applications will be accepted well into the extended filing periods until quotas are filled.

Application Acknowledgment. You may expect to receive an acknowledgment of your application from your first choice campus within two to four weeks of filing the application. A notice that space has been reserved for you will also include a request that you submit the records necessary for the campus to evaluate your qualifications. You may be assured of admission if the evaluation of your qualifications indicates that you meet admission requirements. Such a notice is not transferable to another term or to another campus.

Hardship Petitions. The campus has established procedures for considering of qualified applicants who would be faced with extreme hardship if not admitted. Petitioners should write the Admissions Office regarding specific policies governing hardship admission.



Undergraduate Admission Requirements

First-Time Freshman Applicants. You will qualify for regular admission as a first-time freshman if you

1) are a high school graduate,
2) have a qualifiable eligibility index (see below), and
3) have completed with grades of *C* or better at least four years of college preparatory English and at least two years of college preparatory mathematics.

Fall 1988 Admission Requirements. Effective with fall 1988 terms and thereafter, first-time freshman applicants shall be required to include the following comprehensive pattern of collegiate preparatory subjects in their preparatory studies:

- 4 years of English
- 3 years of mathematics (algebra, geometry, and intermediate algebra)
- 1 year of U.S. history or U.S. history and government
- 1 year of laboratory science (biology, chemistry, physics, or other acceptable laboratory science)
- 2 years of the same foreign language (subject to waiver for applicants demonstrating equivalent competence).
- 1 year in the visual and performing arts (art, dance, drama/theater, or music). Acceptable courses will combine theory and practice and meet the State Board of Education's *Model Curriculum Standards, Grades 9 through 12: Visual and Performing Arts.*
- 3 years of electives selected from English, advanced mathematics, social studies, history, laboratory science, agriculture, foreign language, and the visual and performing arts

Other admission criteria, in addition to the preparatory subjects, include graduation from high school (or equivalent) and a qualifiable Eligibility Index as defined.

To phase in the 1988 standards for admission, California State University will provide for the conditional admission of applicants otherwise admissible but who are missing a limited number of the required subjects. ***Conditional admission*** is an alternative means to establish eligibility for admission. Applicants otherwise eligible for regular admission, but missing a limited number of the preparatory subjects, will be regularly admitted on condition that they make up the missing subjects early in their baccalaureate studies. Students will not be denied admission during the phase-in period simply because they lack a limited part of the required pattern.

Under the plan, the *minimum number of subjects* to be completed each year will be:

Fall 1988: At least 10 of the required 15 units

Fall 1989: At least 12 of the required 15 units

Fall 1990 and Fall 1991: At least 14 of the required 15 units

In each of these years, applicants will be expected to include at least six of the seven units required in English and mathematics. *By fall 1992, the CSU will expect all freshman applicants to have completed all required subjects.*

Test Requirements. Freshman and transfer applicants who have fewer than 56 semester or 84 quarter units of transferable college work must submit scores from either the Scholastic Aptitude Test of the College Board (S.A.T.) or the American College Test Program (A.C.T.). Registration forms and test dates for either test may be obtained from school or college counselors or from a campus testing office. Or, you may write to the following addresses:

The College Board (S.A.T.)
Registration Unit
Box 592
Princeton, New Jersey
08541

American College Testing
Program (A.C.T.)
Registration Unit
P.O. Box 168
Iowa City, Iowa 52240

ELIGIBILITY INDEX TABLE FOR CALIFORNIA HIGH SCHOOL GRADUATES OR RESIDENTS OF CALIFORNIA

G.P.A.	S.A.T. Score	A.C.T. Score
Above 3.10 qualifies with any score.		
3.10	520	11
3.09	530	11
3.08	530	11
3.07	540	11
3.06	550	11
3.05	560	12
3.04	570	12
3.03	570	12
3.02	580	12
3.01	590	12
3.00	**600**	**13**
2.99	610	13
2.98	610	13
2.97	620	13
2.96	630	13
2.95	640	14
2.94	650	14
2.93	650	14
2.92	660	14
2.91	670	14
2.90	680	15
2.89	690	15
2.88	690	15
2.87	**700**	**15**
2.86	710	15
2.85	720	16
2.84	730	16
2.83	730	16
2.82	740	16
2.81	750	16
2.80	760	17
2.79	770	17
2.78	770	17
2.77	780	17
2.76	790	17
2.75	**800**	**18**
2.74	810	18
2.73	810	18
2.72	820	18
2.71	830	18
2.70	840	19
2.69	850	19
2.68	850	19
2.67	860	19
2.66	870	19
2.65	880	20
2.64	890	20
2.63	890	20
2.62	**900**	**20**
2.61	910	20
2.60	920	21
2.59	930	21
2.58	930	21
2.57	940	21
2.56	950	21
2.55	960	22
2.54	970	22
2.53	970	22
2.52	980	22
2.51	990	22
2.50	**1000**	**23**
2.49	1010	23
2.48	1010	23
2.47	1020	23
2.46	1030	23
2.45	1040	24
2.44	1050	24
2.43	1050	24
2.42	1060	24
2.41	1070	24
2.40	1080	25
2.39	1090	25
2.38	1090	25
2.37	**1100**	**25**
2.36	1110	25
2.35	1120	26
2.34	1130	26
2.33	1130	26
2.32	1140	26
2.31	1150	26
2.30	1160	27
2.29	1170	27
2.28	1170	27
2.27	1180	27
2.26	1190	27
2.25	**1200**	**28**
2.24	1210	28
2.23	1210	28
2.22	1220	28
2.21	1230	28
2.20	1240	29
2.19	1250	29
2.18	1250	29
2.17	1260	29
2.16	1270	29
2.15	1280	30
2.14	1290	30
2.13	1290	30
2.12	**1300**	**30**
2.11	1310	30
2.10	1320	31
2.09	1330	31
2.08	1330	31
2.07	1340	31
2.06	1350	31
2.05	1360	32
2.04	1370	32
2.03	1370	32
2.02	1380	32
2.01	1390	32
2.00	**1400**	**33**
Below 2.00 does not qualify for regular admission.		

Eligibility Index—The eligibility index is the combination of your high school grade point average and your score on either the Scholastic Aptitude Test (S.A.T.) or the American College Test (A.C.T.). For this purpose we compute your grade point average on your final three years of high school studies, excluding physical education and military science, and use bonus points for certain honors courses. CSU may offer you early, provisional admission based on work completed through the junior year of high school and planned for your senior year.

You can calculate the index by multiplying your grade point average by 800 and adding your total score on the S.A.T. Or, if you took the A.C.T., multiply your grade point average by 200 and add ten times the composite score from the A.C.T. If you are a California high school graduate (or a legal resident of California for tuition purposes), you need a minimum index of 2994 using the S.A.T. or 722 using the A.C.T.; the table below shows the combinations of test scores and averages required. If you neither graduated from a California high school nor are a legal resident of California for tuition purposes, you need a minimum index of 3402 (S.A.T.) or 822 (A.C.T.).

Applicants with grade point averages above 3.10 (3.60 for nonresidents) are exempt from the test requirement.

Transfer Applicants. You will qualify for admission as a transfer student if you have a grade point average of 2.0 (*C*) or better in all transferable units attempted, are in good standing at the last college or university attended, and meet the following standards:

(a) were eligible as a freshman, or

(b) were eligible as a freshman except for the college preparatory subjects in English and mathematics and have completed appropriate college courses in the missing subjects, or

(c) have completed at least 56 transferable semester (84 quarter) units and have completed appropriate college courses to make up any missing subjects in college preparatory English and mathematics. (Nonresidents must have a 2.4 grade point average or better.)

For these requirements, transferable courses are those designated for that purpose by the college or university offering the courses.

Subject Requirements. The California State University requires that all undergraduate applicants for admission complete with a *C* or better four years of college preparatory study in English and two years of college preparatory mathematics, or their equivalent. California secondary school courses that meet the subject requirements are listed on "Courses to Meet Requirements for Admission to the University of California," published for, and available at, each high school.

English— Regular English courses in the 9th and 10th grades that integrate reading and writing will be considered college preparatory. English courses in the 11th and 12th grades will be considered college preparatory if *(1)* they include writing instructions and evaluation, and require substantial amounts of writing of extensive, structured papers, expressive and analytical, demanding a high level of thinking skills; and *(2)* they are integrated with challenging, in-depth reading of significant literature.

Courses in speech, drama, or journalism will be considered college preparatory if they meet the criteria for 11th and 12th grade courses. Two consecutive semesters of advanced English as a Second Language may be substituted for two semesters of college preparatory English. Remedial reading and writing courses at any level will not be accepted nor will courses in beginning or intermediate English as a Second Language.

Mathematics—College preparatory courses in mathematics include algebra, geometry, trigonometry, calculus, and mathematical analysis. Most students will have taken at least algebra and geometry or two years of algebra. Business or technical mathematics, arithmetic, or pre-algebra are not considered college preparatory. You may still qualify for regular admission *on condition* if you are missing no more than two semesters of the required courses in English and mathematics.

Additional College Preparatory Courses Recommended. Most academic advisers agree that preparation for university study includes preparation in subjects beyond four years of English and two years of mathematics. (Please see *Fall 1988 Admission Requirements,* p. 70.) Bachelor's degree curricula build upon previous study in the natural sciences, social sciences, visual and performing arts, foreign languages, and the humanities. Students planning to major in mathematics, the sciences (including computer science), engineering, pre-medicine, other science-related fields, business, or economics should complete four years of college preparatory mathematics. Students in the social sciences and preprofessional fields of study should include at least three years of mathematics in the preparatory studies. Further, all students should include English and mathematics in the final year of high school.

Honors Courses. Grades in up to eight semester courses, taken in the last two years of high school, that are designated honors in approved subjects may receive additional points in grade point average calculations. Each unit of *A* in approved courses will receive a total of 5 points; *B*, 4 points; *C*, 3 points; *D*, 1 point; and none for *F* grades.

TOEFL Requirement. All undergraduate applicants, regardless of citizenship, whose preparatory education was principally in a language other than English must demonstrate competence in English. Those who have not attended for at least three years schools at the secondary level or above where English is the principal language of instruction must earn a minimum score of 500 on the Test of English as a Foreign Language (TOEFL). Individual campuses may require a higher score.

Systemwide Tests Required of Most New Students. The CSU requires new students to be tested in English and mathematics after they are admitted. These are not admission tests, but a way to determine if you are prepared for college work and, if not, to counsel you how to strengthen your preparation. You might be exempted from one or both of the tests if you have scored well on other specified tests or completed appropriate courses.

English Placement Test (E.P.T.)—The CSU English Placement Test must be completed by all new undergraduates* with the exception of those who present proof of one of the following:

- a score of 3, 4, or 5 on either the language and composition or the composition and literature examination of the College Board Advanced Placement Program
- a satisfactory score on the CSU English Equivalency Examination
- a score of 510 or above on the verbal section of the College Board Scholastic Aptitude Test (S.A.T.—verbal)
- a score of 23 or above on the A.C.T. English Usage Test
- a score of 600 or above on the College Board Achievement Test in English Composition *with essay*
- completion of an acceptable college course in English composition of four quarter or three semester units with a grade of *C* or better.

Entry Level Mathematics (E.L.M.) Test—All new undergraduate students must take the test and pass it before enrolling in a course that satisfies the college level mathematics requirement of the General Education Breadth program. Exemptions from the test are given only to those students who can present proof of one of the following:

- a score of 3 or above on the College Board Advanced Placement mathematics examination (AB or BC)
- a score of 530 or above on the mathematics section of the Scholastic Aptitude Test (S.A.T.—math)
- a score of 23 or above on the A.C.T. Mathematics Test
- a score of 520 or above on the College Board Mathematics Achievement Test, Level 1
- a score of 540 or above on the College Board Mathematics Achievement Test, Level 2
- completion of a college course that satisfies the General Education-Breadth requirement in quantitative reasoning, provided it is at the level of intermediate algebra or above with a grade of *C* or better.*

Failure to take either of these tests, as required, at the earliest opportunity after admission may lead to administrative probation, which according to Section 41300.1 of *Title 5, California Administrative Code,* and CSU Executive Order 393, may lead to disqualification from future attendance.

Information bulletins and registration materials for the E.P.T. will be mailed to all students subject to the requirements. The materials may also be obtained from the Office of Admissions and Records or the campus test office.

* Undergraduates admitted with 56 or more transferable semester units and who are subject to a campus catalog or bulletin earlier than 1986–87 are not required to complete the E.P.T.

* Courses taken fall 1988 or thereafter must be at a level above that of intermediate algebra in order to qualify for exemption.

High School Students. Students still enrolled in high school will be considered for enrollment in certain special programs if recommended by the principal and the appropriate campus department chair and if preparation is equivalent to that required of eligible California high school graduates. Such admission is only for a given program and does not constitute the right to continued enrollment. Contact the CSU, Fresno Admissions Office.

Adult Students. As an alternative to regular admission criteria, an applicant who is 25 years of age or older may be considered for admission as an adult student if he or she meets the following basic conditions:

1. Possesses a high school diploma (or has established equivalence through either the Tests of General Educational Development or the California High School Proficiency Examination).
2. Has not been enrolled in college as a full-time student for more than one term during the past five years. (*Part-time enrollment is permissible.*)
3. If there has been any college attendance in the last five years, has earned a *C* average or better.

Consideration will be based upon a judgment as to whether the applicant is as likely to succeed as a regularly admitted freshman or transfer student and will include an assessment of basic skills in the English language and mathematical computation. For information, call the *CSU, Fresno Reentry Office, ext. 3040.*

International (Foreign) Students

California State University uses separate requirements and application filing dates in the admission of foreign students. For these purposes, *foreign students* are residents of a country other than the United States or who hold visas as students, exchange visitors, or in other nonimmigrant classifications.

An applicant who is a graduate of a secondary school in a foreign country or who has equivalent preparation in a foreign country, may be admitted as a first-time freshman if his or her preparation and ability are such that in the judgment of the appropriate campus authority, the probability of his or her academic success at the campus is equivalent to that of eligible California high school graduates.

At CSU, Fresno admissions decisions are made on the basis of complete academic records from all secondary and college level schools, demonstrated English proficiency based on the results of the Test of English as a Foreign Language (TOEFL) and a certification of financial support.

Information on TOEFL testing dates and centers may be obtained by writing, TOEFL, Educational Testing Service, Princeton, New Jersey 08540 or from the CSU, Fresno, Testing Center.

Applicants should take TOEFL at least six months before the beginning of the semester to which they are seeking admission to allow time for evaluation and receipt of test scores.

To qualify for undergraduate admission an international student must present a score of 500 or better on the TOEFL. A post-baccalaureate or graduate student must present a score of 550 or better. The TOEFL score required for admission to specific programs may be higher than the minimum of 500 for undergraduate and 550 for post-baccalaureate applicants indicated above. Students should check these TOEFL requirements in the departmental listings.

To assure that students are prepared to take advantage of the educational opportunities available at CSU, Fresno each international student who must submit TOEFL scores will be required to participate in a post-admission testing program. The tests will be administered during orientation, immediately before the student's first matriculated semester. The purpose of the testing program is to assess strengths and weaknesses in oral and written English. As a result of the post-admission testing, a student may be required to enroll in certain International Studies Courses (I.S.C.) as a condition of admission.

An undergraduate student whose academic qualifications are acceptable, but who has not achieved an acceptable TOEFL score may be granted a conditional admission. Such a student must obtain an I–20 Form (Certificate of Eligibility) from an English language school and attend an English as a Second Language (E.S.L.) Program. In order to transfer from a language school to CSU, Fresno a conditionally admitted student must present an acceptable score on the TOEFL.

> **"Students come to CSU, Fresno because it is a middle-size campus, it has most of the majors one would find in any of the California State Universities, and the majors we have, even the most popular, are not impacted."**
>
> *— Student Affairs Officer Relations with Schools*

Applicants to undergraduate majors in business or engineering are not eligible for conditional admission.

Returning Students

Applicants who seek readmission after an absence of one semester or more must file an application for admission. Applicants absent one semester only are exempt from the $35 application fee *providing* no academic work was taken in the interim at any other institution. Students absent on an approved planned educational leave are not required to file an application for admission and are exempt from the $35 application fee. See *Planned Educational Leave,* pages 92–93.

Graduate Admission Requirements

See Division of Graduate Studies and Research, pages 462–471.

Determination of Residence for Nonresident Tuition Purposes

The campus Admissions Office determines the residence status of all new and returning students for nonresident tuition purposes. Responses to the Application for Admission and, if necessary, other evidence furnished by the student are used in making this determination. A student who fails to submit adequate information to establish a right to classification as a California resident will be classified as a nonresident.

The following statement of the rules regarding residency determination for nonresident tuition purposes is not a complete discussion of the law, but a summary of the principal rules and their exceptions. The law governing residence determination for tuition purposes by The California State University is found in *Education Code* Sections 68000–68090, 68121, 68123, 68124, 89705–89707.5, and 90408 and in Title 5 of the *California Administrative Code,* Sections 41900–41912. A copy of the statutes and regulations is available for inspection at the campus Admissions Office.

Legal residence may be established by an adult who is physically present in the state and who, at the same time, intends to make California his or her permanent home. Steps must be taken at least one year prior to the residence determination date to show an intent to make California the permanent home with concurrent relinquishment of the prior legal residence. The steps necessary to show California residency intent will vary from case to case. Included among the steps may be registering to vote and voting in elections in

California; filing resident California state income tax forms on total income; ownership of residential property or continuous occupancy or renting of an apartment on a lease basis where one's permanent belongings are kept; maintaining active resident memberships in California professional or social organizations; maintaining California vehicle plates and operator's license; maintaining active savings and checking accounts in California banks; maintaining permanent military address and home of record in California if one is in the military service.

The student who is within the state for educational purposes only does not gain the status of resident regardless of the length of the student's stay in California.

In general, the unmarried minor (a person under 18 years of age) derives legal residence from the parent with whom the minor maintains or last maintained his or her place of abode. The residence of a minor cannot be changed by the minor or the minor's guardian, so long as the minor's parents are living.

A married person may establish his or her residence independent of his or her spouse.

An alien may establish his or her residence, unless precluded by the Immigration and Nationality Act from establishing domicile in the United States. An unmarried minor alien derives his or her residence from the parent with whom the minor maintains or last maintained his or her place of abode.

Nonresident students seeking reclassification are required by law to complete a supplemental questionnaire concerning financial independence.

The general rule is that a student must have been a California resident for at least one year immediately preceding the residence determination date in order to qualify as a *resident student* for tuition purposes. A residence determination date is set for each academic term and is the date from which residence is determined for that term. The residence determination dates are:

Quarter Term Campuses

Fall	September 20
Winter	January 5
Spring	April 1
Summer	July 1

Semester Term Campuses

Fall	September 20
Winter (Stanislaus only)	January 5
Spring	January 25

Questions regarding residence determination dates should be directed to the campus Admissions Office which can give you the residence determination date for the term for which you are registering.

There are exceptions from nonresident tuition, including:

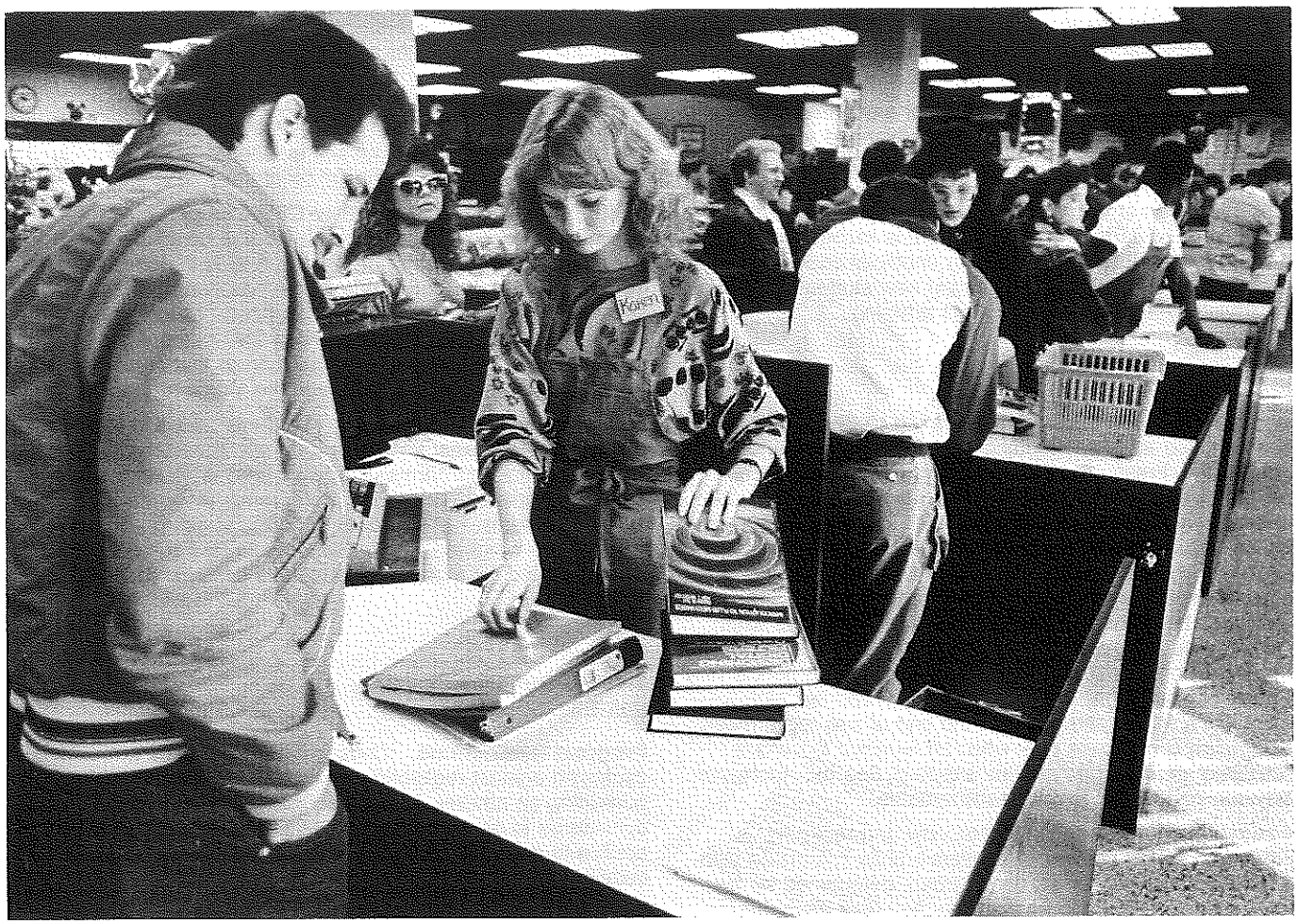
1. Persons below the age of 19 whose parents were residents of California but who left the state while the student, who remained, was still a minor. When the minor reaches age 18, the exception continues for one year to enable the student to qualify as a resident student.
2. Minors who have been present in California with the intent of acquiring residence for more than a year before the residence determination date, and entirely self-supporting for that period of time.
3. Persons below the age of 19 who have lived with and been under the continuous direct care and control of an adult, not a parent, for the two years immediately preceding the residence determination date. Such adult must have been a California resident for the most recent year.
4. Dependent children and spouses of persons in active military service stationed in California on the residence determination date. This exception applies only for the minimum time required for the student to obtain California residence and maintain that residence for a year. The exception, once attained, is not affected by retirement or transfer of the military person outside the state.
5. Military personnel in active service stationed in California on the residence determination date for purposes other than education at state-supported institutions of higher education. This exception applies only for the minimum time required for the student to obtain California residence and maintain that residence for a year.
6. Certain credentialed, full-time employees of California school districts.
7. Full-time state university employees and their children and spouses; state employees assigned to work outside the state and their children and spouses. This exception applies only for the minimum time required for the student to obtain California residence and maintain that residence for one year.
8. Certain exchange students.
9. Children of deceased public law enforcement or fire suppression employees, who were California residents, and who were killed in the course of law enforcement or fire suppression duties.

Any student, following a final campus decision on his or her residence classification, may make written appeal only to:

The California State University
Office of General Counsel
400 Golden Shore
Long Beach, California 90802-4275

within 120 calendar days of notification of the final decision on campus of the classification. The Office of General Counsel may make a decision on the issue, or it may send the matter back to the campus for a further review. Students classified incorrectly as residents or incorrectly granted an exception from nonresident tuition are subject to reclassification as nonresidents and payment of nonresident tuition in arrears. If incorrect classification results from false or concealed facts, the student is subject to discipline pursuant to Section 41301 of Title 5 of the *California Administrative Code.* Resident students who become nonresidents, and nonresident students qualifying for exceptions whose basis for so qualifying changes, must immediately notify the Admissions Office. Applications for a change in classification with respect to a previous term are not accepted.

The student is cautioned that this summation of rules regarding residency determination is by no means a complete explanation of their meaning. The student should also note that changes may have been made in the rate of nonresident tuition, in the statutes, and in the regulations between the time this catalog is published and the relevant residence determination date.



Program Planning and Registration

Freshmen students should plan their programs early; beginning, when practical, with the selection of a major. Degree requirements in each major are listed under the appropriate department. If a student is undecided about a major, indicate *Undeclared* on the appropriate forms until a definite decision is reached. For general information, see *Degrees and Credentials,* pages 98–101.

An academic adviser is assigned to each student or selected by the student depending on the major department's procedure. Undeclared majors are advised by the Office of Advising and Orientation.

It is recommended that all students meet with a faculty adviser once each semester before registering for classes. A faculty adviser assists the student in planning an academic program, but the primary responsibility for meeting all graduation requirements is the student's.

Recommended Preparation

Freshmen Students. Overall excellence of performance in high school subjects and evidence of academic potential provide the basis for admission at CSU, Fresno. The applicant is strongly encouraged to include the following subjects as minimal preparation for university study.

College preparatory English	4 years*
Foreign language	2 years
College preparatory mathematics	3 years*
College preparatory laboratory science	1 year
College preparatory history and/or social science	2 years

Study in speech, music, art, and other subjects contributing to general academic background.

* Students must have completed eight semesters of college preparatory English and four semesters of college preparatory mathematics in high school and/or their equivalent at the college level to qualify for admission to a CSU campus.

Since certain academic majors require high school preparation in definite subjects, the student should consult the requirements indicated in the field of his or her choice.

In university majors, such as engineering, natural 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.

Transfer Students. Students intending to transfer to CSU, Fresno should plan their programs while attending other colleges to meet CSU, Fresno general education and major degree requirements. Students transferring from a California community college should complete as many of the CSU general education requirements of that college as possible. A

general education certification should be sent to CSU, Fresno along with the final transcripts. Earning an A.A. or A.S. degree does not necessarily mean one has fulfilled CSU admission and/or general education requirements.

After admission to CSU, Fresno, transfer students with 20 or more units will receive a copy of their advanced standing evaluation indicating how previous college units have been applied toward requirements at CSU, Fresno. Questions about one's evaluation should be directed to the student's adviser or the Office of Advising and Orientation. It is recommended that transfer students bring with them an unofficial copy of all previous college work when attending new student orientation and advising day to ensure accurate advising.

Registration

Registration is open to new and returning students who have been admitted and to continuing students in good standing. Former CSU, Fresno students returning after an absence of one semester or more must apply for readmission, subject to university enrollment limitations and filing deadlines. Students who are returning after an absence of two semesters or more, and those who have been absent one semester and who have attended another institution since last registered at CSU, Fresno will be required to pay the $35 application fee when applying. The *Academic Calendar* lists dates of registration. Students who register during the Late Registration period (first 10 days of instruction) are assessed a $25 late fee. No registrations will be allowed after the end of late registration. *Registration is complete only when all required forms are completed and filed and all fees are paid.* See the *Academic Calendar,* pages 4–5, for all deadline dates.

Registration priority for all students, new and returning, is determined by the number of academic units completed with limited exceptions. After a priority group, determined by the faculty-student registration committee, first-time freshmen register, followed by students with the highest number of completed units.

Registration in courses offered by some schools or departments may be restricted to students officially enrolled in certain majors and/or class level. It is essential that each student's current major be correctly recorded in the university's records. Failure to do so may result in enrollment difficulties. It is the student's responsibility to be sure his or her major is correct as it appears each semester on the Early Registration form, the Enrollment Verification card, and on the student's grade report. Undergraduate major changes can be made at the Office of Advising and Orientation; post-baccalaureate and graduate changes at the Office of Graduate Studies; and international student changes at the International Student Services and Programs Office.

Schedule of Courses. An official *Schedule of Courses* is published each semester listing registration procedures, courses offered, class hours and locations, and other important deadlines and updated policy changes as applicable. The schedule is available prior to registration and may be purchased at the Kennel Bookstore for a nominal cost.

Concurrent Registration at Another College or University. Approval of the registrar must be obtained in advance of registration before transfer credit may be earned at another college concurrently with registration at CSU, Fresno. Normally permission for concurrent registration will not be granted for a class that is offered at CSU, Fresno.

Concurrent Registration at Another CSU Campus. A continuing undergraduate student who has completed a minimum of one semester of 12 units on the Fresno campus and is in good standing (2.00 grade point average), or a graduate student who has been and is in an authorized graduate program in good standing may enroll concurrently at another CSU campus without any additional fees. Complete information is available in the Office of the Registrar.

Visitor Registration at Another CSU Campus. A continuing undergraduate student who has completed a minimum of one semester or 12 units and is in good standing or a continuing graduate student who has completed one semester and is admitted to an authorized graduate program may register and pay fees at another CSU campus for one semester without applying for admission to that campus. Complete information is available in the Office of the Registrar.

Full-time/Part-time Students. Students taking at least 75 percent of the normal academic load are considered full-time students. Since the normal academic load is 15 semester hours, students carrying 12 or more semester hours are full-time students. For purposes of financial aid, graduate-level courses are weighted for graduate students. Each graduate unit attempted by a graduate student is considered as 1.5 units.

Full-time	12 or more units
Three-quarter time	9 to 11½
Half-time	6 to 8½

Program Restrictions. Undergraduate students are cautioned against registering for more than 18 units without consulting an adviser, since more than 18 units is generally considered to be an academic overload. A limit of 16 units applies to graduate students. See the *Schedule of Courses* for details.

To register for 19 units, an undergraduate student must have an overall grade-point average of 2.50; for 20 to 22 units, a student must have an overall grade-point average of 3.00. Exceptions to these limits must be approved by the chair of the student's major department. An absolute limit of 22 units (excluding credit by examination units) is enforced which may be waived only with the approval of the dean of the school of the student's major.

An academic department may restrict enrollment by requiring students to drop a class if the student has been disqualified from the major or the student has not achieved a grade of *C* or better in the major. This is especially true in academic areas that are impacted or are in high demand.

Enrollment in upper division courses is normally 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 chair. 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 university's recommendation.

Credit in any course is also subject to all restrictions that may appear in the *CSU, Fresno General Catalog.* For restrictions on graduate study, see *Division of Graduate Studies and Research—Master's Degrees,* pages 462–471.

Change of Major. Each undergraduate student who wishes to change his or her major must report to the Office of

Advising and Orientation to initiate the procedure. (International students report to the International Student Services Program Office). Graduate students and second/post-baccalaureate students should report to the graduate office.

Withdrawal From Courses. A student is held responsible for the program of courses in which he or she is officially registered. After registration no changes will be made or recorded until appropriate add or drop forms have been completed and filed at the Admissions-Records Office by the student. A student is urged to consult an adviser before making a program change. If the class is dropped before the end of the fourth week of classes, the course will not be recorded on the permanent record. The end of the fourth week is defined as the end of the twentieth instructional day of the semester.

After the fourth week of classes, a student may drop a course only for a serious and compelling reason that makes it impossible for the student to complete course requirements. A *serious and compelling reason* is defined as a medical, emotional, or other condition acceptable to and verified by the dean of the school in which the course is offered. The condition must be stated in writing on the drop form. Upon signing the form, the course instructor may add a written recommendation to the school dean in the space provided. The dean may require that the student provide written substantiation as deemed necessary. Failing or performing poorly in a class is not an acceptable *serious and compelling* reason within the university policy, nor is dissatisfaction with the subject matter, class, or instructor. When the drop form has been signed by the dean and processed according to instructions on the form, a *W* will be recorded on the student's transcript.

Dropping classes, except for total withdrawal, is not permitted during the final three weeks of instruction except in cases such as accident or serious illness where the cause of withdrawal is due to circumstances beyond the student's control. If the student has completed a significant portion of the required course work, *Incomplete* grades are often assigned in such cases. Normally, withdrawal from courses during the final three weeks of instruction involves a total withdrawal from the university. Withdrawal from the university is not permitted during the final examination period.

Non-Attendance. During the first week of classes, it is the responsibility of students to attend each class meeting of courses in which they are enrolled. Students absent from any class meeting during this period are responsible for personally contacting their instructor by the next class meeting to request being retained in the class.

In addition, as a courtesy to other students on class waiting lists and as a courtesy to the faculty, students who decide to drop a class should contact the instructor immediately. However, the student must not assume that the instructor will exercise his/her option to submit the Administrative Withdrawal Form. In short, it still is the student's responsibility to withdraw properly from any class he/she does not intend to complete. Failure to withdraw will result in the assignment of the appropriate failing grade, (*U* or *NC*).

Further, in order to permit a student on a waiting list to enroll in a class, a professor may drop from his/her class any student who is absent from any class session during the first week of classes and does not personally notify the professor by the next class meeting of his/her intent to remain in the course.



Preprofessional Preparation

Preprofessional programs are available for students who plan to transfer to other institutions for the completion of professional curricula in such fields as law, medicine, veterinary medicine, pharmacy, dentistry, optometry, forestry, theology, librarianship, chiropractic, and osteopathic and podiatric medicine. Certain of these programs are described below. Students planning to complete a preprofessional program and degree at CSU, Fresno must complete a major offered at this university. They should include their preprofessional area plus their university major on all registration forms; for example, premedical-chemistry, premedical-biology, prelaw-history, prelaw-political science. There are no preprofessional majors *per se.* Instead, preprofessional students work toward various university degrees and while doing so, knit into their college programs courses required for entry into professional school. Careful program planning is important in order to select proper classes and complete requirements in a timely way. Regular advising is essential since professional schools change their requirements occasionally. Preprofessional students should contact their respective major and preprofessional advisers before enrolling in classes each semester to stay abreast of current developments.

A current list of CSU, Fresno preprofessional advisers is available in the Office of Advising and Orientation.

Premedical. A student interested in preparing for medical school should declare his or her intent at the time he or she applies for admission to CSU, Fresno. To do this, it is necessary that the student use a term such as premedical-sociology, premedical-zoology, premedical-chemistry or premedical-general on all application, admittance, and registration papers. In case premedical-general is chosen, a specific subject major should be selected as soon as possible and not later than the sophomore year from the list of approved CSU, Fresno majors in the catalog, pages 102–103.

Requirements for admission to medical school vary considerably from one medical school to another and change from time to time, but a well-balanced liberal education is usually specified. Some aptitude and university training in science and English are essential in medicine. The minimum requirements in these subjects specified by most medical schools can be satisfied by specific courses in biology,

chemistry, physics, and English. Also calculus is required by some medical schools. Because of competition for admission to medical schools, a grade average of above 3.5 grade points is highly desirable. The Medical College Aptitude Test (MCAT) is required before a student can be accepted into medical school. It is recommended that the MCAT be taken and application for medical school be made at the end of the junior year.

Freshman, transfer, and all other students who are entering the program are advised to attend the premedical student orientation meeting scheduled prior to registration. (See *Advising and Orientation—Orientation*, p. 44.) Each student will be assigned to a member of the premedical advisory committee who will assist him or her in planning a program of courses and will advise him or her concerning preparatory procedures for application to medical school.

The Premedical Advisory Committee will mail to any interested student a booklet that covers the operation of the CSU, Fresno premedical program, courses required, and medical school admissions procedures. Write to: **Premedical Advisory Committee, California State University, Fresno; Fresno, CA 93740.**

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) for a total of 60 units. Each science course must include laboratory. The present trend among dental schools is to require more than two years of predental training including a broad liberal arts background. Since 1971, three years of predental training have been required by the University of California, San Francisco, and some other dental schools. Additional organic chemistry, quantitative chemical analysis, elementary physical chemistry, other zoology courses, and in some cases a foreign language and psychology are recommended or required. Several schools require a bachelor's degree for entrance. The American Dental Association Aptitude Test and evidence of physical fitness and good moral character are usually required. 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. Most fully accredited law schools require a bachelor's degree for admission. Since a prelegal program providing a broad cultural background is recommended by the law schools, any baccalaureate major, depending on the student's interest, may be chosen from the university offerings. (See *Degree Programs, Majors, and Minors,* pp. 102–103.) Law schools suggest courses, but not necessarily a major, in the following: written and oral English, American and English constitutional history, world history, accounting, business administration, elementary logic, mathematics, statistics, economics, political science, philosophy, science, and foreign language. For further information consult a prelaw 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 at least one modern foreign language is a requirement for admission to most graduate schools of librarianship; this requirement is normally satisfied by the successful completion of two college years of the language. Also, many schools now require a course in mathematics or statistics. In addition, a course in computer concepts is advisable. Students considering librarianship as a career should consult the prelibrary program adviser in the Henry Madden Library.

Preoptometry. California State University, Fresno provides courses for the completion of the first two years of a six-year optometry program. Most professional schools require junior standing and course work which includes two years of biology, one year of chemistry, mathematics, physics and English, and one semester of psychology and statistics with above average scholarship. Consult optometry school catalogs and the preoptometry adviser, Department of Physics, for further information.

The Optometry College Admission Test is required before application can be made to optometry school. Application should be made one year in advance of enrollment.

Prepharmacy. The first two years (prepharmacy) of a six-year pharmacy program may be completed at CSU, Fresno. All new and transfer students should indicate on application, admittance, and registration papers an interest in prepharmacy-biology. Most professional schools require a *C* average or better for a minimum of 60 semester units, including one year each of inorganic chemistry, physics, calculus, zoology, English composition, and literature; one semester of organic chemistry or quantitative analysis; and additional elective courses that are specified in certain areas by some schools. Students may elect to complete more than 60 semester units before applying to pharmacy school. A personal interview may be required of applicants by some schools. For other information see pharmacy school catalogs and consult the prepharmacy adviser in the Department of Biology.

Preveterinary. Students preparing for the veterinary profession can satisfy their preveterinary curriculum requirements at CSU, Fresno. Preveterinary students should plan to complete a B.S. degree in agricultural science (animal science) or a B.A. degree in biology prior to application to a school of veterinary medicine. Students should keep in mind, however, that adequate performance on the advanced biology portion of the Graduate Record Examination within five years prior to application is a major requirement for admission to veterinary school in California.

Courses recommended by the Department of Animal Science and Agricultural Education for its majors preparing for veterinary school include Animal Science 10, 65, 120, and 125; Chemistry 1A, 1B, 8, 109, and 150; Physiology 140; Physics 2A and 2B; Zoology 1 and 160. The School of Agriculture and Home Economics is equipped to provide valuable experience with large animals through the student project program. Admission to veterinary school in California requires about 20 week-equivalents (800 hours) of relevant animal experience in activities that specifically give the applicant an appreciation and understanding of the profession of veterinary medicine.

Students desiring further information regarding the preveterinary curriculum should consult the chair of the animal science department and/or the adviser in the biology department.

Business Office
Joyal Administration, Room 152
(209) 294-2764
Accounting Officer, Robert P. Vega

Schedule of Fees

Legal residents of California are not charged tuition. The following reflects applicable fees and nonresident tuition for both the quarter and the semester systems. (Fees are subject to change without advance notice.)

Application fee (Nonrefundable. Payable by check or money order at time of applying) $35.00
State university fee:
0 to 6.0 units 166.50
6.1 and more units 286.50
Facilities fee, all students, per semester 3.00
Nonresident * tuition fee (foreign and domestic), per semester *in addition to other fees:*
The total amount of nonresident tuition charged shall be based on the number of units taken, per unit or fraction thereof 141.00
Foreign visa student tuition fee—same as nonresident.
Extension, per unit:
Lecture or discussion course 62.00
Summer session courses, per unit 72.00

Other fees:
Identification card fee 2.00
Graduation fee 10.00
Diploma fee 10.00
Diploma replacement, duplicate/reissue 10.00
Transcript of record (4.00 first copy, 2.00 each additional copy) 4.00
Thesis binding fee (not a state fee), per copy (includes 35 sales tax) 6.50
Credential fee (*collected for Commission on Teacher Credentialing)* Varies. Check with Credential Office, School of Education and Human Development 35.00
Health Service fee (not a state fee), optional, per semester 10.00
Student Body Association fee, all students ** (not a state fee), per semester 15.00
Student Body Center fee, all students (not a state fee), per semester 38.00
Instructionally Related Activities Fee, per semester 10.00

Penalties:
Check returned for any cause 10.00
Late registration (in addition to student services fee) 25.00
Failure to meet administratively required appointment or time limit 10.00
Late filing of student programs 10.00
Late filing of application for degree 10.00
Lost or broken items ..... cost or $1.00 if cost is less than $1.00
Lost library items ..... replacement cost plus $10.00 service charge
Damaged library items ..... 50 up to replacement cost, plus $10.00 service charge

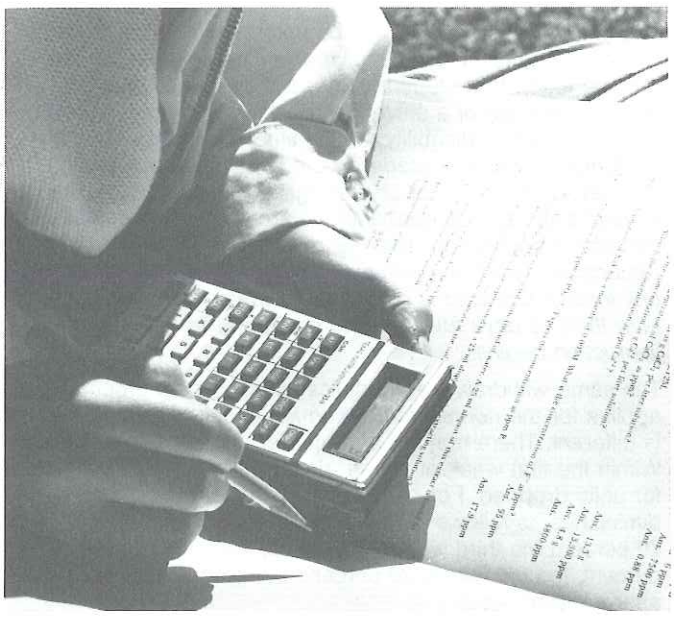
Residence Hall rates:
Room and board, per semester each student $1,383–1,641

Parking fees: decal (subject to change):
Fall and spring, per semester 33.75
Summer Session 22.50

*** NOTE.** 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 enrollment. The exact determination date may be ascertained by contacting the Admissions/Records Office.
**** NOTE.** The law governing The California State University provides that a student body fee may be established by student referendum with the approval of ⅔ of those students voting. The Student Body Fee was established at CSU, Fresno by student referendum on May 12, 1959. The same fee can be abolished by a similar ⅔ approval of students voting on a referendum called for by a petition signed by 10 percent of the regularly enrolled students. (*Education Code,* Section 89300). The level of the fee is set by the chancellor. An increase in the student body fee may be approved by the chancellor only following a referendum on the fee increase approved by a majority of students voting. Student body fees support a variety of cultural and recreational programs, child care centers, and special student support programs.

Alan Pattee Scholarships

Children of deceased public law enforcement or fire suppression employees, who were California residents and who were killed in the course of law enforcement or fire suppression duties, are not charged fees or tuition of any kind at any California State University campus, according to the Alan Pattee Scholarship Act, *Education Code* Section 68121. Students qualifying for these benefits are known as Alan Pattee scholars. For further information contact the Admission/Registrar's Office, which determines eligibility.



Refund of Fees

Fees may be refunded only as authorized by Section 41803 (parking fees), 41913 (nonresident tuition), 42019 (housing charges), and 41802 (all other fees) of *Title 5, California Administrative Code.* Whether a fee may be refunded and the circumstances under which a fee or any part of a fee may be refunded, vary depending on the particular fee involved. Requirements governing refund may include such matters as the reason for seeking a refund (for example, death, disability, compulsory military service), the number of days of instruction that have elapsed before application for refund is made, and the degree to which the campus has provided the services for which the fee has been charged.

The student must file a written application for refund of fees stating the reason for the refund request with the Admissions and Records Office. The application should be filed at the earliest possible date since the refund will be denied if submitted beyond certain time limits. For example, requests for refund of state university fee, student body organization fees, and student body center fees must be made no later than 14 days following the commencement of instruction and requests for refund of extension course tuition fees must be made prior to the fourth meeting of the class.

Details concerning the fees that may be refunded, the circumstances under which fees may be refunded, and the appropriate procedure to be followed in seeking refunds may be obtained from the university Accounting Office, Joyal 181, (209) 294-2876.

Registration Fees. After a student makes a formal withdrawal from the university through the Student Records Office, a refund of a portion of the *state university fee* may be made if a written application for refund is filed not later than 14 calendar days after the first day of instruction. A student shall make the application personally; if in the opinion of the administration, he or she is unable to do so, the parents or guardian of the student who is a minor, or the legal representative of the student may make the application. (See *California Administrative Code, Title 5, Section 41802.)*

The amount of the refund will be determined by the Business Office by deducting $10.00 for registration costs. A full refund may be made to a student who is unable to continue a course, because of a university regulation, compulsory military service, death or disability, at any time prior to the date the student receives any academic credit for any course or courses for which he or she is registered less $10.00. The student body and student activity cards must be turned in with the refund application. The *late registration fee* is not refundable. *There is a refund for a reduction in the student's unit load, if unit load is reduced to a lower fee category not later than 14 days following the day of the term when instruction begins.*

The same withdrawal and application for refund procedure applies for the *nonresident tuition fee* except that the time limit is different. There may be a refund for reduction in unit load. Within the first week of the session, a full refund may be made for units dropped. 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.

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 the student files with the Business Office a written application for refund and returns all documents issued to him or her by the university which evidence their right to use the parking facility including any parking permit, stickers, and decal so issued. If the decal is attached to a vehicle and the vehicle is presented to the university for removal of the attached item by or under the direction of the state, such presentation and removal shall constitute return of the attached item.

Beginning with the first day of instruction, 75 percent of the parking 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 semester.

Housing Facility Fees. The licensee of a residence hall facility in instances of cancellation, revocation, or vacating shall owe fees as provided in Section 42019 of *Title 5* of the *California Administrative Code* regardless of whether the licensee ever assumed actual occupancy and regardless of whether a licensee who has assumed actual occupancy moves out prior to the designated period of obligation. The university shall refund all money collected in excess of such obligation as soon as reasonably possible. A copy of *Title 5,* Section 42019 is available in the Henry Madden Library, Student Affairs Office, and Housing Office.

Estimate of Expenses

The basic expenses for attendance at CSU, Fresno for a year (two semesters) for full-time students who live away from home will range from approximately $4,200 to $5,200. These figures are exclusive of nonresident tuition fee, but include an estimate of such personal items as clothes, laundry, and incidental expenditures. Students who live at home or share apartments with other students and commute to the campus are able to reduce their expenses considerably below the estimated figure. The cost of room and board may also be reduced by cooperative living arrangements or part-time work in exchange for room and board.

Room and Board	$2,936–3,478
Registration Fees	720
Books and Supplies	170–325

Average Annual Cost of Education and Sources of Funds per Full-Time Equivalent Student. The 19 campuses and the Chancellor's Office of The California State University are financed primarily through funding provided by the taxpayers of California. The total state appropriation to the CSU for 1986/87, including capital outlay and employee compensation increases, is $1,500,409,000. The total cost of education for CSU, however, is $1,649,146,315 which provides support for a projected 247,855 full-time equivalent (FTE)[a] students.

The total cost of education in the CSU is defined as the expenditures for current operations, including payments made to the students in the form of financial aid, and all fully reimbursed programs contained in state appropriations, but excluding capital outlay appropriations. The average cost of education is determined by dividing the total cost by the total F.T.E.s. The average cost is further differentiated into three categories: state support (the state appropriation, excluding capital outlay), student fee support, and support from other sources (including federal funds).

Thus, excluding costs that relate to capital outlay (i.e., building amortization), the average cost of education per F.T.E. student



is $6,654. Of this amount, the average student fee support per F.T.E. is $872. The calculation for this latter amount includes the amount paid by nonresident students.

Source of Funds and Average Costs for 1986/87 CSU Budget (Projected Enrollment: 247,855 F.T.E.)

	Amount	*Average Cost Per Student (F.T.E.)*[a]	*Percentage*
TOTAL COST OF EDUCATION . .	$1,649,146,315[b]	$6,654	100.0
—State Appropriation	1,389,847,000[c]	5,607	84.3
—Student Fee Support.	216,047,708	872[d]	13.1
—Support from Other Sources . . .	43,251,607	175	2.6

[a] For budgetary purposes, full-time equivalent (F.T.E.) translates total head count into total academic student load equivalent to 15 units per term. Some students enroll for more than 15 units; some students enroll for fewer than 15 units.

[b] The total cost of education does not include the amount related to lottery and the capital investment of the CSU. The estimated replacement cost of all the system's permanent facilities and equipment on the 19 campuses is currently valued at $5.3 billion, excluding the cost of land.

[c] This figure does not include the capital outlay appropriation of $110,562,000.

[d] The average costs paid by a student include the state university fee, student services fee; application fee, catalog fee, and nonresident tuition. Individual students may pay less than $872 depending on whether they are part-time, full-time, resident, or nonresident students.

Debts Owed to the Institution

Should a student or former student fail to pay a debt owed to the institution, the institution may "withhold permission to register, to use facilities for which a fee is authorized to be charged, to receive services, materials, food or merchandise, or any combination of the above from any person owing a debt" until the debt is paid (see Title 5, *California Administrative Code,* Sections 42380 and 42381). For example, the institution may withhold permission to receive official transcripts of grades from any person owing a debt. If a student believes that he or she does not owe all or part of an unpaid obligation, the student should contact the campus business office. The business office, or another office on campus to which the student may be referred by the business office, will review the pertinent information, including information the student may wish to present, and will advise the student of its conclusions with respect to the debt.

V.I.P. Bike Registration. The Volunteer Indentification Program is available free of charge on the CSU, Fresno campus. With this service your bike will be engraved with your drivers license number, or a serial number and will be listed on a statewide computer system if stolen. Forms for V.I.P. registration are available at the College Union information desk, the residence halls and the Commons #4 Office, and the Campus Security Office.

Financial Aids

Financial Aids Office
Joyal Administration, Room 296
(209) 294-2182
Director, Joseph W. Heuston

The purpose of the Financial Aids Office is to provide assistance to eligible students. All financial aid is awarded on the basis of need. Preference is always given to those who demonstrate the greatest need. Aid recipients must be citizens or permanent residents of the United States. They must be accepted and enrolled in a degree-granting program. They must be in good academic standing and making satisfactory progress toward that degree.

The following information concerning student financial assistance may be obtained from the Financial Aids Office:

1. Student financial assistance programs available to students who enroll at CSU, Fresno;
2. The method by which such assistance is distributed among student recipients who enroll at CSU, Fresno;
3. The means, including forms, by which application for student financial assistance is made and requirements for accurately preparing such application;
4. The rights and responsibilities of students receiving financial assistance; and
5. The standards that the student must maintain in order to be considered to be making satisfactory progress for the purpose of establishing and maintaining eligibility for financial assistance.

The following information concerning the cost of attending CSU, Fresno is also available from the Financial Aids Office:

1. Fees and tuition (where applicable);
2. Estimated costs of books and supplies;
3. Estimates of typical student room and board costs or typical commuting costs; and
4. Any additional costs of the program in which the student is enrolled or expresses a specific interest.

Financial Aid Programs

University Association and Foundation Loan Funds. The university operates an Emergency Loan Fund to assist students who need up to $200 for emergency expenses that are educationally related. These loans have to be repaid within 60 days or at the end of the semester, whichever comes first. Loans are granted on the basis of the students' need, educational program, and ability to repay. There are also available limited funds for loans up to $500 repayable after graduation. These funds, however, are restricted to "worthy upper division and graduate students majoring in education and working for a teacher's credential at CSU, Fresno." The funds for these programs have been provided by gifts to the university.

Applications for loans are processed through the **Student Aid Accounting, Joyal Administration Building, Room 275, California State University, Fresno; Fresno, CA 93740.**

Waivers of Nonresident Fees. Upon written waiver by the dean of student affairs or the director of admissions and records, children or spouses of California State University full-time employees, who are not yet legal residents of California, may be exempted from the nonresident fee.

With verification by the dean of the School of Education, *certificated California school district employees* who are not yet legal residents of California, may be exempted from the nonresident fee if they are provisionally credentialed and working toward regular credentials, completing postponed requirements, or completing the fifth year required under the *Teacher Preparation and Licensing Law of 1970 (Ryan Act)*.

Scholarships and Grants. About 650 scholarships and grants totaling approximately $410,000 will be available for this academic year. Scholarships ranging from $100 to $1,500 are available to both undergraduate and graduate students.

Although requirements for specific scholarships vary, most scholarships require academic achievement or potential plus a demonstration of the students' commitment to their school, community, or society. Financial need may be a factor but is seldom the exclusive factor.

Scholarship applications are available after November 1. February 1, is the last day to submit a scholarship application. Successful applicants will be notified by July 30.

The application, titled *Scholarship Application and Information,* is available at the **scholarship coordinator's desk, Joyal Administration Building, Room 298.**

Supplemental Educational Opportunity Grants. CSU, Fresno participates in the Supplemental Educational Opportunity Grant Program as provided by the Higher Education Amendment of 1980. Undergraduate students who qualify will receive grants ranging from $200 to $2,000. Applications are available from the Financial Aids Office and should be made by March 1.

Air Force Reserve Officer Training Corps (A.F.R.O.T.C.) Financial Aid and Scholarships. Scholarships are available that provide full tuition, allowances for books, laboratory fees, and incidental fees.

The A.F.R.O.T.C. program at CSU, Fresno offers both a four-year and a two-year A.F.R.O.T.C. program. High school seniors should apply for a four-year scholarship during the fall of the senior year. Any students enrolled in the four-year program may also apply for 3½, 3, 2½ and 2-year awards. Applicants to the two-year program may apply for scholarships to a maximum of four semesters.

Students enrolled in the two-year A.F.R.O.T.C. program receive $100 per month nontaxable financial assistance up to a maximum of $2,000.

Two-year applicants attend a six-week field training prior to enrolling in A.F.R.O.T.C. and are paid approximately $587 plus travel pay to and from the field training location, and are provided meals and housing while in attendance.

Applicants with prior military service and four-year program

students who have successfully completed the first two years of the program, and are accepted into the Professional Officer Course, attend a four-week field training for which they receive approximately $391 plus travel, meals, and housing.

Applications should be submitted to the Professor of Aerospace Studies during the fall semester one year prior to anticipated enrollment in A.F.R.O.T.C. Detailed information concerning A.F.R.O.T.C. can be obtained by calling the **Department of Aerospace Studies (294-2593)** or by visiting the **Air Science Wing, North Gymnasium, Room 158.**

Army Reserve Officer Training Corps (R.O.T.C.) Financial Aid and Scholarships. Scholarships are available that pay full tuition, fees, and textbook allowance of $187.50 per semester. Scholarship winners also receive $100 per month of non-taxable financial assistance.

There are three types of scholarships available: four, three, and two year. Four year scholarships are only available to high school seniors and first-semester college freshmen. Applications are due by the first of December. Three and two year scholarships are awarded respectively to college freshmen and sophomores. These applications are due by the first of March of each year. Scholarship recipients must be under 25 years of age when they graduate.

Financial assistance is also available to non-scholarship students that are enrolled in the advanced R.O.T.C. Program. These students receive a tax free allowance of $100. Student/cadets can join an Army Reserve unit as an officer apprentice and receive $120 per month and an additional $140 a month for being a full-time student. Army R.O.T.C. students also attend a six week leadership camp at Fort Lewis, Washington, between their junior and senior years that pays approximately $670 plus travel, meals, and housing.

Applications or further information about scholarships or financial assistance should be directed to the **Professor of Military Science (294-2887), North Gymnasium, Room 211.**

National Direct Student Loan Program. CSU, Fresno participates in the federal loan program that is provided for in Title IV, Part E, of the Higher Education Act of 1965. Under this program needy undergraduate students in any field of study may borrow up to a maximum of $6,000, and needy graduate students may borrow up to a combined maximum of $12,000. Students carrying at least a one-half academic workload are eligible to apply for these loans. Students entering the university for the first time as well as continuing students are eligible to apply for this type of loan.

No interest is charged until six months after the borrower ceases to be at least a one-half time student. (Because interest rates have changed a number of times, it is in the best interest of the student to contact the Financial Aids Office for precise information on the current interest rate.) Payments may extend for a period of not more than ten years, but will be at a rate of not less than $30 per month.

A borrower who becomes a teacher in a public or other nonprofit elementary or secondary school in which there is a high concentration of low income families as designated by the commissioner or who becomes a teacher in special education (hard of hearing, mentally retarded, cerebral palsy, etc., classes) may have 15 percent of the loan cancelled for the first and second year of such service, 20 percent for the third and fourth year, and 30 percent for the fifth year. A borrower shall receive cancellation for service after June 30, 1972, as a member of the United States armed forces, at the rate of 12½ percent per year for each complete year of service in an area of hostilities for a total of 4 years.

Applications are available from the Financial Aids Office and should be made by March 1.

Nursing Student Loans. Under this program, a student who can show that a loan is needed to enter or continue in the nursing program may borrow up to $2,500 an academic year or its equivalent, with an aggregate maximum of $10,000.



Preference will be given to licensed practical nurses in selecting loan recipients. No interest is charged while the borrower pursues at least a half-time course of study, or for a period of 9 months after leaving school. Interest then starts at 6 percent simple interest and the loan is repaid at not less than $15 per month. Interest and payments are deferred for a period of time while the borrower is a member of the uniformed service or is a volunteer under the Peace Corps Act.

Applications are available from the Financial Aids Office and should be made by March 1.

California Guaranteed Student Loan Programs. The California Guaranteed Student Loan Programs enable students with financial need to borrow to help pay educational costs. Under this program, the state and federal governments insure loans from participating lending institutions (banks, credit unions, savings and loans associations, etc.). Depending on the lender, undergraduates who qualify may borrow up to $2,500; students accepted into a graduate program may borrow up to $5,000 per year. The total outstanding principal balance for undergraduates may not exceed $12,500 at any time and $25,000 for graduates.* Simple interest at the rate of 7 percent/9 percent per annum is charged on loans for students who have previous outstanding loans at 7 percent/9 percent per annum, and 8 percent is charged for all new loans. (Because interest rates have changed a number of times, it is in the best interest of the student to contact the Financial Aids Office for precise information on the current interest rate.) The federal government will pay this interest until the student borrower enters the loan repayment period. Applications may be obtained from the Financial Aids Office.

College Work-Study Program. CSU, Fresno participates in the College Work-Study Program under the Higher Education Amendments of 1980. Students who qualify may be offered employment on or off campus. The student would normally work between 10 and 20 hours per week. Applications are available from the Financial Aids Office and should be made by March 1.

Resident Advisers. The university employs a number of students as advisers in its residence hall program. These positions are available to students whose interest and background indicate competence in this type of work. The stipends vary, depending upon the work assignment. Generally they cover the cost of residence hall room and board. Applications and further information are available at the beginning of the spring semester from the director of housing.

Graduate Assistantships. A number of graduate and teaching assistantships are available to students who are enrolled in a master's degree program and whose previous records show outstanding achievement in academic work, outstanding subject matter competence in the major field, and the special qualities necessary to the duties assigned. An assistant may receive a stipend ranging from $3,736 to $4,063 for 20 hours per week of work during the academic year. Some assistantships may be for reduced time and carry prorated stipends. For information write to the dean, Division of Graduate Studies and Research or your department chair, specifying field of graduate study and any special abilities that might justify assignment as a graduate assistant.

Pell. The Pell Grant Program, formerly known as Basic Educational Opportunity Grant Program (Basic Grants), is a program of student financial aid that was authorized by *Title IV, Part A,* of the *Education Amendments of 1972.* This program provides grants for all eligible students to assist them in meeting educational costs. Program regulations change from year to year. Check with the Financial Aids Office for the regulations now in effect. Students may apply by filling out the Student Aid Application for California or the Application for Federal Student Aid. Forms are available at high schools, community colleges, and CSU, Fresno Financial Aids Office.

Bureau of Indian Affairs (B.I.A.) Grants. If you are at least one-fourth American Indian, Eskimo, or Aleut, as recognized by a tribal group served by the Bureau of Indian Affairs, you may apply for a B.I.A. grant. The amount is based on financial need and availability of funds from your area agency. You must first submit an application for financial aid and supportive documents. Obtain an application from your area agency, or the Financial Aids Office, then see the B.I.A. adviser in the Financial Aids Office to complete the B.I.A. application.

California State Educational Opportunity Grant Program (State E.O.P.). Educational Opportunity Program Grants are provided by the State of California for students admitted to any one of the 19 campuses of The California State University under the Educational Opportunity Program. Eligibility for this grant is determined by criteria similar to that which governs federal financial aid programs. Admission to the university through the E.O.P. does not automatically mean that the student will be awarded a State E.O.P. Grant.

Grants provide aid to undergraduate students who, for lack of such assistance, would be unable to enter or remain in an institution of higher education. Funds are limited and are awarded to E.O.P. students who come from low income families and demonstrate financial aid eligibility. E.O.P. grants range from $200 to $1,000 for the academic year. Applications may be obtained from the Financial Aids Office, CSU, Fresno. The application deadline is March 1.

Graduate Student Research and Travel Grants. Limited funds derived from Graduate Studies Continuation enrollment are available on a competitive basis to students in the form of grants for research associated with the thesis or project. Travel grants are available to graduate students who have had a paper accepted to be read at a major, professional conference. For further information, telephone the **graduate division 294-2448.**

California State University Grant. To provide financial support to students equal to the assessed State University Fee. This is a need-based program for California residents. Eligibility for this grant is determined by criteria similar to but not limited to that which governs federal financial aid programs.

Graduate Equity Fellowship Program for Underrepresented Students. In an effort to overcome underrepresentation, some funds are available to students in a master's degree program providing these students satisfy all required criteria. Recipients are 1) required to maintain a grade point average of 3.0 or better, 2) belong to one of the following underrepresented groups: Black, Chicano/Mexican American, other Hispanic, American Indian, Filipino, Pacific Islander, or women in a master's program in which men predominate; disabled students may also qualify. 3) qualify as a resident of the State of California for payment of fees at the university, 4) be prepared to demonstrate financial need.

* The $25,000 graduate ceiling includes indebtedness incurred as a undergraduate.

Further information on this program may be obtained in the Financial Aids Office or the graduate division.

Application Procedures and Requirements

There are basically four separate applications that students may submit for financial aid:

1. **To apply for institutionally administered funds** (National Direct Student Loan, College Work Study, Supplemental Educational Opportunity Grant, Educational Opportunity Grant, State University Grant, Nursing Loan) and the Pell Grant, you must submit:
   - A Student Aid Application for California (SAAC) before March 1 preceding the academic year for which you are applying. There is a charge (payable to the College Scholarship Service) for processing the application.
   - A signed copy of your parents' I.R.S. Form 1040, 1040A, or 1040EZ with all schedules. Independent students should submit a signed copy of their I.R.S. Form 1040, 1040A, or 1040EZ with all schedules and an Affidavit of Non-support.
   - A Financial Aid Transcript from all other post-secondary institutions attended whether or not you received financial aid. (This form is available in the Financial Aids Office.)
   - Any other forms requested by the Financial Aids Office.
2. **When applying for the Guaranteed Student Loan,** submit:
   - Student Aid Application for California (S.A.A.C.). There is a charge (payable to the College Scholarship Service) for processing the application.
   - A signed copy of your parents' I.R.S. Form 1040, 1040A, or 1040EZ, including all schedules. Independent students should submit a signed copy of their I.R.S. Form 1040, 1040A, or 1040EZ with all schedules and an Affidavit of Non-support.
   - A Financial Aid Transcript from all other post-secondary institutions attended whether or not you received financial aid. (This form is available in the Financial Aids Office.)
   - CSU, Fresno Guaranteed Student Loan application packet (available at the Financial Aids Office).
   - Any other forms requested by the Financial Aids Office.

   Applications will be accepted up to 90 days prior to the end of the term for which the application is filed.
3. **When applying *only* for a Pell Grant,** submit the form titled "Application for Federal Student Aid." Applications should be filed 30 days prior to the end of the enrollment period. You must submit:
   - A signed copy of your parents' I.R.S. Form 1040, 1040A, or 1040EZ, with all schedules. Independent students should submit a signed copy of their I.R.S. Form 1040, 1040A, or 1040EZ with all schedules and an Affidavit of Non-support.
   - A Financial Aid Transcript from all other post-secondary institutions attended whether or not you received financial aid. (This form is available in the Financial Aids Office.)
   - Any other forms requested by the Financial Aids Office.
4. **Applications for a CSU, Fresno scholarship** should be filed before February 1. (The Scholarship Application form is available in the Financial Aids Office after November 1.) There is no charge for submitting this form.

Institutional and Financial Assistance

The following information concerning student financial assistance may be obtained from Joseph W. Heuston, director of financial aids, Joyal Administration Building, Room 298, (209) 294-2182:

1. student financial assistance programs available to students who enroll at CSU, Fresno;
2. the methods by which such assistance is distributed among recipients who enroll at CSU, Fresno;
3. the means, including forms, by which application for student financial assistance is made and requirements for accurately preparing such application;
4. the rights and responsibilities of students receiving financial assistance; and
5. the standards the student must maintain to be considered to be making satisfactory progress for the purpose of establishing and maintaining eligibility for financial assistance.

The following information concerning the cost of attending CSU, Fresno is available from Robert P. Vega, accounting officer, Joyal Administration Building, Room 152, (209) 294-2764:

1. fees and tuition (where applicable);
2. estimated costs of books and supplies;
3. estimates of typical student room and board costs or typical commuting costs; and
4. any additional costs of the program in which the student is enrolled or expresses a specific interest.
5. the refund policy for the return of unearned tuition and fees or other refundable portions of costs.

Information concerning the refund policy of CSU, Fresno for the return of unearned tuition and fees or other refundable portions of costs is available from Robert Vega, accounting officer, Joyal Administration Building, Room 152, (209) 294-2764.

Information concerning the academic programs of CSU, Fresno may be obtained from J. Leonard Salazar, vice president for academic affairs, Thomas Administration Building, Room 110, (209) 294-4775 and may include:

1. the current degree programs and other educational and training programs;
2. the instructional, laboratory, and other physical plant facilities that relate to the academic program;
3. the faculty and other instructional personnel;
4. data regarding student retention at CSU, Fresno and, if available, the number and percentage of students completing the program in which the student is enrolled or expressed interest; and
5. the names of associations, agencies, or governmental bodies that accredit, approve, or license the institution and its programs, and the procedures under which any current or prospective student may obtain or review upon request a copy of the documents describing the institution's accreditation, approval, or licensing.

Information regarding special facilities and services available to handicapped students may be obtained from Weldon W. Percy, coordinator of Disabled Students Services, Main Cafeteria West 125, (209) 294-2811.





ACADEMIC REGULATIONS

Academic Regulations

California State University, Fresno is authorized to grant the Bachelor of Arts, Bachelor of Science, Bachelor of Vocational Education, Master of Arts, Master of Science, Master of Business Administration, Master of City and Regional Planning, Master of Public Administration, and Master of Social Work degrees. See *School of Education and Human Development*, pages 123–124, for public school credentials for which the university is authorized to recommend candidates.

Definition of Key Terms

Additional Requirements. Courses from one or more departments or programs outside the major department or program that are required for preparatory or foundational purposes. Such courses are not included in the minimum 2.0 grade point average required for graduation in the major and may be waived or substituted at the discretion of the major department or program. Additional requirements normally may be applied toward a minor. Additional requirements may also be applied toward General Education unless specifically prohibited by the major department.

Core. **a)** One of the three main parts of the current General Education Program; **b)** also, a common set of courses within a major or minor that all students are required to complete.

Capstone. Capstone is part of General Education. The courses used to satisfy the Capstone requirement provide an interdisciplinary experience in which the skills and knowledge developed in CORE and BREADTH are integrated and their interrelationships are brought into focus. The Capstone requirement may be met by completing a minimum of six units in specific upper-division, interdisciplinary courses or by completing a minimum of six units in a single cluster of interrelated upper-division courses.

Concurrent Enrollment. The term *concurrent enrollment* is used to describe several different types of enrollment:

1) *Concurrent Enrollment through Extension.* Nonmatriculated students may enroll in regular CSU, Fresno classes through the Division of Extended Education. Students attend classes concurrently with matriculated students. (See *Division of Extended Education,* pp. 458–460.)
2) *Concurrent Enrollment at Other CSU Campuses.* CSU students may attend two CSU campuses simultaneously. This type of enrollment is not often used by CSU, Fresno students because of the distance to other CSU campuses. (See the registrar for details.)
3) *Concurrent Enrollment at Another (non-CSU) College.* Approval for concurrent enrollment at another college must be obtained from the registrar before the end of the second week of instruction. Transfer credit will not be awarded unless permission is obtained. Normally permission for this kind of concurrent registration will not be granted for a class that is offered at CSU, Fresno.

Double-Counting. Allowing one course to fulfill two separate requirements concurrently; e.g., allowing one course to fulfill both a major requirement and the Upper Division Writing Skills requirement, or allowing one course to fulfill both a major requirement and General Education CORE or BREADTH requirement.

The following double-counting policy pertains to General Education: The completion of both General Education and a major is required for a degree. The goal of General Education is to ensure a background that has solid foundations and broad scope. A student's major provides depth in a specific area, some foundations of which are in other disciplines.



Therefore: **a)** CORE may be used to satisfy any degree requirements. **b)** A maximum of two General Education courses from one department or program (ethnic studies, women's studies, child development, etc.) may be applied to satisfy BREADTH requirements. A department or program may prohibit any General Education BREADTH course from simultaneously satisfying its own departmental or programmatic requirements. **c)** Courses used to satisfy CAPSTONE may not be used to satisfy requirements for the major.

Electives. Courses/units a student selects to complete requirements for a major, minor, and/or total units for the baccalaureate degree.

Major. Selection of courses from one or more departments designed to provide students with the knowledge, skills, and experiences necessary to pursue a specific career and/or advanced study. A student must earn a 2.0 grade point average in all courses required for the major, except "additional requirements," in order to graduate. (Minimum Title 5 requirements: *B.A. degree*—24 units of which 12 must be upper division exclusive of General Education; *B.S. degree*—36 units of which 18 must be upper division exclusive of General Education.)

Minor. Selection of courses from one or more departments or programs but less comprehensive than the major. Courses fulfilling requirements for a minor usually may be counted toward General Education. Refer to the description of the specific minor for exceptions. Courses in a major cannot be applied toward a minor unless designated as "additional requirements."

A minor may be earned only at the time a student earns the first baccalaureate degree.

Option. Selection of courses within a school, department, or program in addition to CORE courses that emphasizes one important aspect of that school, department, or program.

Prerequisite Requirements. **a)** Course or courses that must be completed before a higher level course may be taken, sometimes allowed by the instructor to be taken concurrently; **b)** Courses outside the major department that must be completed before admission to the major.

Recommended Courses. Courses that the department faculty believe would be beneficial for a student to take but are not mandated or required as part of the major.

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. Also, two hours of activity or studio (art, dance, music, physical education) are normally equivalent to one unit of credit.

Choice of Catalog (Election of Regulations)

An undergraduate student must fulfill degree requirements from one catalog, not the most favorable requirements from two or more catalogs. As long as a student maintains "continuous attendance,"* he or she may elect, for purposes of fulfilling graduation requirements,

a) the catalog in effect at the time a student begins attending a California public community college or California State University campus, or

b) the catalog in effect at the time a student begins attending CSU, Fresno, or

c) the catalog in effect at the time the student graduates from CSU, Fresno.

* **NOTE:** A student may not begin "continuous attendance" while still enrolled in high school.

> **"After a while, you realize that even professors have to ask questions too."**
>
> *— Sophomore, History*

Continuous attendance is defined as being officially enrolled at least one semester or two quarters during a calendar year regardless of the number of units completed. Also, a student is considered to have been in attendance even if he or she registered and totally withdrew from school during that semester/quarter as long as the official transcript so indicates. Any break in attendance of one calendar year or longer will break a student's continuous attendance status. Once a student establishes catalog rights in the CSU or California Community College System, he/she may attend any accredited college or university not to exceed two years and maintain catalog rights. A planned educational leave will maintain a student's continuous attendance status (see *Planned Educational Leave of Absence,* pp. 92–93).

Graduate (master's) students fulfill requirements based on an approved advancement to candidacy petition. These requirements are based on departmental and university requirements as published in the current catalog at the time of advancement. Continuous enrollment is likewise defined differently for master's students (see *Division of Graduate Studies and Research,* pp. 462–471).

Transcript Evaluation

Undergraduate transfer students will be evaluated under the degree requirements listed in the general catalog at the time he or she enters CSU, Fresno unless eligible for the 1980–81 or earlier catalog.

The advanced standing evaluation will be mailed to the student's mailing address sometime during the first semester of attendance assuming all transfer transcripts are on file. Upon completion of approximately 90 semester units, each student *should request* a 90 unit degree evaluation from the Evaluations Office. This evaluation will show all requirements completed and any remaining baccalaureate degree requirements. Only one degree evaluation can be made for each student. Each student should keep his or her personal copy current. All transcripts submitted in support of an application for admission become the property of the Records Office and are not returnable, even on loan. Students are strongly encouraged to obtain duplicate copies of their records from high school and prior college attendance for their personal file. Students also are strongly encouraged to request a general education certification (partial or full) from the California community college and/or California State University campus that they attended prior to enrolling in CSU, Fresno. The certification should be requested at the time final college transcripts are requested.

Grade Symbols and Grade Points

A—Excellent. Performance of the student has demonstrated the highest level of competence, showing sustained superiority in meeting all stated course objectives and responsibilities and exhibiting a very high degree of intellectual initiative.
(4 grade points per unit)

B—Very Good.[1] Performance of the student has demonstrated a high level of competence, showing sustained superiority in meeting all stated course objectives and responsibilities and exhibiting a high degree of intellectual initiative.
(3 grade points per unit)

C—Satisfactory.[2] Performance of the student has demonstrated a satisfactory level of competence, showing an adequate level of understanding of course objectives, responsibilities, and comprehension of course intent.
(2 grade points per unit)

D—Unsatisfactory.[2, 3] Performance of the student has been unsatisfactory, showing inadequacy in meeting basic course objectives, responsibilities, and comprehension of course content.
(1 grade point per unit)

F—Failure. Fails to meet course objectives. Work at this level does not meet requirements for credit toward a degree.
(0 grade points per unit)

U—Failure—Unauthorized Withdrawal.[4] The symbol *U* indicates that an enrolled student did not complete course requirements and did not properly withdraw from the course. It is assigned when, in the opinion of the instructor, completed assignments or course activities, or both were insufficient to make normal evaluation of academic performance possible.
(0 grade points per unit)

CR—Credit for units allowed, work of *A, B,* or *C* quality in undergraduate courses and *A* or *B* quality in post-baccalaurate courses.
(0 points per unit; units allowed counted)

NC—No credit for units registered for, work of *D* or *F* quality in undergraduate courses and *C, D,* or *F* quality in 200-level courses. Replaces *I* grade in courses where *CR-NC* grading is used if required work is not completed within required time.
(0 points per unit; no units allowed)

W—Withdrawal after the fourth week of instruction.
(Not used in grade point calculation)

I—Incomplete. Semester requirements at least two-thirds complete with work of passing grade.
(Not used in grade point calculation.) See *Incomplete Grade—Explanation,* which follows.

RD—Report delayed.
(Not used in grade point calculation)

SP—Satisfactory progress—Continuing work in progress.
(No units allowed and not included in grade point calculation until grade is assigned.)

AU—Audit.
(Grade indicates student's status as auditor and does not earn degree credit.)

NOTES:
[1] Master's degree candidates are reminded that a *B* (3.00) average is required in the master's degree program and for all courses (related and unrelated; lower division, upper division, and graduate) taken concurrent with the master's degree program.
[2] Undergraduate students are reminded that a *C* (2.00) average is required for all courses taken everywhere, all courses taken at CSU, Fresno, and all courses in the major in order to graduate with a baccalaureate degree. Students majoring in engineering, nursing, and physical therapy are subject to more stringent grading requirements.
[3] Master's degree candidates are reminded that a *D* is not accepted toward any master's degree program.
[4] A *U* is assigned only for courses graded *A* through *F*. The course can be repeated and, for undergraduate students only, the new grade may be substituted for the *U* by petition. (See *Repeating Courses,* p. 92.)

Explanation of Grades

Audit Status (AU). Persons wishing to attend classes without matriculating or receiving college credit may register as auditors. Auditors must register during the late registration period. Students enrolled in audit status only may not transfer to credit status without completing admission procedures. This must be done within the first two weeks of instruction.

Matriculated students may audit courses in addition to those in which they are registered for credit.

Enrollment in a course as an auditor shall be permitted only after students otherwise eligible to enroll on a credit basis have had an opportunity to do so. Auditors are subject to the same fee structure as credit students. Regular class attendance is expected and the student may be required to participate in any or all classroom activities at the discretion of the instructor. An audited course will not be listed on the student's permanent record if the requirements for auditing the class are not met. Once enrolled as an auditor, a student may not change to credit status unless such a change is requested prior to the last day to add classes. A student who is enrolled for credit may not change to audit after the fourth week of instruction.

Credit for courses audited will not subsequently be granted on the basis of the audit. (See current *Schedule of Courses.*)

Credit-No Credit Grading (CR-NC). The credit no-credit grading policy at CSU, Fresno is designed to encourage academic exploration outside the major field of study. The policy also recognizes that in certain types of courses, student performance is best evaluated in terms of credit no-credit grading rather than through the traditional letter grades.

Neither the *CR* nor *NC* grade is included in the calculation of the grade point average. The grade of *CR* will be assigned if the student's work is judged to be equivalent to an *A, B,* or *C* grade as applicable to regular enrollment in an undergraduate course or equivalent to an *A* or *B* grade in a 200-level course. The *NC* grade will be assigned if the student's work is not equivalent to these standards.

1. General conditions and limitations:
   Some courses are not available for *CR-NC* grading, (See individual course description), while others are designated as available for *CR-NC* grading; *only.* All other courses are available for *CR-NC* grading; however, a student may not elect more than 6 units of *CR-NC* graded coursework per semester. The decision to enroll for *CR-NC* grading must be made prior to the end of the fourth week of instruction and the decision must be recorded by the student at the Student Records Office.
2. Undergraduate Students:
   A student may not elect *CR-NC* graded course work to

satisfy requirements for the major unless the courses have been designated *CR-NC only*. A maximum of 24 semester units at CSU, Fresno of *CR-NC* evaluated credit, including all course work taken *CR-NC only,* may be applied toward the degree. Exception: Up to 12 units of *CR-NC* credit for lower- or upper-division course work may be applied to the liberal studies major.

3. Graduate Students:
   Credit for course work earned through *CR-NC* in fall 1978 and in subsequent semesters may not be applied toward the master's degree unless the course has been designated as available for *CR-NC only* by the Graduate Council. A maximum of 6 units of *CR-NC only* credit may be applied to a 30-unit master's degree program and a maximum of 12 units of *CR-NC only* credit may be applied to a 60-unit program.

See the current *Schedule of Courses* for further information.

Incomplete (I). The symbol *I* (Incomplete Authorized) indicates that a portion of required course work has not been completed and evaluated in the prescribed time period due to unforeseen, but fully justified, reasons and that there is still a possibility of earning credit. It is the responsibility of the student to bring pertinent information to the attention of the instructor before the end of the semester and to determine from the instructor the remaining course requirements that must be satisfied to remove the Incomplete. A final grade is assigned when the work agreed upon has been completed and evaluated. Reregistration in the course is *not* used to remove an *I* grade.

Normally it is expected that the student will make up an *I* grade during the next semester; however, it must be made up within one calendar year immediately following the end of the term during which it was assigned. This limitation prevails whether or not the student maintains continuous enrollment. An extension of time may be granted with justification by contacting the registrar prior to the end of the second semester.

Failure to complete the assigned work will result in the *I* being counted as a failing grade for grade point average and progress point computation. An *I* grade not made up within one calendar year after the grade has been recorded will be changed on the transcript to an *F* (or an *NC* if *CR-NC* grading was approved).

Incomplete grades must be cleared before a degree is awarded. In the absence of the instructor who has assigned the Incomplete, a student seeking to make up this grade should consult the department chair. A student may not be required to repeat a course in which an *I* grade was received unless he or she wishes to receive credit and the time for making up the grade has passed. A short-term extension of time may be obtained by requesting a petition from the Office of the Registrar prior to the last day of instruction of the second semester.

Satisfactory Progress (SP). The *SP* symbol is used in connection with courses that extend beyond one academic term. It indicates that work is in progress and has been evaluated and found to be satisfactory to date, but that assignment of a final grade must await completion of additional work. It may be used only in courses designated on the approved *SP* grade course list published by the Office of the Vice President for Academic Affairs. Cumulative enrollment in units attempted may not exceed the total number applicable to the student's educational objective. Work is to be completed within a stipulated time period, which may not exceed one year except for graduate degree theses for which the time may be up to two years, but may not exceed the overall time limit for completion of all master's degree requirements. Any extension of time limit for an undergraduate student *SP* grade must receive prior authorization by the Office of the Registrar.

Unauthorized Withdrawal (U). The symbol *U* indicates that an enrolled student did not complete course requirements and did not properly withdraw from the course. It is used when, in the opinion of the instructor, completed assignments or course activities, or both were insufficient to make normal evaluation of academic performance possible. For purposes of grade point average and progress point computation this symbol is equivalent to an *F*. The *U* will not revert to any other grade.

Withdrawal (W). The *W* grade indicates that the student was permitted to drop the course after the fourth week of instruction for serious and compelling reasons with the approval of the instructor and appropriate campus officials. It carries no connotation of quality of student performance and is not used in calculating grade point average or progress points.



Grading Policies and Practices

Grading. Students are expected to complete all requirements for a class by the end of the semester unless an incomplete is permitted by the instructor in accordance with university policy. Students shall not be assigned additional work or be allowed to revise previous assignments in order to improve a final grade.

College Syllabus and Record Keeping. All faculty members shall provide students at the beginning of each semester a syllabus or outline stating course goals and objectives including grading methodology, types and number of projects, written assignments, tests, experiments, etc.

Repeating Courses. An undergraduate student may repeat a course in which a grade of *D, F, U* or *I* was received. (Graduate/post-baccalaureate students are not eligible for this policy even though the class is an undergraduate course.) All units attempted will be used to determine the student's grade point average and graduation eligibility unless the student repeats the course and requests the new grade be substituted for the original grade. A forgiveness substitution may be made only once for each course. To substitute a grade by repetition the student must file a petition with the registrar before the end of the semester during which the course is being repeated.

If the student receives the same grade or a higher grade than was received for a previous attempt, the units attempted, units completed (if any), and grade points for the previous attempt will not be used to compute grade point averages or graduation requirements. If the student receives a lower grade no deletions will be made. In all cases, all work will remain legible on the record ensuring a true and complete history.

A course completed at another institution may be repeated by enrolling in a regular CSU, Fresno course determined by the Evaluations Office to be essentially equivalent. In the case of a course taken and repeated at another college, the policy of the college where the course was originally taken shall be followed. If it is not possible to determine that policy, the CSU, Fresno policy will be followed.

Although not recommended, a student may repeat a course in which he earns a *C* or higher grade. Such repetition is recorded on the transcript but is not used to compute unit or grade-point totals.

Academic Renewal. Under certain circumstances, the university may disregard up to two semesters (three quarters) of previous undergraduate course work taken at CSU, Fresno or at any other college from all considerations associated with requirements for the baccalaureate degree. When such action is approved, the student's permanent academic record will be marked to indicate that *no* work taken during the disregarded term(s), even if satisfactory, may apply toward baccalaureate requirements. However, all work must remain legible on the record ensuring a true and complete academic history.

In order to qualify for renewal all of the following conditions must be met:

1. Five years must have elapsed since the most recent work to be disregarded was completed.
2. It must be evident that it would be necessary for the student to complete one or more additional terms in order to qualify for the baccalaureate degree if the request were not approved.
3. It must be evident that the poor level of work represented by the term(s) under consideration is not representative (see #4) of the student's usual academic performance and was due to extenuating circumstances.
4. Since the most recent work to be disregarded, the student must have completed in residence at CSU, Fresno 15 semester units with at least a 3.0 G.P.A., or 30 semester units with at least a 2.5 G.P.A., or 45 semester units with at least a 2.0 G.P.A. Work completed at another institution cannot be used to satisfy this requirement.

Planned Educational Leave Of Absence. A planned educational leave of absence is defined as a planned interruption or pause in a student's regular education during which the student temporarily ceases his or her formal studies at CSU, Fresno, while pursuing other activities that may assist in clarifying the student's educational goals. The intent of the policy is to make it possible for a student to suspend his or her academic work, leave the campus without jeopardizing his or her rights and privileges, and later resume his or her studies with a minimum of procedural difficulty. A student who is approved for a planned leave will be considered as maintaining his or her status as a continuing CSU, Fresno student. A student may, therefore, enroll for classes at the end of an approved leave without reapplying for admission and may continue at CSU, Fresno without change in graduation requirements.

Planned educational leaves may be granted for a variety of reasons or projects, but certain characteristics must be contained in any request for a leave:

1. The student must have a definite objective, which in the judgment of the Admissions Committee, will contribute to his or her educational goals and objectives.
2. The request must be for a specific period of time which shall not exceed one academic year.
3. The student must plan to return to CSU, Fresno at the conclusion of his or her leave.

The following regulations will apply to the planned educational leave:

1. A currently enrolled student, enrolled in a fully matriculated session may be considered for a planned educational leave.
2. A student may be granted only one leave as an undergraduate and one leave as a graduate student. Planned educational leaves will be granted for up to one academic year.
3. Leaves must be recommended by a faculty member or by a member of the counseling staff. Graduate students must be recommended by the dean of Graduate Studies; international students by the director of International Student Services and Programs, and Educational Opportunity Program students by an E.O.P. counselor.
4. Petitions for planned educational leaves must be filed (with the appropriate recommendation) at the Admissions Office before the first day of classes for the semester during which the leave is to begin.
5. A student who has registered through the Early Registration Program, and has subsequently been granted a planned leave must file a petition for Complete Withdrawal and a request for refund of registration fees before the deadlines listed in the *Schedule of Courses.*
6. Leaves will not be approved for students in disqualified status or on contract to remove academic deficiencies.

7. It is expected that a student will devote his or her leave primarily to nonclassroom activities. A leave will not be approved if the student plans to attend another institution, unless the course work the student seeks is not available at CSU, Fresno. Any academic credit earned while on a planned educational leave will be accredited by CSU, Fresno only if permission is granted for that credit in advance by the assistant to the director of admissions.
8. Students who do not return to the university at the conclusion of their planned educational leave and those who enroll elsewhere without permission of the assistant to the director of admissions will be considered to have withdrawn from the university at the end of their last semester of regular enrollment at CSU, Fresno.

Students wishing to apply for a planned educational leave should obtain a petition from the Admissions Office.

Student Academic Petitions. The Student Academic Petitions Committee has the authority to permit exceptions to university baccalaureate degree requirements when fulfilling the degree requirement would prove to be an undue hardship for the student and/or such an exception can be demonstrated to be educationally justifiable. The committee will take action only upon the submission of a formal petition by the student that sets forth the facts and circumstances that may warrant special consideration. Petitions and procedural information are available in the Office of Advising and Orientation. The Petitions Committee does *not* make decisions pertaining to substitutions for undergraduate and graduate major requirements. Such requests are appropriately initiated through the student's department. Requests to waive established university policy governing graduate study may be addressed to the dean, Division of Graduate Studies and Research. If a request cannot be accommodated, it will be forwarded to the Graduate Council.

The Student Academic Petitions Committee also has the responsibility of handling grade protests for all students, undergraduate and post-baccalaureate. If a student believes that he/she has been graded prejudicially or capriciously by an instructor, the student should consult first with the faculty member concerned and make every effort to resolve the issue. (On many occasions when a student contacts an instructor about a grade thought to be assigned unfairly, the student will learn that the instructor actually made a recording error, which will be remedied when the instructor obtains a Grade Correction Request Form from the departmental secretary and submits the completed form to the Petitions Committee.) However, if the issue is not resolved, the student should then consult with the department chair. If the student still believes that the grade was assigned prejudicially or capriciously after completing this process, the student then may request that the Student Academic Petitions Committee review the issue. To request such a review, the student must submit a written statement setting forth all pertinent details relating to the issue to the director of Advising and Orientation who chairs the Petitions Committee.

A full statement regarding "Protection Against Improper Academic Evaluation" and additional procedural instructions may be obtained from the Office of the Dean of Student Affairs. The assistant dean of Student Affairs is available for clarification of grade protest procedures.

> **"My advice to new students is not to panic when you make a bad grade on a test and don't be afraid to ask your professor for help. Their goal is to see you pass and learn as much as possible."**
>
> *— Senior, Liberal Studies*

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) and satisfactory progress toward a degree for undergraduate and post-baccalaureate students without a master's degree objective. Graduate (master's degree) students must maintain at least a *B* average.

A student (undergraduate, post-baccalaureate, or graduate) whose grade point average falls below the satisfactory scholarship level will be placed on probation and will be disqualified if the grade point average falls below probation levels. (For details see below.) All probation and disqualification actions are recorded on the student's permanent record (transcript).

Probation. An undergraduate student will be placed on academic probation, a type of academic warning, if his or her:

a) grade point average (G.P.A.) based on total units attempted at all colleges is below a 2.0 (*C* average), or
b) G.P.A. based on all units attempted at CSU, Fresno is below a 2.0 average.

The student will be continued on academic probation until both overall and CSU, Fresno grade point averages are 2.0 or better, or until the student is disqualified under one of the provisions of the disqualification regulations.

For example, a first semester freshman would be placed on probation if he/she carried 12 units (four 3-unit classes) and earned 1 *B*, 2 *C's* and 1 *F*. The student would then have to earn 3 *C's* and 1 *B* or better (in four 3-unit classes) the following semester to regain satisfactory scholarship status.

These regulations also apply to all post-baccalaureate students except those enrolled in master's programs. The latter are expected to maintain a minimum G.P.A. of 3.0. Master's students who fall below the required G.P.A. will be placed on probation.

A student may be placed on administrative-academic probation for withdrawal from a substantial portion of a program in two successive terms or in any three terms; for repeated failure to progress toward a degree; or for failure to comply with an academic requirement or regulation that is routine for all students or for a defined group of students.

Disqualification. A student will be disqualified under the following provisions: if he/she is on probation and fails to meet the contractual conditions or if he/she has a cumulative deficiency on either the overall or CSU, Fresno record equal to or greater than that indicated below.

- Freshmen, sophomores with (0–59 units completed): 15 grade-point deficiency

- Juniors (60–89 units completed): 9 grade-point deficiency
- Seniors (90 or more units completed): 6 grade-point deficiency
- Post-baccalaureate students: 6 grade-point deficiency on post-baccalaureate units

For example, a new transfer junior will be academically disqualified if he/she carried 12 units (four 3-unit classes) and earned 2 *C's*, 1 *D* and 1 *F*. Upon readmission or continuation, the student then would have to earn 1 *B* and 3 *C's* (in four 3-unit classes) the next semester to be removed from academic disqualification and be placed on probation, or 3 *B's* and a *C* or better (in four 3-unit classes) to regain satisfactory scholarship status. The best way to regain satisfactory scholarship status is to repeat classes at CSU, Fresno in which the student previously earned *D, F,* or *U* grades, and petition to have the new grade substituted for the prior grade. Post-baccalaureate students are not eligible for repeat forgiveness (see *Repeating Courses*, p. 92). Disqualified students also are advised to not take heavy unit loads in attempting to bring up their G.P.A.

Graduate (master's) students will be disqualified if their grade point average on either the overall or the CSU, Fresno post-baccalaureate record is equal to or greater than six (6) grade points below a *B* (3.00) G.P.A.

A student who has been placed on administrative-academic probation may be disqualified for the following reasons:

a) if he or she fails to meet the conditions for removal of the probation;
b) becomes subject to academic probation while on administrative-academic probation;
c) or again becomes subject to administrative-academic probation for the same or similar reasons.

Readmission of Disqualified Students. Students placed on disqualified status at the end of a fall semester may be permitted to re-enroll for the following spring semester on *probation contract.* Students disqualified from CSU, Fresno at the end of a spring semester or summer session may be readmitted for a subsequent fall or spring semester only by special action of the appropriate undergraduate or graduate authority. A disqualified student, however, may enroll for summer session or extension classes without readmission.

Students disqualified at the end of spring semester desiring readmission must submit a Readmission Petition obtained from the Admissions Office. Upper-division students must also schedule an interview with their departmental adviser and request that a "Student Readmission Recommendation Form" be forwarded to the Admissions Office. In addition, graduate, international, and E.O.P. students must schedule an interview with the appropriate office and request a "Student Readmission Recommendation Form" be forwarded to the Admissions Office.

Disqualified CSU, Fresno students who have been away one semester or longer must submit an application for readmission in addition to the appropriate petitions and recommendations.

Disqualified students should schedule a readmission interview with the admissions officer, **(209) 294-2287**, if requested, or the academic department, as appropriate, no later than two weeks before registration for the semester in which the student wishes to re-enroll. Earlier deadlines will be required for participation in Early or Walk-Through Registration.

Transcripts and Reports

Transcript of Record. Students may request transcripts of their academic records at CSU, Fresno with the payment in advance of a $4 fee ($2 for each additional copy ordered at the same time). CSU, Fresno Extension transcripts must be requested separately. Because of the large number of transcripts ($2 each) requested at the end of each semester and summer session, three weeks should be allowed for requests to be filled during those periods. After the Admissions/Records Office has been notified of overdue student accounts, transcripts will not be provided without clearance from the Business Office. Transcripts of record from other institutions submitted to this institution will not be returned to the student.

Reports to Students. An enrollment report is made available to the students by the Admissions/Records Office and at the end of the semester final grade reports are mailed to the students at the address submitted to the Admissions/Records Office.

Classification of Students

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.

Post-Baccalaureate/Graduates—Students who have at least a bachelor's degree from an accredited institution.

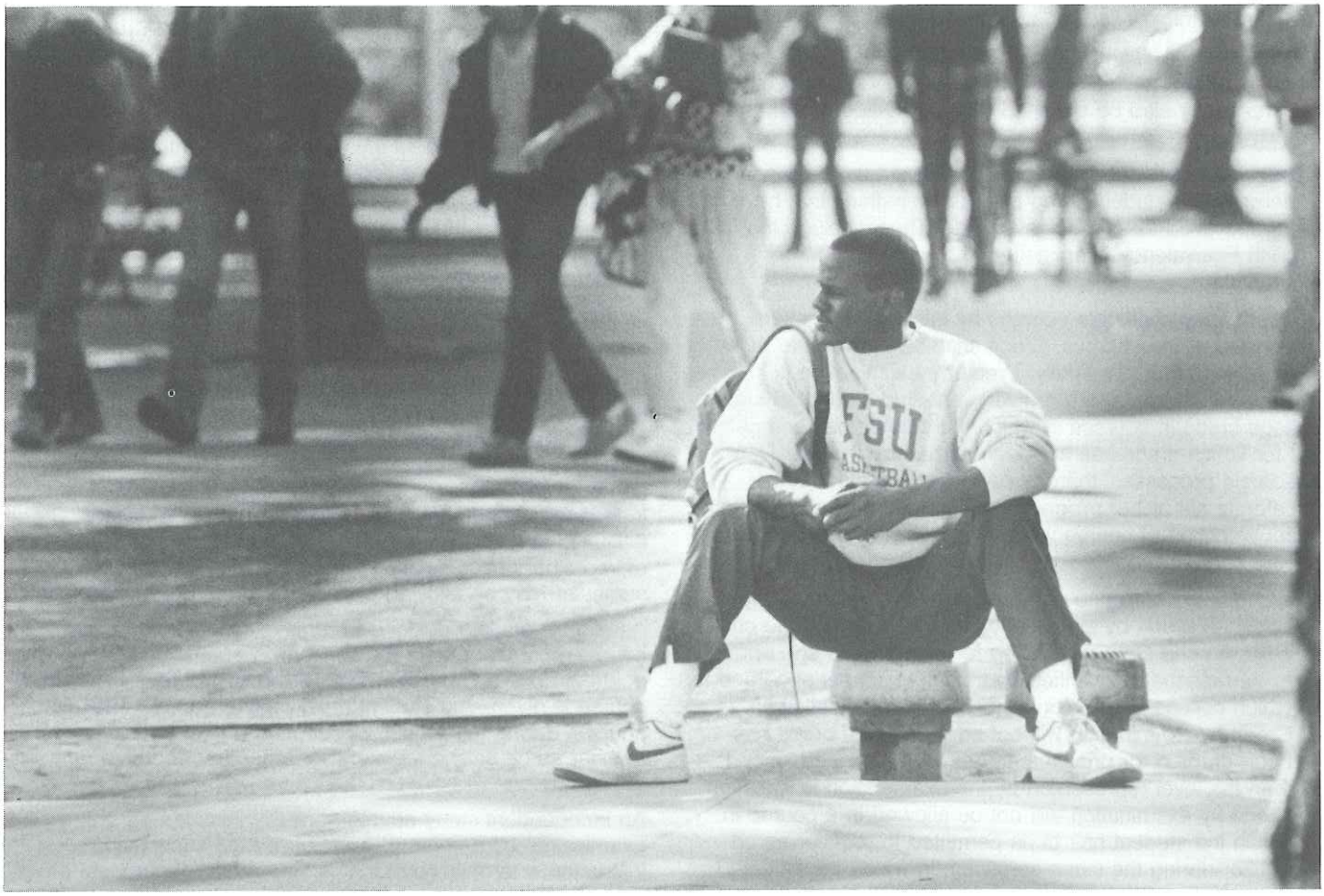
Advanced Placement. The Advanced Placement Program of the College Entrance Examination Board permits able high school students to take college-equivalent courses while in high school and, based upon comprehensive qualifying examinations, receive advanced placement and credit at participating universities and colleges. CSU, Fresno grants credit toward its undergraduate degrees for successful completion of examinations of the Advanced Placement Program of the College Entrance Examination Board. Students who present scores of three or better will be granted six semester units of college credit for each examination.

Credits earned through advanced placement are not included among the maximum of 30 units of credit by examination that may be credited toward a bachelor's degree.

English Placement Test (E.P.T.). The CSU English Placement Test must be completed by all new undergraduates with the exception of those who present proof of one of the following:

- a score of 3, 4, or 5 on either the language and composition or the composition and literature examination of the College Board Advanced Placement Program
- a satisfactory score on the CSU English Equivalency Examination
- a score of 510 or above on the verbal section of the College Board Scholastic Aptitude Test (S.A.T.–verbal)
- a score of 23 or above on the A.C.T. English Usage Test
- a score of 600 or above on the College Board Achievement Test in English Composition *with essay*
- completion of an acceptable college course in English composition of four quarter or three semester units with a grade of *C* or better.

Entry Level Mathematics (E.L.M.) Test. All undergraduate students must take the test and *pass it* before enrolling in a course that satisfies the college level mathematics requirement of the General Education-Breadth program. Exemptions from



the test are given only to those students who can present proof of one of the following:

- a score of 3 or above on the College Board Advanced Placement mathematics examination (*AB* or *BC*)
- a score of 530 or above on the mathematics section of the Scholastic Aptitude Test (S.A.T.–math)
- a score of 23 or above on the A.C.T. Mathematics Test
- a score of 520 or above on the College Board Mathematics Achievement Test, Level 1
- a score of 540 or above on the College Board Mathematics Achievement Test, Level 2
- completion of a college course that satisfies the General Education-Breadth requirement in quantitative reasoning, provided it is at the level of intermediate algebra or above with a grade of *C* or better.

Students who cannot demonstrate basic competence on the examination are required to take steps to overcome deficiencies early in their enrollment. Any coursework undertaken primarily to acquire the required competence shall not be applicable to the baccalaureate degree.

Failure to take either of these tests, as required, at the earliest opportunity after admission may lead to administrative probation, which, according to Section 41300.1 of *Title 5, California Administrative Code*, and CSU Executive Order 393, may lead to disqualification from future attendance. Students who need assistance in preparing for the E.L.M. test should consider enrolling in one or more of the following classes: Math AR or Math ILR, N Sci 37, Psych 180T (overcoming academic anxiety). In addition, students may contact the Developmental Learning Resource Center in the Keats Building for information regarding E.L.M. workshops.

Information bulletins and registration materials for the E.P.T. will be mailed to all students subject to the requirements. The materials may also be obtained from the Office of Admissions and Records.

Credit by Examination. CSU, Fresno grants credit to those undergraduate students who pass examinations that have been approved for credit systemwide. These include the CSU English Equivalency Examination and some CLEP examinations.

Students may challenge courses by taking examinations developed at the campus. Credit shall be awarded to those who pass them successfully. Credit by examination is designed to encourage a regularly enrolled student to seek college credit in courses in which the student has competence but for which credit has not been earned by the usual academic processes, thereby permitting the student to accelerate his or her progress and provide an opportunity for wider selection of course work. The following procedures should be followed:

1. With the concurrence of the department, a student may apply for credit by examination in any course in the current *CSU, Fresno General Catalog* for which he or she appears to be reasonably qualified by training or experience and for which college credit has not been previously allowed. Credit by examination will not be awarded if credit has been granted for previous course work more advanced than the level represented by the examination in question. Credit by examination will not be allowed in a course in which the student has been permitted to register as an auditor during the same semester, in which the student has received a failing grade, or in which he or she has unsuccessfully sought credit by examination.
2. The student will enroll for credit by examination at any time during the first two weeks of classes. The student must be regularly enrolled in other courses before he or she will be granted permission to earn credit by examination. Units of credit by examination are counted as part of the total units registered for a given semester or term. Applications for credit by examination should be completed by the student and approved by the department.
3. The examination must be administered by the end of the fourth week of instruction, and the instructor must report the grade prior to the close of the sixth week.
4. The course in which the student requests credit by examination will be so designated on his or her record. If passed, the student will receive a credit (*CR*) grade. If he or she is unsuccessful, no grade will be reported. Units earned will count toward all appropriate requirements but will not be used in computing his or her grade point average.
5. The number of units earned by credit by examination in any semester or term may not exceed the number of units completed in regular enrollment. A maximum of 30 units earned by examination may be counted toward a bachelor's degree.

Credit earned by examination *does not meet the residence requirement of the university.* For further information, consult the department concerned. See also *Advanced Placement,* page 95.

Graduate Students: Credit by examination for course work may be used to fulfill prerequisites only and may not be applied toward the total units required for a master's degree.

Independent Study. Independent study is offered to give the student experience in planning and outlining a course of study on the student's own initiative under departmental supervision. Independent study should deal with a special interest not covered in a regular course or with the exploration in greater depth of a subject presented in a regular course. Each department has an independent study upper-division course (190), and some departments have a graduate level course (290). In some departments a 190 or 290 course may be desirable preparation for the thesis or other advanced study.

To be eligible for independent study, a student should have an overall grade point average of 3.0 or higher; this requirement may be waived in exceptional cases, when approved by the chair of the department. Maximum credit of six units is allowed toward the bachelor's degree in independent study courses, and maximum credit of six units is allowed in independent study courses toward the master's degree. Credit is limited to a maximum of three units per semester. Under extraordinary circumstances more than three units per semester may be allowed on petition to the department chair.

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 chair of the department in which the course is given. The student must register for 190 and 290 courses during the regular registration period in the same manner as he or she registers for any other course at the time of registration.

An independent study course normally includes an oral examination by a committee set up by the supervising instructor, a formal report that is filed in the department office,

and an abstract of the study that is filed with the department chair. Approval forms and copies of the current regulations may be obtained at department or school offices. The entry on the permanent record will show the discipline and course number only; the title will not appear.

Certain special regulations concerning enrollment in 190 and 290 courses during a summer session will be found in the *Summer Session Catalog*.

Credit for Noncollegiate Instruction. CSU, Fresno grants undergraduate degree credit for successful completion of non-collegiate instruction, either military or civilian, appropriate to the baccalaureate, that has been recommended by the Commission on Educational Credit and Credentials of the American Council on Education. The number of units allowed are those recommended in the *Guide to the Evaluation of Educational Experience in the Armed Services* and the *National Guide to Educational Credit for Training Programs*.

Credit for Military Service Course/Work. Four semester units of lower-division elective credit is given if the student was on active military duty for at least one year and a day. An applicant for credit must submit a copy of *Notice of Separation* (DD214).

DANTES (Defense Activity for Non-Traditional Educational Support) maintains the educational records of the service men and women who have completed S.S.T.'s (Subject Standardized Tests), CLEP (College Level Examination Program) examinations and G.E.D. tests. DANTES has also maintained U.S.A.F.I. (United States Armed Forces Institute) transcripts since that organization ceased to exist in 1974.

College credit will be awarded for acceptable S.S.T. scores as recommmended by DANTES. Equivalency for S.S.T. credit will be determined by CSU, Fresno departments. Other credits recommended by DANTES (CLEP, etc.) must meet university guidelines for the awarding of credit for those examinations.

DANTES/U.S.A.F.I. correspondence credit is combined with other extension or correspondence course work to a maximum of 24 semester units.

Additional credit is granted for military courses and experiences as recommended in *A Guide to the Evaluation of Educational Experiences in the Armed Services*. The applicant for such credit must submit official documents giving all details such as location and length.

College Level Examination Program. The College Level Examination Program (CLEP) is designed to be a means through which recognition, academic credit, and placement may be given for less conventional forms of educational experience. Those who may have reached a college level of education through home or correspondence study, on-the-job training, television courses, or by other means may take the CLEP examinations, which are offered by the College Entrance Examination Board.

Within the restrictions of systemwide policy, CSU, Fresno will award credit for successfully completed CLEP examinations. Such credit will be applied to the total units required for the baccalaureate degree, but it will not be applied to the General Education requirement.

Not all CLEP examinations are acceptable under system policy. Subject examinations may require the recommendation of the appropriate department before credit is awarded.

Course equivalency is also determined by the department concerned.

> "I encourage freshman to take advantage of the extracurricular activities available at CSU, Fresno and to make a lot of friends. A social life helps to prevent your studies from becoming too burdensome."
>
> *— Senior, Civil Engineering*

Credits earned through CLEP will be included among the maximum of 30 units of Credit by Examination that may be credited toward a bachelor's degree.

For additional information, call the **Office of Testing Services, ext. 2457.**

English Equivalency Examination. The English Equivalency Examination (E.E.E.) is an examination offered by the CSU system. It is administered each spring on the various campuses to prospective freshmen. Students passing both the objective and essay portions of the examination will be granted six units of freshman English credit. For information, call the coordinator of **Relations with Schools, CSU, Fresno, ext. 2191.**

Credits earned through the E.E.E. will be included among the student's Credit by Examination (C.B.E.) units. A maximum of 30 C.B.E. units may be counted toward a bachelor's degree.

Students who want to challenge English 1 C.B.E. may do so only by taking the E.E.E. or the Advanced Placement (AP)–Language and Composition or AP–Literature and Composition tests. Although both tests normally are taken while a senior in high school, only the E.E.E. also may be taken as a university student. Students who pass the E.E.E. will earn 6 units of C.B.E. credit–3 units in English 1 and 3 units in English 20. Students who pass AP–Language and Composition will earn 3 units in English 1 and 3 units in English 2; whereas, students who pass AP–Literature and Composition will earn 3 units in English 1 and 3 units in English 20.

Upper Division Writing Examination. The Upper Division Writing Examination (U.D.W.E.) is administered by the university and may be used to satisfy the Upper Division Writing Skills requirement. One unit of credit may be granted (English 100W) to registered students upon request. University registration deadlines must be adhered to. For details, call the **Office of Testing Services, ext. 2457.**

Degree Requirements

Baccalaureate Degree Requirements

A student must complete the following requirements in order to earn a Bachelor of Arts or Science degree. Requirements are described in detail in the latter part of this section. Most students will accumulate a combination of units in the major, General Education, and non-designated electives in order to fulfill the requirements of a baccalaureate degree.

1. A minimum of 124 semester units (most B.S. degree programs require 128 or more units)
2. An academic major
3. General Education
4. Specific Course/Skill Requirements
   a. English Composition (English 1 or equivalent)
   b. Intermediate Algebra (Math 4)
   c. United States History (History 11 or 12)
   d. United States and California Constitution (Political Science 2 or 101)
   e. Upper Division Writing Skills
5. A minimum of 30 residence units, of which 24 must be upper division and 12 in the major.
6. A minimum of 40 upper-division units.
7. Minimum of a *C* average for units in major, all CSU, Fresno units and total units.
8. Completion of an application for graduation obtained from the *Office of Evaluations* and payment of the graduation fee at the cashier's window in the Joyal Administration Building by one of the published deadlines.

Dual (Concurrent) Major Requirements

An undergraduate student may desire to complete the requirements for more than one major at the time of completion of the baccalaureate degree (i.e., graduate with a dual major). When the student applies for graduation, he or she must designate which major is to be the primary degree major for purposes of graduation. Minimum requirements and exceptions for dual majors are as follows:

- Dual B.A. majors must include 24 units, 12 of which must be upper division;
- Dual B.S. majors must include 36 units, 18 of which must be upper division;
- Courses in General Education may be used to fulfill secondary major requirements;
- Units may be double-counted for both majors above 24 mutually exclusive units (12 upper division) in B.A. programs and 36 units (18 upper division) in B.S. programs.

Special Major for the Bachelor of Arts Degree

The special major for a Bachelor of Arts degree provides an opportunity for students to engage in an individualized course of study leading to a degree when legitimate academic and professional goals are not accommodated by standard degree majors. The special major consists of correlated studies in two or more fields. It is not intended as a means of bypassing normal graduation requirements or a means by which students



may graduate who fail to complete the degree major in which they are enrolled.

The special major must be approved in the Office of the Vice President for Academic Affairs, with approval based upon a case-by-case justification. The candidate must have one full year of academic work (at least 30 units) still to be completed to meet minimum degree requirements. The minimum requirement for the special major is an approved program of 45 units at least 30 units of which must be upper-division work. Units applied to satisfy General Education requirements may not be counted. Also, a maximum of six (6) independent study units may be included in the special major program. Any exception to this limit must be approved in writing by the vice president for academic affairs upon written recommendation by the special major adviser prior to registration for the additional units.

A student requesting a special major must obtain application forms from the Office of Advising and Orientation. On these forms the student must: 1) Prepare a statement giving his or her reasons for desiring a special major in terms of academic and professional goals and why these goals cannot be met through a standard major; 2) Develop a specific list of courses which would, in his or her opinion, lead to the academic and professional goals stated above; 3) Secure the signed approval from the Office of Advising and Orientation, as well as from special major adviser and department chair in the areas from which the special major courses are drawn. The student must submit the foregoing material to the Office of the Vice President for Academic Affairs for final approval. Upon graduation, *Bachelor of Arts, Special Major* will be entered upon the student's transcript and diploma.

Specific Course/Skill Requirements

English Requirement. English 1, Composition, or its equivalent is a university graduation requirement that should be completed before the end of the fourth semester of university attendance. (A grade of *C* is the minimum acceptable grade to satisfy this requirement.) Students who are exceptionally well-prepared in composition may elect to satisfy the requirement by the successful challenge of English 1 by successful performance in the *English Equivalence Examination (E.E.E.)*. The English Placement Test does not substitute for English 1. See *English Placement Test,* page 95, for test scores prerequisite to enrollment in English 1.

Mathematics Requirement. All undergraduate students must complete Math 4 (Intermediate Algebra/Algebra II). If a student completed Algebra II in high school, then he or she may take an alternate class to fulfill the requirement (see *General Education—CORE,* pp. 104–105). Students who wish to take an alternate class must submit a high school transcript showing completion of Math 4 (Algebra II/Intermediate Algebra) at the time of admission.

U.S. History and Government Requirements. Undergraduate and second baccalaureate degree candidates in order to graduate must demonstrate competence with respect to the Constitution of the United States, American history, and in the principles of state and local government of California. This may be done by passing examinations or by completing History 11 or 12 and Political Science 2 or 101. (See *History Department—American History Requirement,* p. 342, and *Political Science Department—United States Constitution Requirement,* p. 404, and *General Education—CORE,* pp. 104–105.)

"I strongly believe that there is more to life than studying and working all of the time. I swim, or go to the lake with friends, or get involved in some activity away from school and that helps me to maintain some kind of balance in my life."

— Junior, Physical Therapy

Upper Division Writing Skills Requirement. All undergraduate and second baccalaureate degree candidates, must demonstrate competency in writing skills at the upper division (junior-senior) level as a requirement for graduation. Students may meet this requirement in either of two ways after completion of 56 units:

1. Passing the Upper Division Writing Examination (U.D.W.E.) composed of both an essay and an objective component. This examination will be given several times each year, including once during the first two weeks of each semester. Students are permitted to take the examination a maximum of two times, but no more than once during any single semester. Upon successful completion of the U.D.W.E., a student may request one unit of credit (Engl 100W), which may or may not be posted to the student's transcript the same semester in which the U.D.W.E. was passed. For details, call the *Office of Testing Services, ext. 2457.*
2. Obtaining a *C*, *CR*, or higher grade in an approved upper division course at CSU, Fresno or another CSU campus. Approved courses can be identified in the catalog and *Schedule of Courses* by the letter *W* (e.g., Eng 160W, IS 105W). English Composition (Engl 1) is a prerequisite to any *W* course.

It is imperative that the U.D.W.S. requirement be met within one semester after completing 56 units, or no later than the second semester at CSU, Fresno for students transferring with 56 or more units.

Graduate students should consult *Graduate Studies and Research,* pages 462–471, regarding the graduate-level writing proficiency requirement.

Note. Passing the U.D.W.E. does not preclude a student from taking a *W* course if it is required in the major, e.g., Hist 100W.

Remedial Courses. Each student admitted to a CSU campus is expected to possess basic competence in the English language and mathematical computation. Students admitted who cannot demonstrate such basic competence are required to remedy this deficiency. Such remedial courses are designated by the letter *R* following the course number. Credits earned in remedial courses cannot be used to satisfy degree requirements. (See *Developmental Learning Resource Center,* p. 54.)

Unit Limitations

The following unit limitations apply to all bachelor's degrees:

1. A maximum of 70 transferable semester units is allowed from two-year institutions.
2. A maximum of 8 semester units of P.E./Dance Techniques/Athletics activity is allowed (P.E. and Dance majors may have credit for 12 semester units).
3. A maximum of 12 semester units is allowed for work experience/internship/agricultural projects. (A maximum of 6 semester units may transfer into the university. A maximum of 6 semester units of the 12 is allowed in agricultural projects). All *work experience* and *internships* will be graded on a credit-no credit basis.
4. A maximum of 24 semester units at CSU, Fresno is allowed for ***CR/NC*** grading. (See *Credit-No Credit Grading,* pp. 90–91, for other limitations.)
5. A maximum of 30 semester units is allowed for Credit by Examination (excluding Credit for Advanced Placement Examination).
6. A maximum of 24 semester units is allowed for credit through Extension and/or correspondence course work.
7. A maximum of 6 semester units is allowed for independent study course work.
8. A maximum of 6 semester units is allowed for course work in typing.
9. A maximum of 10 semester units is allowed for course work in shorthand and/or dictation.

Second Baccalaureate Degree or Undergraduate Major Requirements

A post-baccalaureate student (i.e., one who already holds a bachelor's degree) may pursue a program leading to an additional baccalaureate *degree* or undergraduate *major.* Each student is urged to consult with a departmental adviser and with the Division of Graduate Studies and Research to determine whether a second baccalaureate or graduate program better meets his or her needs.

A. A post-baccalaureate student seeking an additional undergraduate *degree* must complete the following requirements:
   1. A minimum of 30 units in residence at CSU, Fresno since completion of the most recent degree.
   2. All state and university requirements for that degree, including English 1, Intermediate Algebra (Math 4), General Education, United States Constitution and California state and local government, American history, and the Upper Division Writing Skills requirement. These requirements may be met by courses taken in the student's undergraduate program.
   3. All units required in the major. No credit may be applied from courses taken for an earlier degree. If required major courses were previously taken, the student must substitute, with the approval of the department, additional major courses. Graduate level courses (200 series) may not be applied toward the requirements for a second baccalaureate degree or additional undergraduate major.
   4. At least 12 units in the major in residence at CSU, Fresno since the last baccalaureate degree. Departments may set higher requirements.
   5. Filing of an undergraduate degree application and payment of graduation fee.

B. A post-baccalaureate student seeking an additional undergraduate *major* must complete numbers 3 and 4 above. The transcript will indicate that all coursework for the additional major has been completed. A student pursuing a second baccalaureate *degree* or additional undergraduate *major* cannot select the catalog or bulletin used for the initial undergraduate degree. If the student does not remain in continuous attendance, the requirements will be those in effect at the time the student re-enters the university or completes the program (see *Choice of Catalog,* p. 89).

C. A post-baccalaureate student may not earn a minor or a second minor.

D. Second baccalaureate students are not considered for university honors.

Post-Baccalaureate Credit. Upper division and/or graduate level units earned at CSU, Fresno in the semester or summer session in which the bachelor's degree is granted will be automatically listed on the student's permanent record as post-baccalaureate credit with the following exceptions:

a) Provided the courses are not needed for the bachelor's degree;

b) Provided the student is neither on academic probation nor academic disqualification at the beginning of the final term;

c) Units are not in excess of stated maximum limitations (e.g., six units of independent study).
In addition, only credit for courses in which grades ***A***, ***B***, ***C***, or ***CR*** are earned may be counted, no course may have its credit divided between baccalaureate and post-baccalaureate programs, and use of such credit for graduate degrees at CSU, Fresno requires special approval and is limited to a maximum of 10 units. (See *Graduate Studies and Research Advancement to Candidacy,* pp. 465–466.) The amount of post-baccalaureate credit allowed may not exceed one-third of the required units for the master's degree. Only students with graduate standing may enroll in the following courses: 290, 298, 299. Use of post-baccalaureate credit for other purposes is to be determined by the appropriate authority.

Graduation and Commencement

Commencement is held annually at the end of spring semester. Students who have completed degree requirements in the summer or in the fall semester immediately preceding commencement are eligible to participate with those who complete their work in the spring semester. **Students looking forward to meeting degree requirements should complete the following steps:**

1. Obtain and file a completed application for a degree ($10 graduation fee and a $10 diploma fee) in the Evaluations Office when the student has one or two semesters remaining. See *Academic Calendar,* pages 4–5, for filing dates and deadlines ($10 fine for late filing). Failure to apply before the final deadline will delay the granting of the degree.
2. Request the Records Office public contact windows to transfer CSU, Fresno Extension units to the permanent record.

The Evaluations Office, considering the student's prior and current work, will check the student's application for a bachelor's degree against requirements and will report to the student regarding his or her eligibility for the degree. In the case of graduate degrees, this clearance is given by the graduate office. A degree will not be awarded to a student with an *I* grade remaining on his or her record. A student receiving an *I* grade during the final year that has not been completed (or changed to an *F* grade) by the appropriate clearance deadline will not be considered for graduation that semester and must reapply for the degree. See *Incomplete,* page 91.

In order to be eligible for graduation and participate in commencement exercises, the student must:

a) submit an application for the degree and pay the graduation fee,
b) have been approved for graduation by the faculty,
c) have met all financial obligations to the university,
d) and, have completed with appropriate scholastic standing all courses required for the degree. Graduates will receive their official diplomas by mail.

It is the responsibility of the student to be sure that all requirements have been met and that documentation has been filed with the Evaluations Office by the appropriate deadlines. No additions, deletions, or changes to a student's record are permitted after the degree has been recorded.

Honors at Graduation. Honors at the time of graduation from CSU, Fresno will be awarded to undergraduate students with an overall grade point average of 3.50 on all work attempted. The student must also have completed at least 45 units at CSU, Fresno with the following G.P.A. on all CSU, Fresno work:

Summa Cum Laude (highest honors)	3.90 to 4.00
Magna Cum Laude (high honors)	3.70 to 3.89
Cum Laude (honors)	3.50 to 3.69

Since the requirement for honors could change, students are requested to check the current *General Catalog* for the criteria in effect at the time of graduation.

The Bachelor of Vocational Education Degree

The Bachelor of Vocational Education (B.V.E.D.) degree is limited to vocational teachers who qualify for a Swan Bill evaluation through the State Board of Vocational Examiners. Qualifications required for such an evaluation are outlined in the State Education Code. Among these qualifications is the stipulation that the candidate shall have had a minimum of 1,620 hours of teaching experience in an approved vocational class or 1,000 hours of teaching experience in an approved trade extension class. Additional information regarding this degree program may be obtained from the chair of the Department of Industrial Technology. B.V.E.D. students must complete all general requirements for the baccalaureate degree, except the 40 upper-division unit requirement.

Certificates

Many students want to study areas not covered by traditional degree programs to increase professional competence, to acquire paraprofessional training, to change careers, or to promote personal enrichment. A baccalaureate or master's degree, or second baccalaureate or second major may be inappropriate for them, yet they may still deserve recognition for their work. To meet the needs of these students the university has established three kinds of certificates. These are:

1) *The Certificate of Completion,* awarded for successfully completing a planned educational experience (workshop, conference, short course, or seminar) designed for specific academic objectives;
2) *The Certificate of Special Study,* awarded for successfully completing a structured program of educational experiences, at least 12 semester units, determined in advance by a department or school, and consisting of upper-division (100–199) courses, professional (300–399) courses, and related activities and;
3) *The Certificate of Advanced Study,* awarded for successfully completing a structured program of at least 12 semester units of graduate (200–299) courses, upper-division (100–199) courses, and professional (300–399) courses, determined in advance by a department or school.

Public School Credentials

California State University, Fresno, is authorized by the Commission on Teacher Credentialing to recommend candidates for the following credentials. See *School of Education and Human Development,* pages 123–124, for program requirements.

Basic Teaching Credentials, Elementary

Multiple Subjects
Multiple Subjects, with emphasis in Early Childhood Education
Multiple Subjects, with emphasis in Bilingual/Cross-Cultural Education (Spanish)

Specialist Teaching Credentials

Agricultural
Bilingual/Cross-Cultural
Early Childhood
Reading
Resources
Special Education

Services Credentials

Administrative
Clinical-Rehabilitative
Pupil Personnel, including School Psychologist
Health (School Nurse)

Basic Teaching Credentials, Secondary

Single Subject:
Agriculture
Art
Business
English, with separate concentrations in Drama and Speech
Foreign Languages
Health Science
Home Economics
Industrial Arts
Life Science (Biology)
Mathematics
Music
Physical Education
Physical Science
Social Science

Degree Programs, Majors, and Minors

The California State University, Fresno offers majors for the baccalaureate degrees, minors, and master's degree programs as indicated below. Undergraduate options are indented under the programs; graduate degree options are fully listed under *Division of Graduate Studies and Research, page 462.* Requirements for approved undergraduate majors and minors, as well as graduate degrees, are listed in the appropriate school and department sections of the *General Catalog.* For general master's degree program requirements, see *Division of Graduate Studies and Research,* pages 462–471.

	Baccalaureate Degrees				Master's Degrees		
	B.A.	B.S.	Other	Minor	M.A.	M.S.	Other
Accountancy						X	
Aerospace Studies				X			
Agricultural Business		X				X	
Agricultural Education		X					
Agricultural Science Options I, II Dietetics & Food Administration		X		X			
Agriculture						X	
Anthropology	X			X			
Armenian Studies				X			
Art	X			X	X		
Asian Studies				X			
Asian-American Studies				X			
Biology (B.S.) Biological Science, Botany, Environmental Biology, Functional Biology, Microbiology, Zoology	X			X	X		
Black Studies				X			
Business (General)				X		X	
Business Administration (B.S.) Accountancy, Agribusiness, Computer Applications and Systems, Decision Sciences, Finance, Financial Services, Human Resource Management, Information Management, Legal Environment of Business, Logistics/Operations Management, Management, Marketing, Real Estate and Urban Land Economics, Risk Management and Insurance		X					M.B.A.
Chemistry	X	X		X		X	
Chicano-Latino Studies				X			
Child Development		X					
City and Regional Planning							M.C.R.P.
Classical Studies				X			
Communicative Disorders	X			X	X		
Computer Science		X					
Counseling						X	
Criminology (B.S.) Corrections, Law Enforcement		X		X		X	
Economics	X			X			
Education					X		
Engineering (M.S.) Civil Engineering						X	
Engineering, Civil		X					
Engineering, Electrical		X					
Engineering, Industrial		X					
Engineering, Mechanical		X					
English	X			X	X		
Ethnic Studies				X			
French	X			X			
Geography	X			X	X		
Geology		X		X		X	
German	X			X			
Gerontology				X			
Health Science (B.S.) Health Science—Community Health, Environmental Health Science, Health Services, Occupational Safety and Health		X		X		X	
History	X			X	X		

Degree Programs, Majors, and Minors—Continued

	Baccalaureate Degrees				Master's Degrees		
	B.A.	B.S.	Other	Minor	M.A.	M.S.	Other
Home Economics	X			X		X	
Humanities Interdisciplinary Minor				X			
Industrial Arts (B.A.) Graphics and Interior Design	X			X	X		
Industrial Technology (B.S.) Manufacturing Industries, Construction		X					
International Relations					X		
Journalism Advertising, News-Editorial, Photocommunication (see Mass Communication M.A.), Public Relations, R-TV News Communication	X			X			
Latin				X			
Latin American Studies				X			
Liberal Studies Credential, Non-Credential	X						
Linguistics (B.A.) English as a Second Language, Spanish-English Bilingualism	X			X	X		
Marine Science						X	
Mass Communication Print Media, Electronic Media					X		
Mathematics	X			X	X	X	
Microbiology		X			X		
Music (B.A.) Options I, II	X			X	X		
Nursing		X				X	
Performing Arts, Administration of				X			
Philosophy (B.A.) Religious Studies	X			X			
Physical Education (B.A.) Teaching, adapted Phys. Ed., Athletic Training, Allied Career	X				X		
Physical Science				X			
Physical Therapy		X					
Physics	X	X		X	X	X	
Political Science	X			X			
Psychology	X			X	X	X	
Public Administration	X			X			M.P.A.
Recreation Administration (B.S.) General, Therapeutic		X		X			
Rehabilitation Counseling						X	
Russian	X			X			
Russian Area Studies				X			
Social Science	X						
Social Work	X						M.S.W.
Sociology	X			X			
Spanish	X			X	X		
Special Education					X		
Special Major	X				X		
Speech					X		
Speech Communication	X			X			
Surveying Engineering		X					
Telecommunications (B.A.) Creative, Management News/Public Affairs, Production (see Mass Communication M.A. degrees)	X			X			
Theatre Arts (B.A.) Dance (see Speech M.A.)	X			X			
Vocational Arts			B.V.E.D.				
Women's Studies				X			

General Education

Developed by both faculty and students, CSU, Fresno's General Education Program is an introduction to the breadth and depth of the dynamics of human experience. It provides students with a foundation in the liberal arts and sciences and prepares them for specialized study in a particular discipline or program.

The overall objective of General Education is to create a context wherein basic skills are developed and strengthened, scholarship and disciplined thinking emerge, awareness and reflection occur, and ultimately—the *integration* of knowledge begins.

CORE, BREADTH, and CAPSTONE

The General Education Program is an integrated curriculum of courses organized into three phases:

CORE, the basic foundation of one's university education, consists of courses in fundamental skills and knowledge.

BREADTH exposes students to a variety of disciplines within a structured framework that develops knowledge and skill representative of all areas of human endeavor.

CAPSTONE concludes the General Education Program by providing an interdisciplinary experience at the upper division level in which the skills and knowledge developed in CORE and BREADTH are integrated, bringing their interrelationships into focus.

Requirements

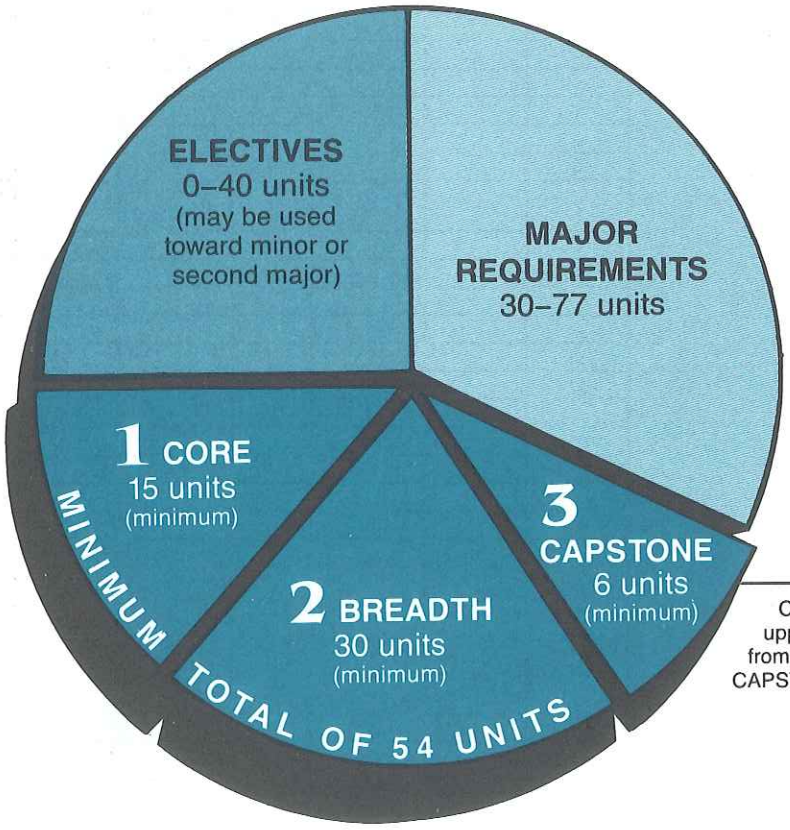
The General Education Program requires students to complete a minimum of 54 semester units. This includes 15 units minimum in CORE, 30 units minimum in BREADTH, and 9 upper-division units minimum, of which 6 units are in CAPSTONE. The 9 upper-division units can be taken only after completing 56 units of coursework. Also, 9 units must be taken in residence at CSU, Fresno.

Because the goal of General Education is to provide a solid foundation with a broad scope and the goal of the major is to provide depth in a specific discipline or program, the following stipulations apply:

1. **CORE** courses may be used to satisfy any degree requirements.
2. A maximum of two General Education courses from one department or program may be applied to satisfy **BREADTH** requirements. (However, a department or program may prohibit any General Education BREADTH course from simultaneously satisfying its own departmental or programmatic requirements.)
3. Courses used to satisfy **CAPSTONE** may not be used to satisfy requirements for the major.

CORE

An educated person must be able to read critically, communicate effectively, and think clearly. CORE serves to develop these skills. It is important to take CORE courses soon after entry into the university.



Note: In addition to CAPSTONE, three more upper-division units must be taken from CORE, BREADTH, or CAPSTONE after completing 56 units.

Select one course from each of the following five categories for a minimum of 15 units:

1. English 1
2. Speech 3, 5, 7, or 8
3. Math 4. **Note:** *Students who passed Algebra II (intermediate algebra) in high school may select an alternate course from one of the following options:*
   - Mathematics 5, 6, 41, 45, 51, 52, 70, 71, 75, DS 71
   - Computer Language: EE 70; IS 50, 53, 54; C Sci 20, 40
   - Statistics: Ag Ec 71; Plant 100; DS 73; AS 153; H S 102; Psych 142; Soc 25; Math 11
4. History 11 or 12
5. Political Science 2 or 101

BREADTH

The BREADTH component of the General Education Program exposes students to a variety of disciplines within the structured framework of Divisions 1–10.

Select a minimum of 9 units from Divisions 1, 2, and 3, including at least one course each from Divisions 1 and 2. One of the courses from Division 1 or 2 must have a laboratory component.

Division 1—Physical Processes

Purpose: To understand fundamental principles in the physical sciences and the methods of developing and testing hypotheses used in the analysis of the physical universe.

Chemistry 1A, 1B, 2A, 2B, 2C
Geology 1, 2, 15 (Man and Natural Environment only) *
Physics 1, 2A, 2B, 5A, 5B

Note: *Math 4 or second-year high school algebra is a prerequisite for all courses in Division 1.*

Division 2—Biological Processes

Purpose: To understand basic concepts of living things, the nature of scientific knowledge, and the relevance of biological knowledge to human affairs.

Biology 10, 15 (Man and Natural Environment only) *
Botany 1 or 10
Zoology 1 or 10

Division 3—Behavioral/Environmental Systems

Purpose: To understand scientific concepts of human development and the relationships between people and their physical environment.

Anthropology 1, 3
Geography 5, 5L, 7, 7L
Psychology 10, 36

Select a minimum of 12 units from Divisions 4, 5, 6, and 7. Courses must be selected from at least three of the four Divisions.

Division 4—Literature

Purpose: To study the realm of literature from a variety of historical perspectives and cultures by analyzing individual works.

English 20, 30, 101, 102, 103
French 109
Greek 148
Latin 148
Spanish 140, 142

Division 5—Fine Arts

Purpose: To understand the world of nonverbal expression by developing an appreciation for the integrity and harmony of works of art.

Art 1
Art History 10, 11
Dance 171
Drama 62, 163
Chicano-Latino Studies 7, 9
Music 9, 74

Division 6—Humanities

Purpose: To understand, appreciate, and analyze the meaning of our civilization and its cultural and historical background.

History 1, 2
Humanities 10, 11
Philosophy 1, 10, 120, 131

Division 7—Languages

Purpose: To understand the nature and role of language by developing skills in speaking, reading and writing a language other than English.

Students from non-English speaking countries cannot use their native language for General Education BREADTH, Division 7.

Armenian 1A, 1B, 2A, 2B
Chinese 1A, 1B, 2A, 2B
French 1A, 1B, 2, 3
German 1A, 1B, 2A, 2B
Greek 1A, 1B, 2A, 2B
Hebrew 1A, 1B
Italian 1A, 1B, 2A, 2B
Japanese 1A, 1B, 2A, 2B
Latin 1A, 1B, 2A, 2B
Linguistics 10
Philosophy 25, 45
Portuguese 1A, 1B
Russian 1A, 1B, 2A, 2B
Sanskrit 10A, 10B
Spanish 1A, 1B, 2A, 2B, 4A, 4B

Select 3 units each from Divisions 8, 9, and 10 for a minimum of 9 units.

Division 8—Social, Economic, and Political Systems

Purpose: To understand and analyze the basic principles underlying human social behavior.

Agricultural Economics 1
Anthropology 2, 15 (Man and Natural Environment only) *
Economics 1A, 1B
Geography 2, 3, 4
Political Science 1, 8, 120
Sociology 1, 2, 3

* Man and the Natural Environment (M.N.E.) is a 17 unit interdisciplinary thematic cluster offered through the School of Natural Sciences. For more information about this program, see *School of Natural Sciences,* page 128.

Division 9—Other Cultures and Women's Studies

Purpose: To understand the diversities and similarities of individuals and groups by studying the roles of specific ethnic cultures and women in contemporary America.

Armenian Studies 10
Asian American Studies 15, 30, 56, 110
Black Studies 25, 27, 38, 144
Ethnic Studies 1
History 101
Chicano-Latino Studies 3, 5
Native American Studies 50, 103
Sociology 131
Women's Studies 10, 101, 131, 135

Division 10—Personal Life and Growth

Purpose: To equip human beings for lifelong understanding of themselves as integrated physical and psychological entities and to enhance their appreciation of and participation in the social, cultural, and physical environment.

Art 13, 20, 30, 40, 50, 60, 70
Dance 116
Drama 22, 34
English 41, 43
Health Science 90, 124
Child and Family Studies 38
Industrial Engineering 125
Music 2–102, 3–103, 18–118, 21–121
Physical Education 31
Psychology 61 or 171, 132
Recreation 80
Speech 4
Food Science and Nutrition 53

CAPSTONE *(Upper Division)*

CAPSTONE provides an interdisciplinary experience at the *upper-division level* in which the skill and knowledge developed in CORE and BREADTH are integrated.

Policies for CAPSTONE:

The CAPSTONE requirement may be fulfilled in one of two ways—either by completing a minimum of 6 units (two courses) in specific interdisciplinary courses (CapS and/or NEXUS) or by completing a minimum of 6 units (two courses) in a single cluster from two different departments or programs.

No CAPSTONE course may be used to fulfill a major requirement.

All Capstone courses require a written paper, research project, or performance equivalent to exploring the course or *Cluster* theme.

In the case of *Cluster* courses, the student must select from at least two different participating departments.

CAPSTONE: *Interdisciplinary Courses (CapS)*

CapS 104 Humanities in the Middle Ages and Renaissance (3). An examination of art, literature, philosophy, and music and their interrelationships in European culture during the Middle Ages and Renaissance.

CapS 108 Humanities in the Ancient World (3). An examination of art, literature, philosophy, and music and their interrelationships in the Ancient world (Sumer, Babylonia, Ancient Egypt, Ancient Greece).

CapS 112 Humanities During the Baroque and Enlightenment (3). An examination of European and American art, literature, philosophy, and music and their interrelationships during the period from the late 16th century through the 18th century.

CapS 116 Humanities in the Modern World (3). An examination of art, literature, philosophy, and music and their interrelationships in the Western world during the 19th and 20th centuries.

CapS 120 A–B Latin America: A Search for Stability (3–3). Prerequisite: Completion of Division 8 of the General Education Program or permission of the instructor. An examination of the geographic, social, and historical factors underlying government instability in Latin America followed by a discussion of right and left wing approaches to stability. *Completion of both semesters is required to satisfy the Capstone requirement for General Education.*

CapS 123 The American Experience: Beginnings to World War I (3). Survey of the principal experiences and intellectual movements that have formed the American character, as illustrated through American literature, music, and the arts, serious and popular, from the formation of the colonies to the outbreak of WWI.

CapS 124 The American Experience: World War I to the Present (3). Survey of the principal experiences and intellectual movements that have formed the American character, as illustrated through American literature, music, and the arts, serious and popular, from WWI to the present time.

CapS 128 Mythology: An Interdisciplinary Approach (4). An interdisciplinary examination of mythology. Readings in significant myths from various parts of the world (including those influential on Western culture, such as Greek myth and the Bible, and equivalent Native American, Pre-Columbian, Oriental, and African myth). A survey of the current theories of myth (as a component in ritual and religion, a development of linguistics and oral tradition, a focus of cultural values, and the like); and an examination of the contemporary relevance of myth in art, literature, and culture.

CapS 130 Latin American Cultures and Traditions (3). A study of Hispanic cultural and aesthetic trends and practices as seen in the popular and formal arts and other styles of Hispanic thought, feeling, and expression.

CapS 132 Aging as a Social Issue (3). Prerequisites: English 1 and prior fulfillment of Upper Division Writing requirement. An examination of human aging from the viewpoints of gerontology, literature, and social work with particular emphasis on the problems of women.

CapS 144 The Individual and Complex Organizations in American Society (3). An examination of the characteristics and complexities of professional organizations. Designed to develop knowledge of fundamental organizational theory, of the function of such organizations, and of the methods by which administrative structures and processes interact with external environments and clients.

CapS 148 Voting and Elections in the Nineteen Eighties (3). Exploration of the factors (e.g., socioeconomic, cultural,

peer, and family influences) that affect voting. Focus of class will be on the analysis of major election studies.

CapS 152 Ethnic Minorities in American Schools (3). Exploration of the socio-historical and cultural development of education in the United States, with special emphasis on the Asian American, American Indian, Black, and Chicano experience.

CapS 156 Welfare and Military Expenditures: The Quest for Balance (3). An examination of the size and effects of spending for social welfare and military purpose.

CapS 160 Orientation to Gerontology (3). Orientation to the professional and personal requirements for work with the aging, including an introduction to the problems and potentials of the aged.

CapS 164 Technology and Health Care (3). The impact of technology on the health care industry: currect applications, resulting ethical issues, political ramifications, and future directions.

CapS 168 Cinema and the Humanities (3). Explores the relationships between the art and technology of the cinema and current humanist ideology. Topics include how film interacts with other arts and with cultural, aesthetic, and moral assumptions; whether cinema is a viable intellectual discipline; and where art, entertainment, and values meet. Weekly films, assigned reading, written reports.

CapS 172A–B Health Promotion and Wellness (3–3). Prerequisite: Upper-division status. An interdisciplinary approach to encourage individual responsibility toward achieving high level wellness with integration of body, mind, and spirit. To assist students in seeking balance with their natural and psychosocial environments. (2 hours lecture, 2 hours lab) CapS 172A is a prerequisite to CapS 172B and both *A* and *B* must be completed to receive Capstone credit.

CAPSTONE: *Interdisciplinary Courses (NEXUS)*

NEXUS 101 Space and Time (3). An interdisciplinary study of the changing concepts of space and time that underlie our vision of the world and the ways in which these concepts are expressed, especially in Art, Astronomy, Literature, and Physics.

NEXUS 102 Understanding of Men and Women (3). A philosophical, psychological, and biological investigation of the main issues involved in understanding human behavior. Reading and discussion of literary and historical accounts of behavior, with emphasis on the development of scientific explanation. Ethical scientific consequences of the use of experimental methods.

NEXUS 103 Ascent of Man (3). Exploration of basic ideas found in Jacob Bronowski's *Ascent of Man.* The course will explore the implications, both scientific and humanistic, of Bronowski's interpretation of man's cultural history. Guest lecturers from various arts and science disciplines will add their insights.

NEXUS 104 Psychological Issues Through Literature (3). Examination of fundamental and controversial issues in psychology as they appear in novels, plays, and short stories.

NEXUS 105 Evolution Revolution (3). An exploration of the significance of evolutionary theory and its impact on the sciences and on the broader cultural scene: Pre-Darwinian evolutionists; changing attitudes toward persons and their relation to the rest of nature; literary and artistic expressions of evolutionary ideas; philosophical and ethical responses; the controversies between evolutionary and other accounts of the origin and development of life.

> **"If you're interested in philosophy, but your main interest is in the sciences, take some philosophy courses anyway. Try to get to know some of your professors too."**
>
> *— Senior,*
> *Biology, Philosophy, and Liberal Studies*

CAPSTONE: Cluster Courses

The Spiritual Quest

Cluster Theme: To explore in cross-cultural, theoretical, and philosophical perspectives the answers humans have discovered to ultimate questions

Phil 130	Philosophy of Religion (3)
Phil 131	Comparative Religion (3)
Anth 150W	Anthropology of Religion (3)

Energy and Society

Cluster Theme: To understand the role of energy in modern society and to provide an awareness of environmental problems associated with energy utilization from an economic, spatial, practical, and theoretical standpoint.

I T 106	Energy Conversion and Utilization (3)
P Sci 168	Environmental Impact of Energy Demands by Society (3)
Econ 117	Economics of Ecology (3)
Geog 134	Geography of Energy (3)

Ethnicity and Culture: Theories and Applications

Cluster Theme: To sharpen the focus on ethnic behavior by applying theories of inter-ethnic contact, boundary maintenance, and cultural change to the study of one major element, folklore, in the culture of a significant ethnic minority group in the U.S. today.

CLS 103	Chicano Folklore (3)
Anth 172	Ethnic Relations and Cultures (3)

Christianity, History, and Politics

Cluster Theme: To offer students an opportunity to reflect upon and integrate their General Education experience in the light of the tradition of Christian humanism. To offer a framework and a method for tying together the disparate bodies of information and insight garnered from formal courses in the humanities, the arts, and the natural and social sciences.

Hist 103A	History of Early Christianity (3)
Pl Si 112	Politics and Christianity (3)

The Church and the Court

Cluster Theme: To explore the interdependence of art forms developed during the Middle Ages and the Renaissance in Western Europe.

Engl 113 World Literature: Medieval and Renaissance (4)
Art H 122 Northern Renaissance (3)
Music 161A Survey of Music History I (3)

Mexico-U.S. Relations: Conflict and Change

Cluster Theme: To explore the constant conflicts and changes in Mexican/U.S. relations from the past to the present and to analyze the socio-cultural interaction among Mexicanos/Chicanos and Anglos.

Hist 165 Modern Mexico (3) or
Hist 183 The Hispanic Southwest (3)
CLS 114 Mexico and the Southwest 1810–1910 (3) or
CLS 115 Mexico–U.S. Relations Since 1910 (3)

The Greek World

Cluster Theme: To deal with the ancient, primarily Greek, world from its earliest beginnings to the classical period and beyond.

Hist 111 Ancient Greece (3)
Engl 112 World Literature: Ancient (4)
Phil 101 Ancient Philosophy (3)
Grk 148 Greek Literature in English Translation (3)

Note: To receive Capstone credit, a student must complete either Hist 111 or Phil 101 and complete Engl 112 or Grk 148.

Popular Culture and Society

Cluster Theme: To examine popular culture as an institution that is organized in distinctive ways; the relation between content and social structure; the importance of the content of popular culture in shaping society.

Soc 142 Sociology of Popular Culture (3)
TCOM 163 Radio-TV as Popular Culture (3)
Engl 174 Popular Fiction (3)
Music 187 Pop Music: Jazz and Rock (3)

Note: To receive Capstone credit, a student must complete either Soc 142 or TCOM 163 and complete either Engl 174 or Music 187.

Agriculture and Government Policy

Cluster Theme: To investigate the philosophical foundations, political formulation, and economic consequences of government agricultural policies and farm programs.

Ag Ec 150 Agricultural Policy (3) and either
Pl Si 150 Public Policy Making (3) or
Phil 125 Social and Political Philosophy (3)

The Soviet Union

Cluster Theme: To acquaint students with the geography, history, economy, institutions, and culture of the Soviet Union.

Geog 176 Geography of the U.S.S.R. (3)
Hist 143 The Soviet Union (3)
Pl Si 141 Soviet Politics (3)

Business and Society

Cluster Theme: To understand the relationship between business and society and to analyze various forms of business activity that have appeared in different societies and at different times.

Soc 149 Sociology of Business (3)
B A 120 Business and Society (3)

The Roman World

Cluster Theme: To acquaint students with Roman civilization in the areas of language, law, government, art, architecture, literature, and religion.

Hist 112 Ancient Rome (3)
Latin 148 Roman Literature in English Translation (3)

Crime and Society

Cluster Theme: To provide students an opportunity to study crime in contemporary American society from an intensive interdisciplinary approach.

Crim 100 Criminology (3) or
Crim 153 Psychology of Crime (3)
Soc 143 Deviance and Control (3) or
Soc 159 Social History of Crime (3)

Note: To receive Capstone credit, a student must complete either Crim 100 or Crim 153 and complete either Soc 143 or Soc 159.

Women: Themes and Variations; Potential and Problem; Cohesion and Conflict

Cluster Theme: To re-orient the student from a perception of women as "other" to a view of all women as equal contributors to our developing humanity and increase sensitivity to the problems that women—privileged and oppressed, Black and Chicana, working and at leisure—have faced, coped with, and surmounted to achieve self-hood.

Anth 170 Women: Culture and Biology (3) (Same as WS 170)
Bl S 137 Black Women (3) (Same as WS 137)
CLS 152 The Chicano Family (3) (Same as WS 119)

Note: To receive Capstone credit, a student must complete Anth 170 before Bl S 137 or CLS 152 is taken.

The Renaissance

Cluster Theme: The emergence of the "modern world" from its medieval beginnings to the 17th century.

Hist 125 Renaissance (3)
Music 161A Survey of Music History I (3)
Art H 120 Italian Renaissance (3)
Engl 147 Renaissance (4)

The World of the Old Testament

Cluster Theme: An analysis of the Hebraic world, including its history, geography, literature, and its basic religious beliefs.

Hist 115 Ancient Israel (3)
Geog 180 Biblical Lands (3)
Engl 116 Literature of the Old Testament (3) (Same as Phil 134)

European Culture Since the Renaissance

Cluster Theme: The various ways in which intellectual and artistic movements and political ideologies have shaped the development of the modern world from the 18th Century to the present.

Hist 135 European Cultural History (3)
Engl 114 World Literature: Modern (4)

Phil 103 Bacon to Kant (3)
Music 161B Survey of Music History II (3)

Note: To receive Capstone credit, a student must complete Hist 135 before Engl 114, Phil 103, or Music 161B is taken.

California: Land of Contrast

Cluster Theme: An examination of the physical, cultural, and political complexities of the State of California; a land of contrast.

Geog 168 Geography of California (3)
Geol 168 Geology of California (3)
Pl Si 103 California Politics (3)

Note: To receive Capstone credit, a student must include Geog 168 as part of the required 6 unit cluster.

Cities and Urban Society

Cluster Theme: To explore the social, economic, and environmental factors at work in the formation of cities; their changing forms and social patterns; urban life and interrelationships; means for guiding city change through planning.

Anth 108 Urban Anthropology (3)
Geog 160 Urban Geography (3)
Soc 163 Urban Sociology (3)
C R P 100 Introduction to Community Planning (3)

An Emerging Third World Region: Subsaharan Africa

Cluster Theme: This cluster is intended to provide an understanding of the peoples of Africa south of the Sahara—their problems and prospects, accomplishments and aspirations, values and perceptions—through a study of their physical environment, their history, and their literature.

Geog 182 Subsaharan Africa (3)
Hist 157 Modern Africa (3)
Fren 149 Voices of Africa (3)

Environment: Problems and Solutions

Cluster Theme: Our environment, critical to the survival of mankind and all living things, has been threatened by a variety of human-caused problems. These problems, their nature, and potential solutions are treated in depth by this cluster of courses.

Biol 105 Human Ecology (3)
Geog 128 Environmental Pollution (3)
C R P 135 Environmental Law (3)

Note: To receive Capstone credit, a student must complete Biol 105 or Geog 128 before C R P 135 is taken as the required course of this cluster.

Race and Ethnicity in the United States

Cluster Theme: This cluster will focus on race and ethnicity in the United States and is designed to integrate perspectives and information on race and ethnicity in America from at least two and, ideally, three different programs and disciplines.

Hist 186 American Ethnic History (3)
Soc 111 Sociology of Minority Relations (3)
Bl S 135 American Black Ghettos (3)
N A S 100 American Indian Religion (3)
CLS 116 Cultural Change and the Chicano (3)
AsAm 110 Asian American Communities (3)

Note: To receive Capstone credit, a student must select one course (3 units) from Hist 186 or Soc 111 and select one to two courses (3–6 units) from Bl S 135, N A S 100, CLS 116, AsAm 110.

Acquisition of Knowledge

Cluster Theme: To examine various aspects of the methods and processes by which we acquire information and support our beliefs.

Phil 150 Foundations of Knowledge (3)
P Sci 106 History of Physical Science (3)
Psych 136 Human Learning and Behavior (3)

Britain

Cluster Theme: To examine Britain through selected cultural and historical perspectives, including its theatre, literature, and the development of the welfare state.

Art 100T 18th and 19th Century Art
Biol 185T Famous British Scientists
Engl 169T The British Novel: 18th, 19th, and 20th Century
Drama 188T British Theatre
Hist 149T Figures from the British Past

Note: Only students participating in the London Semester Program will be eligible for Capstone credit by enrolling in these classes.

Shock of the New: The Triumph of Modernism

Cluster Theme: To explore the theme that artists, like other people, are the products of their social and cultural environments and that full understanding of their behavior and work requires interwoven analysis of their social milieux and of purely aesthetic situations. To illustrate the theme, faculty will present the achievement of Modernism in Western culture between 1880 and 1939.

Engl 156 Twentieth Century British Literature (4)
Fren 147 French Literature in Translation (3)

Asian Cultures and Traditions

Cluster Theme: To provide an understanding of cultural pluralism, awareness of the proportion and significance of other cultures in general, of Asia in particular, and a better understanding of this country's role in different parts of Asia.

Anth 186 Tradition and Change in China and Japan (3) (same as Hum 140)
Ling 110 Indic Cultures and Traditions (3) (Same as Hum 150)
Anth 123 Peoples and Cultures of Southeast Asia (3)

Pollution, Health, and Society

Cluster Theme: To develop knowledge of fundamental engineering and health factors in the environment including governmental regulations, risk analysis, sources of pollution, control technologies, and health effects of more common pollutants.

H S 170 Health Effects of Indoor Pollution (3)
C E 170 Pollution and Society (3)

Juveniles and Adolescence

Cluster Theme: To study adolescents during intense periods of biological, social, and psychological development.

CFS 136 Middle Childhood and Adolescence (3)
Psych 102 Adolescent Psychology (3)
Crim 120 Juvenile Delinquency (3)

Note: To receive Capstone credit, a student must complete either CFS 136 or Psych 102, and Crim 120.

Law, Culture, and Society

Cluster Theme: Examines the nature, origins, functions, and limits of law as cultural expressions; focuses on the American legal system and its underlying premises in their American cultural contexts.

Anth 146	Law and Culture
B A 108	Law and Society

Our Classical Heritage

Cluster Theme: An analysis of the Greco-Roman legacy via archetypes in religion, drama, sport, and mythology.

Drama 185	History of the Theatre and Drama I (3)
Hist 116	Greek and Roman Religion (3)
Latin 132	Classical Mythology (3)
P E 111	The Olympic Games (3)

Transfer Students

Earning an A.A. or A.S. degree does not mean one has completely fulfilled CSU-system General Education requirements.

After admission to CSU, Fresno, transfer students with 20 or more units will receive a copy of their advanced standing evaluation indicating how previous college units have been applied toward requirements at CSU, Fresno. Normally, the advanced standing evaluation is sent to students during their first semester at CSU, Fresno. Questions regarding one's evaluation should be directed to the **Evaluations Office, Joyal Administration Building 114, (209) 294-4076.** *It is recommended that transfer students bring with them an unofficial copy of all previous college work when attending new student orientation and advising day to ensure accurate advising.*

Transfer admission eligibility is based on *BACCALAUREATE TRANSFERABLE* college units, rather than on all college units. California community college transfers should consult their counselors for information on transferability of courses for admission purposes. Applicants in good standing at the last institution attended may be admitted as *undergraduate transfer* if either of the following requirements are met:

1. Eligible for admission in freshman standing (see freshman requirements) with a grade point average of *C* (2.0 on a scale where *A* = 4.0) or better in all transferable college units attempted.
2. Completed at least 56 transferable semester units or 84 transferable quarter units with a grade point average of *C* (2.0 on a scale where *A* = 4.0) or better if a California resident; *nonresident* must have a grade point average of 2.4 or better.

California State Administration Code provides that General Education BREADTH requirements completed at an accredited California public community/junior college and/or a California State University campus by a student transferring to CSU, Fresno shall be accepted (up to 39 units) to the extent stated in the certification from the originating college or university. Each transfer student will be required to complete additional units at CSU, Fresno to meet the General Education requirement. Transfer students who change their majors after being admitted to the university are advised that General Education course requirements may also change.

A through E Format (Transfer Students)

To aid transfer students in planning their academic programs, the CSU, Fresno General Education Program is presented below in the *A* through *E* format in use at many other California colleges and universities.

Area A—6 units minimum

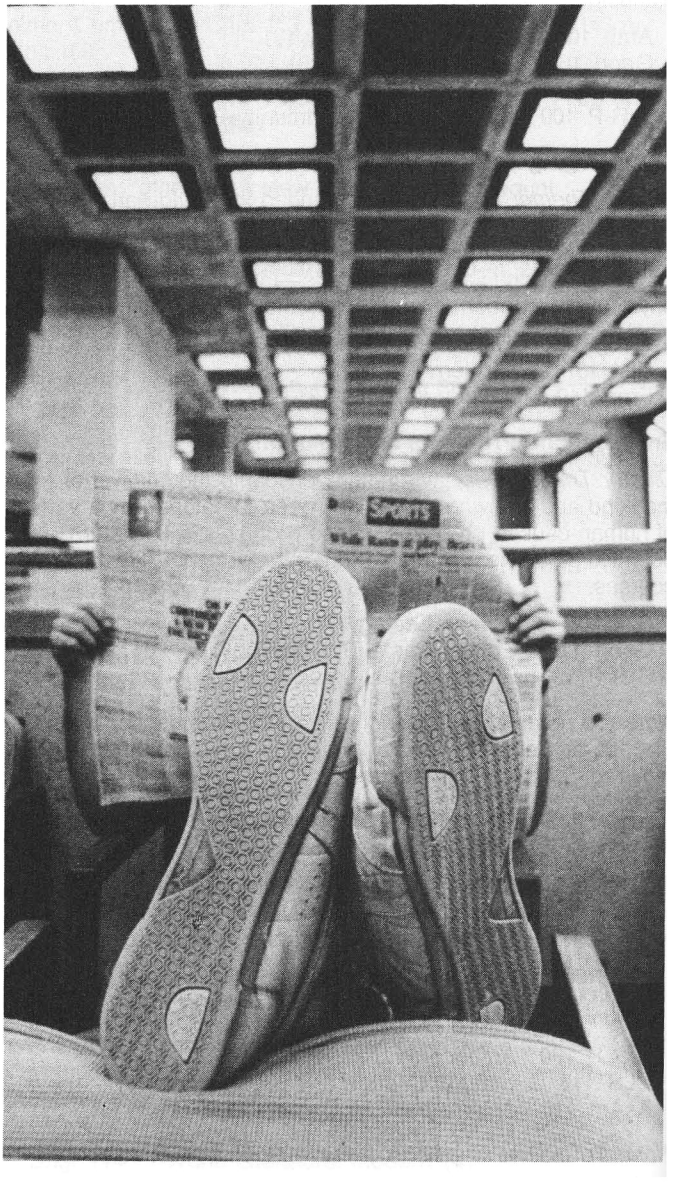
Required: English 1
Select One: Speech 3, 5, 7, or 8

Area B—12 units minimum

Required: Math 4. *Note:* Students who passed Algebra II (intermediate algebra) in high school may select an alternate course from one of the following options:

- Mathematics 5, 6, 41, 45, 51, 52, 70, 71, 75, DS 71
- Computer Language: EE 70; IS 50, 53, 54; C Sci 20, 40
- Statistics: Ag Ec 71; Plant 100; DS 73; AS 153; H S 102; Psych 142; Soc 25; Math 11

At least one course required from Division 1 and 2 (include one Lab).



Division 1—Physical Processes

Chemistry 1A, 1B, 2A, 2B, 2C
Geology 1, 2, 15 (Man and Natural Environment Only)*
Physics 1, 2A, 2B, 5A, 5B

Division 2—Biological Processes

Biology 10, 15 (Man and the Natural Environment Only)*
Botany 1 or 10
Zoology 1 or 10

Division 3—Behavioral/Environmental Systems

Anthropology 1, 3
Geography 5, 5L, 7, 7L
Psychology 10, 36

Area C—12 units minimum

At least one course required from three of the four Divisions (4–7).

Division 4—Literature

English 20, 30, 101, 102, 103
French 109
Greek 148
Latin 148
Spanish 140, 142

Division 5—Fine Arts

Art 1
Art History 10, 11
Dance 171
Drama 62, 163
Chicano-Latino Studies 7, 9
Music 9, 74

Division 6—Humanities

History 1, 2
Humanities 10, 11
Philosophy 1, 10, 120, 131

Division 7—Languages

Armenian 1A, 1B, 2A, 2B
Chinese 1A, 1B, 2A, 2B
French 1A, 1B, 2, 3
German 1A, 1B, 2A, 2B
Greek 1A, 1B, 2A, 2B
Hebrew 1A, 1B
Italian 1A, 1B, 2A, 2B
Japanese 1A, 1B, 2A, 2B
Latin 1A, 1B, 2A, 2B
Linguistics 10
Philosophy 25, 45
Portuguese 1A, 1B
Russian 1A, 1B, 2A, 2B
Sanskrit 10A, 10B
Spanish 1A, 1B, 2A, 2B, 4A, 4B

Area D—12 units minimum

Required: History 11 or 12
Required: Political Science 2 or 101

One course required from each Division (8–9)

> "I can't emphasize the importance of good reading and writing skills. They make the difference between suffering through a class or enjoying it and learning something from it."
>
> *— Freshman, Undeclared Major*

Division 8—Social, Economic, and Political Systems

Agricultural Economics 1
Anthropology 2, 15 (Man and the Natural Environment Only)*
Economics 1A, 1B
Geography 2, 3, 4
Political Science 1, 8, 120
Sociology 1, 2, 3

Division 9—Other Cultures and Women's Studies

Armenian Studies 10
Asian American Studies 15, 30, 56, 110
Black Studies 25, 27, 38, 144
Ethnic Studies 1
History 101
Chicano-Latino Studies 3, 5
Native American Studies 50, 103
Sociology 131
Women's Studies 10, 101, 131, 135

Area E—3 units minimum

One course required from Division 10.

Division 10—Personal Life and Growth

Art 13, 20, 30, 40, 50, 60, 70
Dance 116
Drama 22, 34
English 41, 43
Health Science 90, 124
Child and Family Studies 38
Industrial Engineering 125
Music 2–102, 3–103, 18–118, 21–121
Physical Education 31
Psychology 61 or 171, 132
Recreation 80
Speech 4
Food Science and Nutrition 53

Capstone—6 upper-division units minimum

Note: A minimum total of 9 upper-division units in General Education is required, of which 6 units are Capstone.

* Man and the Natural Environment (M.N.E.) is a 17 unit interdisciplinary thematic cluster offered through the School of Natural Sciences. For more information about this program, see *School of Natural Sciences,* page 128.





THE UNIVERSITY'S SCHOOLS

School of Agriculture and Home Economics

Charles M. Smallwood, *Dean*

Carl L. Pherson, *Assistant Dean,*
Academic Affairs and Graduate Programs
Harry P. Karle, *Assistant Dean,* Agricultural Operations
Jon D. Shaver, *Assistant Dean,*
California Agricultural Technology Institute
Herbert O. Mason, *Chair,* Agricultural Economics
John A. Jacobs, *Chair,*
Animal Science and Agricultural Education
(To be appointed), *Chair,*
Enology, Food Science, and Nutrition
Eugene W. Krebs, *Chair,*
Family Studies and Home Economics
Gary E. Grannis, *Chair,* Industrial Technology
Allan A. Hewitt, *Chair,*
Plant Science and Mechanized Agriculture
John W. Hagen, *Director,* Center for Agricultural Business
Kenneth H. Solomon, *Director,*
Center for Irrigation Technology
Gary L. Ritenour, *Director,*
Crop Production and Protection Center
Don A. Duncan, *Director,* San Joaquin Experimental Range
Vincent E. Petrucci, *Director,*
Viticulture and Enology Research Center
John R. Shields, *Coordinator,*
International Agriculture Program

Phone: (209) 294-2061
Telex: 5106001919 CSUF AG
Mail: CSU, Fresno 93740-0079

Mission Statement

The university mission statement reveals the institution's priorities. CSU, Fresno "emphasizes programs in agriculture and business, reflecting its location in the world's premier agriculture and agribusiness center. The university recognizes a special commitment to work with the community in the preparation of students for industries and professions in the San Joaquin Valley." Also, "The university fosters applied research and public service programs . . . contributing to the intellectual, social, cultural, and economic vitality of the San Joaquin Valley and California."

Historical Development

The School of Agriculture and Home Economics is firmly rooted in the tremendously fertile San Joaquin Valley—the number one production region in the number one agricultural state in the nation. Prior to 1947 a limited agriculture curriculum was offered through the biology department. During the 1947–51 period, agriculture department faculty were hired, curriculum was developed, and the first farm laboratory was established at Hammer Field. The original 12 B.A. program areas and a two-year technical agriculture program were expanded to the current 37 B.S. and B.A. program concentrations offered today. During the 50's, the agriculture department became the Division of Agriculture composed of three departments—agricultural mechanics, animal science and plant science. Within this same period, leaders in the California agricultural industry began a state-wide fund-raising effort to acquire the present 1,200-acre agricultural laboratory and university site. Their objective "to establish a school of agriculture" was achieved in 1968, when an M.S. program was also created for animal science and plant science. Shortly thereafter, the name was changed to the School of Agricultural Sciences. The Department of Agricultural Economics was begun during the 1969–70 academic year. In 1977 the Department of Family Studies and Home Economics joined the school, which was renamed School of Agriculture and Home Economics. The Department of Industrial Arts and Technology became a part of the school in 1980. The agricultural laboratory was enhanced by the 1983 acquisition of the 4,500-acre San Joaquin experimental range in the Sierra Nevada foothills. A significant addition to the school occurred in 1984, when the California Agricultural Technology Institute (CATI) was founded to sponsor applied research and technology transfer needed by agricultural industries of California.

Within the present six departments (agricultural economics; animal science and agricultural education; enology, food science and nutrition; family studies and home economics; industrial technology; and plant science and mechanized agriculture), the school has 2,000 undergraduate majors and 240 graduate students. The 93 faculty, many of whom are recognized nationally and internationally, are well-qualified professionals who maintain up-to-date industry contacts. Throughout the school's growth and development, the administrators and faculty have never lost sight of its number one priority—serving the educational needs of students.

Educational Commitment

The instructional philosophy of the school insures that its students have:

1. A well-rounded general education emphasizing critical thinking skills for becoming a responsible citizen in our society;
2. A sound scientific and/or economic foundation to understand and contribute to a progressive agricultural sector;
3. The technical knowledge and managerial skills necessary for entry into a professional occupation or pursuit of advanced education;
4. Motivation through close student-teacher working relationships in the classroom and laboratory;
5. An opportunity for a faculty supervised "hands-on" field experience via the enterprise project program and/or through research center projects under the California Agricultural Technology Institute;
6. Access to industry internships and cooperative education experiences preparatory for agricultural careers; and
7. Participation in student chapters of national professional organizations bringing students into association with agribusiness leaders.

The school strives to provide leadership in the university, community, state, nation, and world in the fields of agriculture home economics, and industrial technology through the continual development of new and updated instructional programs.

Degrees Offered

B.S. in Agricultural Business
B.S. in Agricultural Education
B.S. in Agricultural Sciences with concentrations in Animal Sciences, Plant Sciences, Mechanized Agriculture, Food Sciences
B.S. in Industrial Technology
B.A. in Home Economics
B.A. in Industrial Arts

Minors: Agriculture, Home Economics, Industrial Arts

M.S. in Agricultural Business
M.S. in Agriculture with options in: Agricultural Chemistry, Animal Science, Food Science and Nutrition, Plant Science
M.S. in Home Economics
M.A. in Industrial Arts

Academic Planning

High school *graduates* and community college students, to assure rapid and satisfactory progress through a degree program, should be competent in the following areas: biological sciences, such as botany and zoology or physiology; physical sciences, such as chemistry through organic chemistry; mathematics through intermediate algebra; English grammar and composition skills; public speaking ability; and agricultural science, home economics, or industrial arts foundation courses.

Community college transfer students should request the university's Office of Evaluations to assess their academic record regarding CSU, Fresno degree requirements. They should also consult their major adviser to determine which CSU, Fresno courses within their program of study are articulated for credit as equivalent to their community college courses.

Foreign students must score 500 on the Test of English as a Foreign Language (TOEFL) examination in order to qualify for admission to the university as an undergraduate and achieve a minimum of 550 for entry to the university as a graduate student.

Each student should consult his or her assigned adviser for program planning assistance once a semester prior to registration. An individually tailored major *Program of Study* is designed to prepare students for their specific career objectives. Flexibility is an important characteristic of the school's major programs; the assigned academic adviser will assist the student in evaluating the alternatives. Departmental advisers play a significant role in planning educational programs because of their close personal contact with students and with potential employers. Refer to the departmental sections of this catalog for listings of typical career positions held by successful graduates who have completed these programs of study.

Financial Aid

The Ag One organization, comprised of agricultural industry supporters and CSU, Fresno agricultural alumni, sponsors 125 undergraduate students annually through grants and scholarships generated by member fund raising efforts. Recipients typically have demonstrated academic promise, leadership potential, and community service.

One out of every five students majoring in agriculture receives financial assistance in the form of an academic scholarship, an Ag One Grant, or grants from other sources. Government supported work-study is also available. Additional financial support and valuable professional experience is available through summer and part-time jobs in agriculture and related businesses around Fresno, where housing and living costs are relatively low.

The deadline for filing a financial aid application is February 1. For more information and application forms, call the **Financial Aids Office at (209) 294-2182.**

Undergraduate Programs of Study

Concentrations within options/emphases under B.S. and B.A. degrees are identified below.

Agricultural Business. Agricultural economics, farm management, agribusiness management, agricultural finance, agricultural development, agricultural policy, agricultural marketing, and agricultural decision analysis.

Agricultural Science. *Animal Science:* production (swine, sheep, horse, beef, cattle, dairy cattle husbandry), dairy science, meat technology, preveterinary medicine, animal health; *Plant Science:* plant, crop science (agronomy, vegetable crops, rangement management), fruit science (viticulture, horticulture), soils/irrigation (soil science, irrigation technology, water management); *Mechanized Agriculture:* agricultural engineering technology, mechanized agriculture; *Food Science:* dairy industry, enology, food science, food in business.

Dietetics and Food Administration. Dietetics, nutrition, food services.

Agricultural Education. Agricultural economics, animal science, mechanized agriculture, plant science disciplinary fields.

Home Economics. Child and family studies, consumer science and housing, clothing and textiles, fashion merchandizing, food in business, general home economics, home economics teacher education.

Industrial Arts. *Graphic and Interior Design:* commercial art/advertising design; *Industrial Arts Education; Industrial Arts:* automotive, construction, design, drafting, electricity/electronics, general metal, graphic arts, industrial crafts, machine tool metal, power mechanics, woodworking.

Industrial Technology. *Manufacturing Option:* computer-aided design, electricity/electronics, electronic communications, graphic communications, manufacturing automation, metals, transportation, wood products; *Construction Option:* architecture, construction management.

Teaching Credentials. The school offers credential programs to prepare graduates for teaching *agriculture, home economics,* or *industrial arts* in public secondary school systems. Students should consult the appropriate departmental credential adviser for program requirements. For specific credential requirements, see *School of Education and Human Development,* pages 123–124.

School-Wide Programs. Cross disciplinary programs of study may also be pursued as career speciality concentrations under many existing undergraduate degree options/emphases in the School of Agriculture and Home Economics. (See major program of study concentrations on advising check sheets in the departments for approved course listings by

options/emphases.) They are:

Agricultural Communications. This field covers news information gathering and subsequent transmission via the print, broadcast, and computer media. The program of study combines courses in the agricultural sciences, agricultural economics, journalism, speech, graphic design, and radio/television in preparing students for careers in the publishing and telecommunications industries, as well as in public relations and government service.

Food Industry Management. This area involves agricultural commodity transformation, plus food and fiber product distribution. The program of study links such fields as food science, nutrition, dairy industry, enology, plant science, industrial technology, mechanized agriculture, agribusiness management, and consumer science. Students enter occupations in product development, food preservation, food and fiber processing, value-added manufacturing, packaging design, and quality assurance, as well as transportation logistics, warehouse management, inventory control, wholesale marketing, retail promotion, and food service.

International Agriculture. The study of tropical food and fiber production, overseas agricultural sector development, and export marketing integrates courses in plant, animal, and food sciences with agricultural economics. Students are provided the requisite technical knowledge, economic/business acumen, and cross-cultural orientation both for study-abroad exchange programs and for employment in multi-national agribusinesses, international development agencies, the U.S. Foreign Service or Peace Corps, and private voluntary organizations. Students from around the world are enrolled in undergraduate and graduate degree programs staffed by faculty with extensive professional experience in Africa, Asia, Latin America, and the Middle East. The school also conducts short-term training programs for students sponsored by foreign governments, the U.N.'s Food and Agricultural Organization, the U.S. Agency for International Development, and similar institutions with which the university has cooperative agreements.

Professional Preparation

Student Activities. More than 30 professional associations, honor societies, judging teams, show teams, clubs, and social fraternities exist within the School of Agriculture and Home Economics to provide excellent opportunities for leadership development and industry contact.

Production Projects. Supervised student project programs in animal and plant production utilize a hands-on approach to the practical application of theory learned in the classroom to enhance opportunities for future employment. To qualify for a project a student must have coursework in the subject concentration and be enrolled in an enterprise management course (number 196) as well as demonstrate proficiency in equipment operation (if appropriate).

Industry Internships. *Non-paid* work opportunities abound for qualified students to serve as interns in an industry setting appropriate to their major program of study. Integration of academic learning and work experience is attained by participating in the program. Professional employment prospects after graduation are greatly enhanced through internships.

Cooperative Education. *Paid* work experience is combined with on-the-job training and classroom learning under this program. Placement with participating employers depends upon career goals and can be arranged on the **Alternating Plan** (one semester full-time employment followed by one semester full-time study at the university) or the **Parallel Plan** (concurrent part-time work and study). Academic credit earned will be applied toward the degree while the student is testing tentative career choices.

Continuing Education. Short courses, seminars, workshops, and field day demonstrations are offered to meet the in-service education needs of the agricultural community. Similar programs provide home economists and industrial technologists opportunities for professional development.

Undergraduate Degree Requirements

The *Bachelor of Science* degree in agricultural business, agricultural education, or agricultural science consists of 128 semester units, *including 40 units upper division.* The Bachelor of Science degree in industrial technology consists of 128 units, *including a minimum of 18 units upper division* in the major (see *Degree Requirements,* pp. 98–101).

The *Bachelor of Arts* degree in home economics or industrial arts consists of 124 semester units, *including 40 units upper division (see Degree Requirements,* pp. 98–101).

Upper-division courses taken before the student has earned 45 units may not be applied toward the 40-unit or 18-unit upper-division requirements.

Upon completion of 90 units, an official *Program of Study* developed individually with an adviser for each student majoring in agricultural business, agricultural education, agricultural science, or home economics, must be initiated by the student and approved by the appropriate department chair and the school dean. This Certification of Major Requirements form should be filed with the Office of Evaluations early in the last semester prior to graduation, along with an application for graduation and accompanying fee.

No more than 15 *upper-division* units from internships (maximum 8 units per department in the School of Agriculture), independent study (maximum 6 units), and undergraduate research (maximum 4 units per department in the School of Agriculture) *combined* may be applied to the degree. Please note that there is a campus limit of 12 units (upper and/or lower division) for work experience, internship and agricultural enterprise projects combined. (See *Unit Limitations,* p. 100.) Courses graded on a ***CR-NC*** basis may not be counted toward the major unit requirement. (For specific exceptions, see *Degree Requirements,* pp. 98–101.)

The general requirements for the Bachelor of Arts degree or Bachelor of Science degree must be completed. (See *Degree Requirements,* pp. 98–101.)

A dual major must have 36 mutually exclusive units (including a minimum of 18 upper division). A dual major requires the approval of the department chairs administering these programs of study. General Education and elective units may be applied (i.e., double counted) toward a second major or a minor. (See *Dual Major,* p. 98, in the catalog and consult with the appropriate department advisers.)

Refer to departmental sections for specific program requirements.

Minor Programs

A minor in agriculture, home economics, or industrial arts is available to students majoring under other degree programs. Students interested in a minor should consult an agriculture, home economics, or industrial arts adviser to plan a minor program. The minor program is planned with an adviser and must be certified by the appropriate department chair and the school dean. The certified minor program will be filed with the Office of Evaluations.

Agriculture/Home Economics. A minor in agriculture or home economics consists of 21 units of which 9 must be upper division. At least 12 units must be taken in a particular department and/or discipline.

Industrial Arts. A minor in industrial arts consists of 20 units of which 9 must be upper division. At least 12 units must be taken in one of the following specific areas of concentration: automotive, construction, design, drafting, electricity/electronics, general metal, graphic arts, industrial crafts, machine tool metal, power mechanics, or woodworking.

Graduate Programs of Study

The master's degree programs offered in the School of Agriculture and Home Economics are designed to provide advanced specialized study through the following programs:

Master of Science degree in agricultural business is designed to develop business management and economic analysis skills for individuals seeking career advancement in farm management, agribusiness management, agricultural finance, and agricultural marketing.

Master of Science degree in agriculture offers programs designed to extend the competence of persons engaged in teaching, professional, and technical positions, or interested in preparing for advanced graduate study at the doctoral level. Options are offered in animal science, plant science, food science and nutrition, and agricultural chemistry.

Master of Science degree in home economics with an option in education is designed to increase the competencies of students who focus their programs of study in any one of the four areas of home economics: child development and family relations; clothing and textiles, and fashion merchandising; consumer sciences and home management; and housing and interior design.

Master of Arts degree in industrial arts offers graduate study in both industrial and educational related professional and technical fields. Emphasis is directed toward the attainment of advanced competency in the respective areas of industrial arts teaching, manufacturing technology, and construction.

General admission for graduate study by the university does not imply acceptance for the master's program by departments in the School of Agriculture and Home Economics. See departmental sections for specific admission requirements.

(Refer to departmental sections for specific program requirements. See also *Admission to Graduate Standing, Advancement to Candidacy, Program Requirements, and Thesis and Thesis Alternatives.)*

Instructional Facilities

University Farm Laboratory. Eleven hundred and ninety acres adjacent to the academic campus provide a unique opportunity for students to directly apply the knowledge and skills acquired in the classroom. Vineyard, orchard, vegetable, cotton, and field crop enterprise projects supervised by faculty in the plant science and mechanized agriculture department further develop production and management skills. Similar enterprise projects at the beef, sheep, and swine units are supervised by faculty in the animal science department. The modern (1983) dairy, quarter horse, and feed mill units also support the instructional programs in animal science. All facilities are located within walking distance of the classroom. More than 5,000 acres of Sierra foothill rangeland are utilized in the comprehensive livestock and range management programs.

Enology Laboratory. The instructional winery provides an opportunity for students to make and evaluate varietal wines. The facility is also used to assist students in learning the distillation processes for converting farm waste products to alcohol fuel.

Raisin Processing Plant. Situated near the campus vineyards, many student and faculty research projects on dehydration methods and other drying systems for raisins are conducted in this facility.

Dairy Processing Plant. Milk, butter, cheese, and ice cream are processed by students in this instructional laboratory and marketed to the various on-campus food services and the public.

Meats Laboratory. An abattoir with complete livestock butchering, curing, and processing facilities provides many learning opportunities for students including meat inspection and processing plus the correlation of live appearance with carcass quality.

Seed Technology Laboratory. This instructional and research facility houses a full-scale seed conditioning plant for processing seed produced on the university farm. A complete model laboratory is also available for teaching the principles of seed conditioning as well as for testing various physiological and biochemical functions of seeds.

Computer Laboratories. Two fully equipped laboratories with modern computers for the agricultural business and agricultural science programs provide students with hands-on computing at individual terminals to complete practical exercises in support of academic courses.

Textiles Laboratory. This research and testing facility includes equipment examining textile construction, physical properties, and color performance for purposes of product development and compliance with federal law. Students learn the scientific and technological aspects of textile products by studying the characteristics of natural and man-made fibers, the methods of yarn construction, and the techniques of fabric construction with basic finishes.

Fashion/Clothing Laboratory. This production facility is equipped with machines and tools for cutting, sewing, pattern construction, layout, tailoring of fabrics of particular weights, and mannequin use. Students learn garment construction methods, alteration skills, and fitting techniques to produce a custom fit. The display windows in the Art-Home Economics Building are extensions of this laboratory and familiarize students with current ideas for exhibiting clothing and accessories to the public.

Infant/Toddler Laboratory. This learning facility, which accepts young children between the ages of six months and two and one-half years, is designed to elicit and expand specific competencies, such as language, sensory, motor, and social skills. This controlled setting provides university students opportunities for observation and testing, as well as first hand experience in applying theoretical studies of the infant and toddler's physical, emotional, and intellectual development.

Child Development Laboratory. This modern and well-equipped facility enables students to observe and test young children in order to design a development program involving balanced physical, emotional, and character maturation. The laboratory was created for students to gain experience working with young children and acquiring competencies in child development. The facility is also utilized as a campus day care center for student's children.

Technology Transfer

California Agricultural Technology Institute. The agricultural technology development, training, and demonstration activities of the institute offer students opportunities to interact with faculty and industry experts on state-of-the-art energy, water, production, management, and computer applications projects. CATI provides the "umbrella" for all funded faculty and graduate student research, industry conferences, and special projects.

Center for Agricultural Business. In order to promote the economic efficiency, profitability, and survivability of California agriculture, this center utilizes faculty expertise and student assistants addressing problems in farm management, agribusiness finance, commodity marketing, and labor management. Information dissemination conferences are held periodically on topical issues of concern to farmers and agribusiness firms.

Center for Irrigation Technology. The school is internationally recognized for research, development, and demonstration of efficient water management practices. The center provides impetus to state-of-the-art irrigation research and development and offers work experience opportunities for enrolled students. The technical library, equipment testing facilities, field demonstration areas, and computer analysis and control programs enhance the irrigation coursework. Field days, workshops, and seminars are conducted for local growers, industry specialists, and international visitors.

Crop Production and Protection Center. The major goal of center-sponsored research is to provide California farmers with information on improved production and protection of their crops to achieve maximum technical efficiency and economic return through the application of modern cultural techniques that minimize adverse environmental effects. Field experiments are conducted by faculty with the assistance of students, and often completed in conjunction with state and federal agencies. Cooperation regularly occurs with other agricultural researchers located in the CSU, Fresno service region.

Viticulture and Enology Research Center. Surrounded by 160 acres of table, raisin, and wine grape vineyards, the Viticulture and Enology Research Center provides students with up-to-date technical information and hands-on vineyard and winery management skills. Comprehensive viticulture and wine making programs of excellence are offered with financial support from the grape and wine industry and the U.S. Department of Agriculture. Current research efforts are directed toward the development of new products made from grapes.

San Joaquin Experimental Range. The San Joaquin Experimental Range was California's first range research station and has a 50-year history of range, range livestock, and wildlife management research. Under the management and coordination of the university, the 4500-acre range functions as a laboratory for range management classes and for student and faculty studies, which have varied from rattlesnakes to rose clover, and supplements to sulfur fertilization. CSUF's commercial herd of more than 300 cows provide laboratory, research, and hands-on husbandry experience for animal science students.

Mushroom Research Unit. Initially established to study the utilization of agricultural wastes as a resource for mushroom-growing media, this program now demonstrates speciality crop management and waste handling techniques for students and industry.

School of Arts and Humanities

Joseph Satin, *Dean*

Robert G. Ware, *Assistant Dean*
S. Michael Opper, *Chair,* Art
Ronald D. Johnson, *Chair,* Communication Arts and Sciences
R. C. Adams, *Coordinator,* Telecommunications Program
John C. Cagle, *Coordinator,* Speech Communication Program
Ronald D. Johnson, *Coordinator,* Theatre Arts Program
Roger D. Chittick, *Chair,* English
Keith Sauer, *Chair,* Foreign Languages
James B. Tucker, *Chair,* Journalism
P. J. Mistry, *Chair,* Linguistics
Phyllis A. Irwin, *Chair,* Music
Warren L. Kessler, *Chair,* Philosophy

School Programs

The arts and humanities are the eye of the pyramid, providing vision, depth, and discernment for all areas of knowledge. From the "Know thyself" of philosophy to the "Get it right" of journalism, the arts and humanities illuminate everything from self to society. Art, music, telecommunications, and theatre offer opportunities to participate in and absorb the full range of creative and interpretive experience. English and speech communication, letters and language, sum up the best that has been thought and said. Foreign languages and linguistics do all of that and more. Besides providing culture, in the Germanic sense of the term, knowledge of foreign languages offers insights into whole new worlds of people. Linguistics offers the same opportunity through the English language, but from the opposite end of the telescope. Journalism is best equipped to report on, comment on, and analyze the wisdom and folly of today. Philosophy deals with the wisdom of the ages—a heavy phrase for a discipline that teaches us how remarkable and timelessly "modern" the human mind has always been, from apple to Apple. Given the broad spectrum of human concerns in the arts and humanities, it should come as no surprise that the humanities interdisciplinary minor is also housed in the school.

The School of Arts and Humanities offers majors in the following areas:

Art
Telecommunications with options in:
- creative
- management
- news/public affairs
- production

Speech Communication
Theatre Arts
Theatre Arts—Dance Option
English
French
German
Russian
Spanish
Journalism with sequences in:
- advertising
- news-editorial
- photocommunication
- public relations
- radio-television news communication

Linguistics with options in:
- English as a second language
- Spanish-English bilingualism

Music with options in:
- performance
- composition
- musicology
- studio piano teaching

Philosophy with options in:
- religious studies
- philosophy and law

The School of Arts and Humanities offers minors in the following areas:

Art
Classical Studies
Telecommunications
Speech Communication
Theatre Arts
English
Armenian
French
German
Latin
Russian
Spanish
Journalism with sequences in:
- advertising
- news-editorial
- photocommunication
- public relations
- radio-television news communication

Linguistics
Music
Philosophy
Interdisciplinary Humanities
Film Studies

The School also offers graduate programs leading to the M.A. degree in:

Art
Speech
Theatre Arts
English with options in:
- literature
- creative writing
- composition

Spanish
Mass Communication
Linguistics with option in:
- English as a second language

Music

For specific information concerning courses that meet requirements for general education, teaching credentials, and degree programs, consult the chair of the department of the area of interest.

London Semester

California State University, Fresno's London Semester enables students to live and study in London each spring semester. Students earn full residence credit for all course work taken in the program. The courses are regularly scheduled catalog courses taught by CSU, Fresno faculty.

All students currently enrolled at, or transferring into CSU, Fresno, are eligible to participate in the London Semester program. Participants are selected on the basis of their overall academic qualifications, including grade point average, units completed, and personal interview. Priority is given to students who have completed a minimum of 40 semester units and who have a cumulative grade point average of 2.75 or higher.

Students are selected for London Semester during the early part of the fall semester. Students participating in the program pay the normal university fees for full-time status. All other personal expenses are the responsibility of the student, including round trip airfare, textbooks, room charges for program arranged housing, meals, and incidentals.

Information about the program and application forms are available from the **Office of the Dean, School of Arts and Humanities, San Ramon 4-222.**

School of Business and Administrative Sciences

Joseph J. Penbera, *Dean*

Dwayne G. Schramm, Assistant Dean
Richard L. Pinkerton, Valley Business Center
Lynn Forsythe, *Director,* Graduate Program
Elwyn M. Christensen, *Chair,* Accountancy
Paul M. Lange, *Chair,* Finance and Business Law
Harry G. Costis, *Chair,*
Information Systems and Decision Sciences
Gerald L. Jones, *Chair,* Management and Marketing
Lt. Col. Shaun M. Sullivan, *Chair,* Aerospace Studies
Lt. Col. James W. Henderson, *Coordinator,*
Military Science Program

Degrees Offered: B.S., M.S., M.B.A., M.S.-A.

Minors: Administration of the Performing Arts
General Business

B.S. Options:

Accountancy
Agribusiness
Computer Applications and Systems
Decision Sciences
Finance
Financial Services
Human Resource Management
Information Management
Legal Environment of Business
Logistics/Operations Management
Management
Marketing
Real Estate and Urban Land Economics
Risk Management and Insurance

School Programs

The School of Business and Administrative Sciences prepares students for careers in business, in the professional world, and in teaching. At the undergraduate level it offers a program in business administration leading to the Bachelor of Science degree. The program is designed to provide a knowledge of the principles, procedures, and practices 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 the proficiency in technical skills and information required by our complex business society.

At the graduate level the Master of Business Administration, Master of Science, and Master of Science in accountancy degrees are offered. These degrees are described under the Business Administration Graduate Program.

The School of Business and Administrative Sciences programs emphasize preparing students to be imaginative and responsible in their future roles as leaders and citizens of business and society. Political, social, and ethical considerations for national and international businesses are presented throughout the curriculum.

The programs of the school also emphasize the application of computers for systematically managing the data and information essential to business operations. Using mainframes and microcomputers, students analyze data and solve problems, and collect, organize, and distribute information involving virtually all areas of business.

In addition to preparing students for business careers, the school offers real estate courses that fulfill the statutory course requirement needed to qualify for the real estate broker examination (Fin 180, 181, 182, 183, BA 154). The Bachelor of Science degree in business administration is also considered appropriate and desirable for prelegal students.

The School of Business and Administrative Sciences is a member of and is accredited by the American Assembly of Collegiate Schools of Business at both the graduate and undergraduate levels.

The School of Business and Administrative Sciences has an open advising policy in which students are encouraged to select a faculty member of their choice for an adviser. A list of faculty advisers and their areas of expertise is available in the **McKee Fisk Building, Room 106.** Students wishing to have their collegiate work evaluated are also directed to seek help and advice in Room 106 of the McKee Fisk Building.

Major Requirements

Units

I. Core requirements (Required of all business majors) 39

The 39 unit business core provides students with a general background commonly acknowledged as furnishing the basis for effective management of business enterprises. The following courses (in alphabetical order) are required of all business majors.

Acct 4A–4B Financial and Managerial Accounting Principles and Systems	6
BA 18 Business and the Legal Environment	4
DS 73 Statistical Analysis I	3
DS 173 Statistical Analysis II	3
Fin 130 Principles of Finance	4
IS 50 Computer Concepts	3
LOM 124 Logistics/Operations Management	3
Mgt 110 Administration and Organizational Behavior (or Mgt 104–106)	6
Mgt 187 Seminar in Business Strategy	3
Mktg 100 Marketing Concepts	4
	39

II. Option requirements 18–34

Business students all have one common major—business administration. But there are 14 option areas from which students can choose; each student is required to complete an option. Students have their choice of the following options, which are arranged below according to the department in which they are offered:

Accountancy Department	
(See option requirements) Accountancy	34
Finance and Business Law Department	
(See option requirements)	
Agribusiness	18
Finance	25–26

Financial Services....30–32
Legal Environment of Business....21
Real Estate and Urban Land Economics....21–22
Risk Management and Insurance....18
Information Systems and Decision Sciences Department
(See option requirements)
Computer Applications and Systems....27
Decision Sciences....28
Information Management....24
Management and Marketing Department
(See option requirements)
Human Resource Management....21
Logistics/Operations Management....25–28
Management....25–26
Marketing....24

III. General Education Requirements....54

Choose from General Education requirements. Choices must include Econ 1A and 1B or Ag Ec 1 in Breadth, Division 8.

Business students must complete DS 71 or one semester of approved college mathematics beyond intermediate algebra. Completion of DS 71 or its equivalent is a prerequisite to enrollment in DS 73.

IV. Electives and Remaining Major/Degree Requirements....0–16

Business students must complete a minimum of 51 units outside of the School of Business and Administrative Sciences (courses selected for General Education may be included in these units).

Students with a major in business administration must complete a minimum of 39 upper-division business units.

Successful completion (grade of *C* or better) of English 1 or its equivalent is a prerequisite to enrollment in upper-division business courses. Every upper-division business course has writing requirements in the course, and the quality of the writing is used in determining grades in the course. Completion of the Upper Division Writing Skills Requirement (successful completion of IS 105W, another authorized *W* class or passing the Upper Division Writing Examination) is a prerequisite to enrollment in Management 187.

CR/NC grading is not permitted in the Business major except for courses in 193 and 195 which can be taken by *CR/NC* only.

V. Total Requirements for Business Administration Degree....124–127

Undergraduate Program Preparations

High School Preparation. High school preparation for business majors should include the typical college preparatory courses in social sciences, natural sciences, English, and mathematics through intermediate algebra.

Community College Preparation. It is recommended that students taking their first two years of study at a community college complete, if possible, lower-division general education requirements, including the appropriate courses in speech, English composition, mathematics through intermediate algebra, U. S. history, U. S. and California Constitutions, and a year of principles of economics. The following business courses are recommended: principles of accounting, one semester of data processing or computer concepts, one semester each of business law and business statistics. Other transfer business courses taken in community colleges are accepted as elective credit. If possible, transfer students should see the School of Business and Administrative Sciences evaluator prior to registering for business classes.

Special Features

Valley Business Center. The center is organized within the school to meet the research and service needs of the San Joaquin Valley business community and to provide ancillary services to the students and faculty of the school. It is a member of and accredited by the Association for University Business and Economic Research. The center compiles, interprets, and publishes statistics and studies on the local and regional economy. 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 part of the school's responsibility to provide continuing education in business.

Business Advisory Council. Twenty-five leading business executives of the San Joaquin Valley serve as an advisory body to the School of Business and Administrative Sciences and help keep the school attuned to the changing needs of business. The council meets periodically with faculty and participates in a number of school functions. Members of the council are available to faculty and students for consultation and as speakers. The council sponsors the Executive-in-Residence Program, an annual graduation dinner for graduating seniors, and other events that benefit the school.

Management Seminars. Each year, a local business firm brings its top management to the school for a series of seminar-type meetings with students. The contact between students and executives allows students to develop a fuller perspective of the managerial function. Arrangements are managed by the Inter-Business Council, composed of representatives of professional business student organizations.

Management Block Programs. Management Block Programs, a unique feature of the School of Business and Administrative Sciences, are planned to bridge the gap between the classroom and the outside world. There are two programs: Management 101 (Basic Management Block) and Management 102 A–B–C–D, (Advanced Management Block). Each course meets 12 hours per week for 12 units of credit. Students engage in a variety of group projects and are graded on their performance rather than on tests or examinations. Information is gathered from local businesses that the students analyze in research projects and classroom presentations. More than 50 business and community leaders are invited as guest speakers each semester.

Either or both of the Block Programs may be substituted for some requirements. The Basic Management Block substitutes for four basic courses required in all business options. Students majoring in other fields may use credits to partially meet requirements for a minor in Business. Advanced Management Block credits can be substituted for elective and

some required course credits. Consult the assistant dean, School of Business and Administrative Sciences, for details.

Internships. A number of student internships in local firms and agencies are available. Academic credit can be granted the business interns; some of the internships also carry stipends. Also, 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. The School sponsors professional organizations for both men and women.

Cooperative Education. Cooperative Education is a program that formally combines a student's academic study with work experience in cooperating employer organizations. The interaction between study and work experiences allows students to enhance their academic knowledge, personal development, and professional preparation.

The Office of Cooperative Education arranges contracts between students and employers leading to a work assignment for a semester (four to six months) on a full-time or part-time basis. Students are employed in practical, paid work experiences directly related to their course of study and career interests. In addition, these students enroll in and complete individual study assignments under faculty supervision and are awarded academic credit for the Cooperative Education experience.

Under the **Alternating Plan**, students work one semester on a full-time basis. Under the **Parallel Plan**, part-time work is found that can be done while the student is attending classes.

To be eligible, the student must be enrolled at CSU, Fresno, have a least a sophomore class standing, and a grade point average of 2.0 or above. The best timing for this experience is second-semester junior or first-semester senior standing.

Business Minors

Administration of the Performing Arts

Provides an opportunity to study the economic and business problems of the arts, to explore their future implications, and to supply the necessary tools for administrative decision making.

	Units
Acct 3, B A 18, 128, Mgt 104, DS 73	15
Mktg 140	3
	18

General Business

Designed for students with majors in other fields who wish to have a minor in the broad basic areas of business.

	Units
Acct 4A	3
Elect from: B A 18, Fin 130, Mgt 104, 106, Mktg 100, DS 73	8
Elect from not more than two fields (8 upper division): Acct, B A, Fin, HRM, Mgt, Mktg, IS, DS	11
	22

Business Teaching Credential Requirements

The School of Business and Administrative Sciences offers students a single subject business credential to teach in grades K–12. All students seeking a teaching credential in business must complete the requirements for a Bachelor of Science degree in business administration. This includes the General Education requirements, the business core, and one of the various options offered in the School of Business and Administrative Sciences. In addition, students seeking a credential must complete IS 104 and IS 105W and select *one* of the three areas of emphasis listed below:

1. *Office Services and Related Technologies*
   The following two courses are required: IS 103 and IS 115. Select any three courses from the following: IS 108, 109, 116, 117, 120, 121, 122.
2. *Marketing and Distribution*
   Select any five courses from the following: Mktg 102, 120 (or 125), 130, 132, 136, 138, 188.
3. *Accounting and Computer Literacy*
   The following three courses are required: Acct 120A, Acct 144, IS 108. Select any two courses from the following: Acct 120B, Acct 132, IS 54, 151, 152.

Students who have already completed these courses as part of the option requirements for the B.S. degree in business administration are not required to take additional classes beyond those indicated here.

In addition to the waiver courses in business teacher education, a student must complete the professional education courses that comprise an additional 27 to 31 units. Also, prior to admission into the Teacher Education program, students must have passed the California Basic Entrance Skills Test (CBEST) and have verification of having passed TEd 50, Introduction to Teaching or equivalent. (See *Teacher Education,* pp. 271–281.)

Business teacher education students should consult the appropriate advisers in the Schools of Business and Administrative Sciences and Education and Human Development as early in their programs as possible. Students wishing to combine the credential with a master's degree should consult the director of the Graduate Program of the School of Business and Administrative Sciences and the dean of the Graduate Studies and Research, as well as the credential adviser.

Career Opportunities

To learn more about career opportunities, students should check with the faculty advisers in each of the departments in the school. In addition to contacting faculty, students with career-related questions are encouraged to contact the Career Development and Employment Services. This office provides a centralized service, which is closely integrated with the various schools, divisions, and departments of the university. Services include a career development center staffed by a career information specialist and professional assistance for students and graduates seeking part-time, temporary, and summer positions, and career positions upon graduation.

School of Education and Human Development

Homer M. Johnson, *Dean*

Robert H. Monke, *Assistant Dean,*
H. Dan Smith, *Chair,* Advanced Studies
Carl R. Stutzman, *Chair,* Teacher Education
Marvin B. Wampler, Administration and Supervision (Advanced Studies)
Cecilio Orozco, Bilingual/Cross-Cultural Education (Teacher Education)
Louis F. Markert, Counselor Education (Advanced Studies)
Doris O. Smith, Early Childhood Education (Teacher Education)
Robert H. Monke, Graduate Programs
Ivan H. Rowe, Liberal Studies
Bonnie Dutton, Multiple Subject (Teacher Education)
Penelope A. Dyer, Reading (Teacher Education)
Richard S. Brown, Research and Development
Jolyne S. Daughtry, Single Subject (Teacher Education)
Deanna E. Schilling, Special Education (Advanced Studies)
Shareen Abramson, Victim Services Certificate of Special Study (Teacher Education)

History

Teacher education was initiated in Fresno in 1911 with the establishment of a state normal school. In 1921 the state legislature changed the two year teacher preparation program to four years terminating in the Bachelor of Arts in teaching degree and renamed the institution Fresno State Teachers College. Further legislative action authorized additional degree programs, along with teacher preparation at the officially renamed Fresno State College. The Master of Arts degree in education was first offered in 1949.

In 1961, legislation known as the Fisher Act resulted in the elimination of the Bachelor of Arts in teaching degree and a general restructuring of programs in professional education. The Ryan Act (1970) specified in great detail the nature of professional education programs and reassigned responsibility for teacher education and credentialing from the State Department of Education to the Commission on Teacher Preparation and Licensing (which is currently the Commission on Teacher Credentialing). In more recent years the School of Education and Human Development added more specialized programs that go beyond the traditional education of teachers (K–12). Currently ten specialist credentials and five services credentials are authorized, in addition to basic teacher credentials (K–12). To reflect expansion of curriculum in areas such as counseling, early childhood education, peace education, and child abuse, the School of Education became the School of Education and Human Development (S.O.E.H.D.).

School Mission

The School of Education and Human Development has established as its primary mission the maintenance of quality professional education programs designed to prepare teachers and other educational leaders for service in public and private schools and other educational institutions. The secondary mission of the school is divided into several different areas of approximately equal emphasis: preparation for the acquisition of human development skills applicable to non-school settings; preparation directed to the development of human potential as one progresses through life; provision of a variety of educational services for promotion and enhancement of continued professional development; and provision of leadership in educational institutions and agencies within the university service area.

Administrators and faculty of the S.O.E.H.D. are dedicated to the following endeavors: providing selection and screening procedures designed to identify candidates with strong academic preparation and effective interpersonal communication skills; providing quality advising and assistance for optimal progression toward program completion; providing educational experience directed toward the acquisition of a strong theoretical base combined with a balance of practical application in classroom, laboratory, and field settings; and securing continuing student/faculty/community assessment so that the program is current and meets the needs of those directly or indirectly affected by it.

It is the intent of the School of Education and Human Development to direct its full attention to the enhancement of human potential so that those who work in the field of education and human development will function more effectively and productively in an ever changing and increasingly diverse society.

Accreditation and Program Approval

The School of Education and Human Development credential and master's degree programs are currently accredited by the National Council for Accreditation of Teacher Education (national) and the Western Association of Schools and Colleges. All credential programs are approved by the Commission on Teacher Credentialing.

Credential Programs

The School of Education and Human Development uses the resources of the university to prepare teachers, administrators, and special service personnel for elementary, secondary, and other school and non-school settings. Basic credential programs are established on the assumption that an effective educator needs a liberal education; should be well versed in subject matter; should acquire knowledge of the psychological and cultural factors that influence learning and achievement; and should be highly trained in the principles and practices of teaching.

Through its two departments and related programs, the School of Education and Human Development provides basic teaching credential programs in elementary (multiple subject) and secondary (single subject) teaching; specialist teaching credential programs are offered in agriculture, early childhood, reading, and special education. Advanced services credential programs are offered in administration and supervision, clinical rehabilitation, health, and pupil personnel (counseling).

Cooperating Public School Districts

The professional preparation programs of the School of Education and Human Development are offered with the cooperation and support of a number of cooperating central valley public school districts and other agencies. In these settings assignments in student teaching and other clinical and field work are provided. Teachers, administrators, consultants, and other personnel assist students to gain practical experience in the field.

Credential Programs

Information regarding basic, specialist, and services professional preparation programs, as well as a special certificate program is available in the Teacher Education and Advanced Studies departmental offices and in the School of Education and Human Development Admissions Office (EdP 120).

Basic Teaching Programs

- Multiple Subject (see Teacher Education Department/Multiple Subject coordinator, **ext. 4446**)
- Multiple Subject, with emphasis in Early Childhood Education (*see* Teacher Education Department/coordinator of Early Childhood Education, **ext. 2185**)
- Multiple Subject, with emphasis in Bilingual/Cross-Cultural Education (*see* Teacher Education Department/coordinator of Bilingual/Cross-Cultural Education, **ext. 2631**)
- Single Subject (*see* Teacher Education Department/Single Subject coordinator, **ext. 4445**)

For major requirements, see program advisers in subject matter departments.

Specialist Teaching Programs

- Agricultural (*see* Agriculture and Home Economics School, **ext. 2971**)
- Early Childhood (*see* Teacher Education Department/coordinator of Early Childhood Education, **ext. 2185**)
- Reading (*see* Teacher Education Department/coordinator of Reading Specialist Program, **ext. 2568**)
- Special Education (*see* Advanced Studies Department/coordinator of Special Education, **ext. 2608**)

Services Credential Programs

- Clinical-Rehabilitative (*see* Communicative Disorders Department/coordinator of Special Education, **ext. 2423**)
- Health (School Nurse) (*see* Nursing Department, **ext. 2041**)
- Preliminary Administrative (see Advanced Studies Department/coordinator of Educational Administration and Supervision, **ext. 4000**)
- Professional Administrative (see Advanced Studies Department/coordinator of Educational Administration and Supervision, **ext. 4000**)
- Pupil Personnel (*see* Advanced Studies Department/coordinator of Counselor Education, **ext. 2322**)

Certificate Program

- Victim Services (see *Education–Interdepartmental Programs and Courses,* **ext. 2316**)

Master's Degree Programs

The School of Education and Human Development offers a Master of Arts degree in education, Master of Arts degree in special education, and a Master of Science degree in counseling. These degree programs are located in either the Department of Advanced Studies or the Department of Teacher Education.

M.A. in Education

- Administration and Supervision (see coordinator of Administrative Services Program, **ext. 4000**)
- Bilingual/Cross-Cultural (*see* coordinator of Bilingual/Cross-Cultural Education, **ext. 2631**)
- Curriculum and Instruction (see coordinator of Curriculum and Instruction, **ext. 2316**)
- Early Childhood Education (*see* coordinator of Early Childhood Education, **ext. 2185**)
- Reading (*see* coordinator of Reading Specialist Program, **ext. 2568**)
- School Counseling (see coordinator of Counselor Education, **ext. 2322**)

M.A. in Special Education (*see* coordinator of Special Education Program, **ext. 2608**)

M.S. in Counseling (*see* coordinator of Counselor Education, **ext. 2322**)

- Career Development Counseling
- Marriage, Family, and Child Counseling

School of Engineering

Elden K. Shaw, *Dean*

Karen L. Frair, *Assistant Dean*
Karl E. Longley, *Chair,* Civil and Surveying Engineering
C. K. Liu, *Chair,* Electrical Engineering
Delbert E. Robison, *Chair,*
Mechanical and Industrial Engineering

History. Engineering education first began at California State University, Fresno when Professor Herbert Wheaton was hired in 1922 to begin instruction in civil engineering. The engineering programs matured into Civil Engineering, Electrical Engineering, and Mechanical Engineering with the last of these programs gaining national accreditation in 1968. The Surveying Engineering Program became the first accredited professional program in that field in the United States and was most recently followed by Industrial Engineering. The five degree programs offered by the school cover 85 to 90 percent of engineering practice. The Surveying Program, while percentage wise representing a very small portion of professional practice, is still a unique program.

Accreditation. The Civil, Electrical, Industrial, Mechanical and Surveying Engineering programs are accredited by the Engineering Accreditation Commission of the Accreditation Board for Engineering and Technology (A.B.E.T.), the nationally recognized accrediting agency of the engineering profession.

Educational Philosophy. It is the goal of the school's faculty to educate engineering students in such a manner that they may confidently enter professional practice or continue their education in any engineering graduate school on an equal basis with graduates from other engineering schools. Engineering may be defined as the application of service and technology for the benefit of society. The faculty require that engineering students have a knowledge of mathematics, physics, chemistry, the engineering science, and certainly of the humanities and social sciences.

Departments and Programs

There are three departments within the School of Engineering, and these offer a total of five undergraduate degree programs and three graduate degree options. A brief description of the departments and their degree programs follows.

The Department of Civil and Surveying Engineering. Civil engineering is one of the oldest pursuits known to civilized man. Civil engineers create the infrastructure that permits society to function. They conceive of, plan, design, and supervise construction of water supply systems, highways, railways, sewage systems, subdivisions, buildings, ship and aircraft structures, dams, bridges, tunnels, and assure that the water that we drink is safe and plentiful. Civil engineers are employed in agencies of local, state, and federal government, by construction firms, by ship and aircraft manufacturers, and in private consulting practice.

Surveying engineering is also a very old profession. In addition to accurately measuring pieces of property using optical instruments, mechanical devices, radar, lasers, or heat radiating equipment, surveyors also use overlapping photographs of the earth to make accurate maps of the earth, i.e. photogrammetry. Surveyors lay out highways, developments, buildings, and shopping centers, in addition to preparing maps and accurate legal descriptions of property. Surveying engineers are employed in governmental agencies, consulting firms, or act as consultants themselves. Notable surveyors were George Washington, Robert Burns, Thomas Jefferson, Abraham Lincoln, Leonid Breshnev, and Henry David Thoreau.

The Department of Electrical Engineering. Electrical engineering came into being as a result of society's need to have electrical power generated, distributed, and utilized. Since then, electrical engineering has grown to be the largest and one of the broadest fields of engineering. Electrical engineers work in electrical power generation and distribution (and California State University, Fresno has one of the few power programs available), communication and information systems, electronics, computer design, manufacture and applications, and control systems. Electrical engineers are employed in industry, governmental agencies, and in private practice.

The Department of Mechanical and Industrial Engineering. Mechanical engineering deals not only with machines, structures, energy, and fluid systems, as it has for the past four hundred years, but is also now deeply involved in the exploration and colonization of space, in military defense, and in the development of alternative energy resources—activities that envelop the design and development of jet propulsion engines, space vehicles and platforms, laser tools and weapons, nuclear and fusion energy plants, and transportation systems.

The major technical disciplines of mechanical engineering encompass the mechanics of rigid and deformable bodies, thermodynamics and heat transfer, fluid mechanics, and manufacturing. Mechanical designers create mechanisms, machines, and processes associated with virtually all industries. Energy system designers create devices and processes which use energy and heat for the creation of power, whether the energy source is geothermal, solar, fossil fuel, or nuclear. Mechanical engineers who work in manufacturing create the machines, controls, processes, and computer programs needed to manufacture goods. Mechanical engineers are employed by agencies of the state and federal government and all types of industries.

Industrial engineering arose when specialists were needed to derive more effective production processes, quality control, human-machine interfaces, and material flow systems. The industrial engineering faculty are committed to providing all students the advanced technical background necessary for success and growth in their selected professions. A program of study is offered to all students through a carefully designed curriculum, which includes engineering analyses for the design of man-machine systems, optimization of industrial systems, and the scientific management of engineering activities. Specialized training is available in the use of modern engineering tools and techniques such as computer assisted design (CAD), computer assisted manufacturing (CAM), and ergonomic (human factors) engineering. In addition to their educational training, industrial engineering students gain valuable practical experience by participating in industrial

projects that are conducted in conjunction with local industrial firms. Industrial engineering graduates accept jobs in a wide range of fields such as aerospace, energy, manufacturing, airlines, health, and transportation.

Optional Program. The School of Engineering also offers a program in cooperation with the health science department. The program is designed to prepare its graduates for careers in occupational health and safety. Interested persons are referred to the section of this catalog titled *Health Science* department, p. 334.

Majors and Minors

Students must declare an engineering major on their application for admission to the university in order to be allowed to take engineering courses. Because space has been over-subscribed in most engineering programs statewide, students should apply for an engineering major during November for the following fall. The School of Engineering does not offer any minors.

High School Preparation. Recommended preparation for engineering consists of: English (4 years), algebra (2 years), geometry (1 year), trigonometry (½ year), physics or chemistry (1 year). Additional recommended courses are: advanced mathematics (½ year), chemistry or physics (1 year), mechanical drawing (½ year).

Transfers. Transfers from community colleges or other institutions of higher learning are accepted under provisions outlined under General Information—Admissions. Students planning to transfer to the California State University, Fresno engineering programs should follow as closely as possible the outline of the program of their choice.

Bachelor of Science Degree Requirements

The Bachelor of Science degree is granted upon completion of the following programs: Civil, Electrical, Industrial, Mechanical, or Surveying Engineering. These programs include the General Education and degree requirements of the university; students must consult their engineering advisers about meeting the requirements of the General Education Program. Foreign students taking I S C 10, 21, and 93 in their first year may postpone courses that are not prerequisite to courses in their major. A minimum G.P.A. of 2.0 must be maintained in all courses taken in the CSU, Fresno School of Engineering. No engineering course may be repeated for credit if a course for which it is a prerequisite has been completed with a grade of *D* or higher. Students who fail to maintain a 2.0 grade point average (G.P.A.) in engineering courses will be placed on academic probation. Failure to eliminate the grade point deficiency will result in disqualification from the School of Engineering. Disqualified students will be dropped from the engineering major and may not enroll in engineering courses either during the regular academic year, summer sessions, or through the Division of Extended Education.

General Education. Students in Engineering shall follow the program of the major of choice. Engineering students have been granted a partial exception to the university's General Education requirements. For specific requirements, see course outline under selected option.

Graduate Program

The School of Engineering offers the Master of Science with an option in civil engineering [1] on campus, and an option in Electrical Engineering [2] and Mechanical Engineering [2] at Edwards Air Force Base that is intended for government and contractor employees in that area.

The M.S. degree program with option in civil engineering is designed to provide additional benefits of salary and career opportunities to graduates of a baccalaureate degree program in engineering. It will provide continuing development for practicing engineers, additional career entry preparation for continuing students, and excellent preparation for persons planning to teach in pre-engineering or engineering technology programs. This program also provides the first graduate degree for students desirous of pursuing further graduate studies in civil engineering, engineering mechanics, or related areas.

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[1] For a description of the Master of Science degree in engineering with a civil engineering option, *see Engineering—Civil and Surveying Engineering Department,* pages 284–285.

[2] For a description of the Master of Science degree in engineering offered at Edwards Air Force Base with an option in electrical engineering or mechanical engineering, *see Engineering—Edwards Air Force Base Program,* page 290.

School of Health and Social Work

Richard D. Ford, *Dean*

Sanford M. Brown, *Associate Dean*
Lynn B. Burnett, *Coordinator,*
Center for Continuing Education in the Health Professions
Gary A. Cunningham, *Chair,* Athletics
Kenneth G. Shipley, *Chair,* Communicative Disorders
Ronald C. Schultz, *Chair,* Health Science
Karen H. Nishio, *Chair,* Nursing
Joanne W. Schroll, *Chair,* Physical Education and Recreation
Audrey M. Fagnani, *Coordinator,*
Recreation Administration Program
Darlene L. Stewart, *Coordinator,* Physical Therapy Program
E. W. (Bud) Stude, *Coordinator,*
Rehabilitation Counseling Program
Wynn C. Tabbert, *Chair,* Social Work Education

The School of Health and Social Work was formed in 1981 when the university was reorganized. It is comprised of the School of Social Work, the former Division of Health Professions and the departments of Athletics, Physical Education and the Recreation Administration Program from the former School of Professional Studies. The new school was established to bring programs that affect the health and social welfare of the Valley residents into one organized unit.

The school's mission is to provide career-oriented education in a liberal arts context at the baccalaureate level and graduate degree programs in specialized disciplines at the master's level. The school seeks to emphasize the significance of health promotion and wellness in a society with increasing awareness of the importance of lifestyle in determining the quality of physical, mental, environmental, intellectual, and spiritual health.

The departments of the School of Health and Social Work provide programs leading to the Bachelor of Arts, the Bachelor of Science, the Master of Arts, the Master of Social Work and the Master of Science degrees. Preparation is offered for professional careers in the specialized areas of communicative disorders with options in audiology, speech and language pathology, and education of the deaf; health science with undergraduate options in community health, environmental health science, health services, and occupational safety and health, and graduate program options in environmental health, health services administration, and health education-teaching; nursing with options in nursing administration, nursing education, clinical nurse specialist, and nurse practitioner; physical education with options in adaptive physical education, alternate careers, athletic training and teaching; physical therapy; recreation administration with programs in public and private recreation, therapeutic recreation, commercial recreation and recreation administration; rehabilitation counseling; social work education; and the general areas of teaching, business, public or government service.

The School also administers the following programs:

The Center for Continuing Education in the Health Professions serves trained health service professionals by supplementing professional education and inservice training to improve the level of effectiveness in practice and to provide current information and learning opportunities for those persons desirous of career programs. The center was initially developed to provide allied health and nursing continuing education in the rural areas.

The Human Performance Laboratory and the commitment of the school to fitness, exercise physiology, and wellness is a facility where students can obtain a hands-on experience and practical application of human performance research. The objectives of this laboratory benefit many related academic programs: enhancing the sports medicine facilities, providing an opportunity for faculty and student research in the sports sciences and sports medicine and providing a central focus for community service in the area of adult fitness, youth sports, and athletics and encouraging interdepartmental cooperation and further sharing of resources and ideas.

The GAIN (Greater Avenues for Independence) Program provides employment to able-bodied public assistance recipients through a structural sequence of employment-related activities and supportive services that are designed to maximize their opportunities for employment. The CSU, Fresno Rehabilitation Counseling Program, in contract with the Fresno County Department of Social Services, is providing assessment services to GAIN participants. Assessments include diagnostic testing, work sample testing, an in-depth interview, motivational assessment, and a written report for each participant with an interpretation of diagnostic testing results, evaluation of the interview, a suggested vocational objective, and an assessment of the need for employment training.

The Fresno Community Hospital-CSU, Fresno Job Station Evaluation Program, administered by the Rehabilitation Counseling Program, offers work evaluation assessments using job stations housed at Fresno Community Hospital. Graduate students in Rehabilitation Counseling learn practical assessment skills working with the program administrator and hospital personnel. Disabled clients are observed daily. The work areas, or job stations, normally available for use offer a wide variety of settings, including maintenance, mechanical, clerical, cashier, food service, housekeeping, or paramedical fields. Further, work adjustment and work experience are also available should the counselors request these services.

The Interdisciplinary Minor in Gerontology is a program especially designed to serve undergraduate majors in communicative disorders, home economics, health sciences, nursing, physical therapy, psychology, recreation, social welfare, and sociology. It also provides training for those professionals currently working for service agencies for the aging and aging individuals who are interested in gaining greater insight into this period of their lives.

The Certificate in Gerontology, is an interdisciplinary program of study awarded to students who complete 12 units of carefully selected courses in the field of gerontology. Normally the students admitted to the program will have had some college preparation (e.g., an A.A. or A.S. degree, two years of college) or two years of experience related to the field of aging.

For a listing of interdisciplinary courses, see *Health and Social Work—Interdisciplinary Courses, page 340.*

School of Natural Sciences

Kin-Ping Wong, *Dean*

William K. Collin, *Chair,* Biology
Kenneth H. Russell, *Chair,* Chemistry
Harold B. Haslam, *Chair,* Computer Science
Jon C. Avent, *Chair,* Geology
Noal C. Harbertson, *Chair,* Mathematics
John R. Donaldson, *Chair,* Physics
Alexander Gonzalez, *Chair,* Psychology

Majors and Credentials

The School of Natural Sciences offers the following majors and credentials.

Biology: B.A. in Biology. Options in: Biological Science, Botany, Environmental Biology, Functional Biology, Microbiology and Zoology; B.S. in Microbiology, Minor in Biology, M.A. in Biology, M.A. in Microbiology, M.S. in Marine Science, and Single Subject Teaching Credential in Life Science.

Chemistry: B.A. in Chemistry, B.S. in Chemistry, Minor in Chemistry, M.S. in Chemistry, and Single Subject Teaching Credential in Physical Science.

Computer Science: B.S. in Computer Science.

Geology: B.S. in Geology, M.S. in Geology, and Minor in Geology.

Mathematics: B.S. in Mathematics, Concentrations in: Applied Mathematics, Pre-College Teaching, Pure Mathematics, and Statistics and Probability; Option in: Computer Science, Minor in Mathematics, and Credential Program Single Subject Waiver.

Physics and Physical Science: B.A. in Physics, B.S. in Physics, Minor in Physics, Minor in Physical Science, and M.A. in Physics. M.S. in Physics, Single Subject Teaching Credential in Physical Science, Single Subject Teaching Credential in Physical Science (Physics Option).

Psychology: B.A. in Psychology, Minor in Psychology, M.A. in Psychology, and M.S. in Psychology. Service Credentials in: Pupil Personnel, School Counseling, and School Psychologist. Education Requirements for: Marriage, Family, and Child Counselors.

Purpose

The School of Natural Sciences provides for study in the disciplines of biology, chemistry, computer science, geology, mathematics, physics, and psychology. Instruction in these disciplines is designed to accomplish either of two objectives. The first is to provide enough professional training, at either the undergraduate or graduate level, to serve as a foundation for a career in the discipline or for continued study at the graduate level in pursuit of advanced degrees. The second is to provide a means for all university students to gain an understanding of the world of science and to give students specific skills for use in related disciplines.

High School Preparation

Recommended preparation for study in the natural sciences includes English (4 years), algebra (2 years), geometry, trigonometry, and biology. For study in the physical sciences (chemistry, geology, and physics) or mathematics, additional science and mathematics courses are recommended.

Interdisciplinary Study

The school also offers the opportunity for interdisciplinary science study in courses designed to meet student interest in such areas as biotechnology, environmental studies and ecology, science for public school teachers, and science for health professions. Students interested in developing an interdisciplinary degree program through the special major should contact the dean.

Man and the Natural Environment
(17 unit thematic cluster)

This cluster of intensive field courses is presented at the introductory level. Concurrent registration in the four courses listed below is required. Fifteen of the 17 units of credit are applied to G.E. university requirements. Involves approximately one month in the field. A special fee of $150 for transportation and food on field trips will be charged. For further information, contact the **Dean, School of Natural Sciences, ext. 3936.**

N Sci 15	Environmental Science (2)
Anth 15	Man's Place in the Natural Environment (5)
Biol 15	An Ecological Approach to Life Science (5)
Geol 15	The Earth and its History (5)

Pre-Professional Preparation. Pre-professional advising is available for students preparing for careers in medicine, dentistry, veterinary medicine, and other professions. Students should contact their respective major and pre-professional advisers before enrolling in classes each semester to stay abreast of current developments. A current list of CSU, Fresno pre-professional advisers is available in the Office of Advising and Orientation.

Cooperative Education. This program provides the opportunity to combine closely related work experience with a student's classroom and laboratory studies.

Clubs and Organizations. There are a variety of active clubs, organizations, and other programs in the school including Black Students in Science; Caduceus (pre-medical); Chicano Health Organization; Predental Club; Tri Beta biological honor society; Chemistry Club; Association for Computing Machinery; Geology Club; Society of Physics Students; Psi Chi honor society; Psychology Student Union; the *Journal of the School of Natural Sciences,* and other organizations.

Research. The school actively fosters individual as well as joint research among campus scientists and with investigators at other regional research centers. Both basic and applied research activities are encouraged and recognized.

School of Social Sciences

Peter J. Klassen, *Dean*

Dirk van der Elst, *Chair,* Anthropology
Manuel Figuroa, *Coordinator,* Chicano-Latino Studies Program
Max Futrell, *Chair,* Criminology
Izumi Taniguchi, *Chair,* Economics
Robert Mikell, *Coordinator,* Ethnic Studies Program
James Kus, *Chair,* Geography
John C. Kendall, *Chair,* History
Philip F. Beach, *Chair,* Political Science
Joel C. Best, *Chair,* Sociology
Wayne V. Merchen, *Coordinator,* City and Regional Planning
Susan S. Arpad, *Coordinator,* Women's Studies Program

Philosophy of the School of Social Sciences

The School of Social Sciences offers a variety of degree, credential, and certificate programs at both the undergraduate and graduate levels. The curriculum is planned to guarantee breadth of academic experience and to preserve a reasonable depth and rigor in a single academic discipline or study area. The school participates in many interdisciplinary programs (see *Special Programs,* pp. 450–457) both in and beyond the social sciences. Attention is also invited to the *Social Science Major* for obtaining elementary and secondary teaching credentials and for acquiring a good background for a professional career in law, public service, and other areas.

Faculty and students of the school are involved in research, professional activities, and community service. Constant curricular evaluation ensures the development of courses that prepare students for today's world.

Strongly committed to a traditional liberal arts education, yet maintaining a varied and strong participation in the university General Education Program, the school of Social Sciences offers a broad range of majors that prepare students for various professions or further study. The school is sensitive to the widely held view that studies in the liberal arts provide the best preparation for careers of leadership in business, public service, and other areas. Social Sciences stresses the broad character of its curriculum, assuring today's graduate a place in a society where the narrow specialist is often soon obsolete, but where the adaptable generalist is highly welcome.

Recent studies have discovered that many corporation heads view the liberal arts degree as a prime qualification for executive positions.

The bachelors degree in the various disciplines of the social sciences is designed to develop the essential skills of educated people to adapt to a rapidly changing world, and to provide leadership as new needs arise. The various disciplines help students to acquire and use knowledge, to articulate positions effectively, and to solve problems. In addition, the development of a significant degree of mastery in one of the social sciences is in itself a rewarding and enriching experience. Degrees in social sciences indicate that students, as they have acquired a greater body of knowledge, have also attained a sense of perspective, more effective communication skills, a heightened respect for quality and excellence, more appreciation of creativity, and a greater understanding in dealing with people from different backgrounds.

The School of Social Sciences is thus committed to providing its majors with a concern for human values and with the ability to think clearly, critically, and analytically. These graduates, while understanding the value of practical and professional skills, will realize that no career can be successfully pursued without the benefit of humanistic values and insights. The social sciences help students become full, rich human beings who are able to reach out beyond their professional careers.

The School of Social Science also offers the following internship course:

Social Science (S Sci)

10. Peace and Conflict (3). Provides an overview of causes and types of conflict, issues related to war, peace and justice; historical and contemporary perspectives and responses to conflict resolution; uses an eclectic and interdisciplinary approach.

185. Internship (1–6; max total 6). Prerequisite: upper division or graduate standing; permission of instructor. Supervised work experience in the applied aspects of the social science disciplines. Hours to be arranged.

Departments, Programs, and Majors

The School of Social Sciences offers instruction in the following departments and/or programs: Anthropology, Chicano-Latino Studies Program, Criminology, Economics, Ethnic Studies Program, Geography, History, Political Science, City and Regional Planning Program, Sociology, and Women's Studies Program.

Majors are available in: anthropology, criminology, economics, geography, history, political science, public administration, social science, and sociology.

Minors are offered in: anthropology, asian american studies, Chicano-Latino studies program, criminology, ethnic studies, Black studies, Armenian studies, geography, history, political science, public aministration, sociology, urban studies, and women's studies.

Masters degrees may be obtained in: criminology, geography, history, political science, (international relations), public administration, and city and regional planning.

Centers in the School

Several departments have established ancillary units designed to facilitate research, community projects, and other activities intended to enhance the university's service to a broad constituency. Special emphasis is placed on student, faculty and community interaction. Currently, the following centers are engaged in a variety of projects:

- Center for Black Affairs
- Chicano Research Center
- Justice Center
- Social Research Laboratory


CAMPUS DR
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COURSE LISTINGS AND PROGRAMS

Course Prefixes, Symbols, and Terms

The following chart is a guide to the appropriate prefixes used in this catalog for the university's departments and programs of study.

A Eth	Applied Ethics
A S	Advanced Studies
A Sci	Animal Science
A Sp	Aerospace Studies
Acct	Accountancy
Ag Bs	Agricultural Business; Graduate
Ag Ec	Agricultural Economics
Ag Ed	Agricultural Education
Agri	Agriculture; Graduate
Anth	Anthropology
Arm	Armenian
Arm S	Armenian Studies
Art	Art
Art H	Art History
AsAm	Asian-American Studies
ATHL	Athletics
B A	Business Administration
B W E	Basic Written English
Biol	Biology
Bl S	Black Studies
Bot	Botany
Bus	Business and Administrative Sciences; Graduate
CapS	Capstone (General Education)
C D	Communicative Disorders
C E	Civil Engineering
CFS	Child and Family Studies
CLS	Chicano-Latino Studies
C R P	City and Regional Planning
CSH	Consumer Science and Housing
C Sci	Computer Science
Chem	Chemistry
Chin	Chinese
Const	Construction Management
Cr Sc	Crop Science
Crim	Criminology
D Ind	Dairy Industry
DS	Decision Sciences
Dance	Theatre Arts
Drama	Theatre Arts
E E	Electrical Engineering
E F L	English as a Foreign Language
EHD	Education and Human Development
Econ	Economics
Engl	English
Engr	Engineering
Enol	Enology
Ent	Entomology
Eth S	Ethnic Studies
F L	Foreign Language
F M	Fashion Merchandising
FS	Fruit Science
Fin	Finance
Fren	French
FScN	Food Science and Nutrition
G S	Graduate Studies
Geog	Geography
Geol	Geology
Germ	German
GID	Graphic and Interior Design
GPA	Graduate Public Administration
Grk	Greek
H Ec	Home Economics Education; Graduate
HIE	Housing and Interior Environments
H S	Health Science
Hebr	Hebrew
Hist	History
HRM	Human Resources Management
HSW	Health and Social Work
Hum	Humanities
I E	Industrial Engineering
I Ed	Industrial Education
IS	Information Systems
I S A	International Studies—Abroad
I S C	International Studies—Campus
I T	Industrial Technology
Ital	Italian
Japn	Japanese
Jour	Journalism
Latin	Latin
Ling	Linguistics
LOM	Logistics/Operations Management
M Com	Mass Communication
M E	Mechanical Engineering
M S	Military Science
M Sci	Moss Landing Marine Laboratories
Math	Mathematics
Me Ag	Mechanized Agriculture
Mgt	Management
Micro	Microbiology
Mktg	Marketing
Music	Music
N A S	Native American Studies
NEXUS	NEXUS (General Education)
N Sci	Natural Science
Nurs	Nursing
OH	Ornamental Horticulture
P Sci	Physical Science
P E, PE AC	Physical Education
Ph Th	Physical Therapy
Phil	Philosophy
Phy	Physiology
Phys	Physics
Pl Pr	Plant Protection
Pl Si	Political Science
Plant	Plant Science
Port	Portuguese
Psych	Psychology
R C	Rehabilitation Counseling
Rec	Recreation
Russ	Russian
S E	Surveying Engineering
SI	Soil Irrigation and Soil Science
S Sci	Social Sciences
S Wrk	Social Work Education
Skt	Sanskrit
Soc	Sociology
Span	Spanish
Spch	Speech Communication
TCOM	Telecommunications
T Ed	Teacher Education
W S	Women's Studies
Zool	Zoology

Course Numbering System

1–99 *Lower division* courses designed for first- and second-year students.

100–199 *Upper division* courses designed for third-, fourth-, and fifth-year students; Counted as graduate work for students with graduate status; permitted for use on a master's degree program only with departmental approval.

190 *Independent study, undergraduate.*

100G–199G For *graduate* students only; designed for use in the first year of two-year master's degree programs; intensive combination of material normally offered at the undergraduate level.

200–297 *Graduate courses* open to holders of baccalaureate degrees and, with prior approval of the Graduate Division, to last-semester seniors with superior preparation and ability; designed for use on master's degree programs; when taught by Extension, count as upper division in master's degree programs. Graduate-level courses may not be applied toward either a second undergraduate major or second baccalaureate degree.

290 *Independent study, graduate.*

298 *Master's Degree Project.* Open to graduate students having achieved advancement to candidacy.

299 *Master's Degree Thesis.* Open to graduate students having achieved advancement to candidacy.

300–399 Designed to meet *professional needs* that cannot be served by regular established course offerings. *These courses are offered only through Extension and summer sessions.* They assume completion of the bachelor's degree and/or appropriate professional service and are focused upon the problems that enrolled students encounter in their professional service. Although these courses are designed primarily for purposes other than the partial fulfillment of degree and credential requirements, they may, with approval by the department, be applied toward the major. They may be used as part of the 40-unit upper-division requirement for the B.A. degree and as electives in the fulfillment of the total requirements for a baccalaureate degree and/or credential. They may not be used to meet the requirements of a master's degree.

Symbols

A–B Two-semester course normally taken in sequence.

A,B Listed as separate courses, may be taken independently.

F Field course.

L Laboratory associated with another course.

T Topics course, varied area subject matter, repeatable for credit.

W Writing skills course, meets upper-division requirement for graduation.

Course Descriptions. Courses are listed by number, title, units, and maximum total credit. Each unit generally represents one hour per week in class and two hours of preparation; courses involving laboratory, activity, or other application normally require additional hours of class attendance. Lecture-laboratory hours indicate deviation from the usual one class hour per week for one unit of credit. Prerequisites are listed at the beginning of the course description. Course offerings are listed each semester in the *Schedule of Courses.*

Prerequisites. Course prerequisites are designed to protect the student by ensuring that he or she has the necessary background and preparation for success in the course. Transfer courses with equivalent content will be accepted in lieu of stated prerequisites. Students should check the prerequisites carefully before registering in a course to be sure that they have been met. The instructor can deny admission to a course to a student who has not met the prerequisites.

Permission of the Instructor. The instructor has the authority to waive the stated prerequisites for a course if it is in the interest of the student to do so and if in the instructor's judgment, the student has a background sufficiently adequate to permit satisfactory performance in the course.

Students will not receive credit for courses in foreign language or mathematics if credit has been awarded previously for a higher numbered course for which the lower numbered course is a prerequisite.

Aerospace Studies

School of Business and Administrative Sciences
Department of Aerospace Studies
Lt. Colonel Shaun M. Sullivan, Chair
North Gym, Room 158
(209) 294-2593, (209) 291-9947

Air Force Reserve Officer Training Corps (A.F.R.O.T.C.)
Minor in Aerospace Studies



Oh, I have slipped the surly bonds of earth,
And danced the skies on laughter-silvered wings;
Sunward I've climbed, and joined the tumbling mirth
Of sun-split clouds . . . and done a hundred things
You have not dreamed of . . . wheeled and soared and swung
High in the sunlit silence. Hov'ring there.
I've chased the shouting wind along, and flung
My eager craft through footless halls of air.
Up, up the long, delirious, burning blue
I've topped the windswept heights with easy grace
Where never lark, nor even eagle flew.
And, while with silent, lifting mind I've trod
The high untrespassed sanctity of space,
Put out my hand, and touched the face of GOD.

—John Gillespie Magee, Jr.

Air Force Reserve Officer Training Corps Program (A.F.R.O.T.C.)

A minor in aerospace studies consists of satisfactory completion of the A.F.R.O.T.C. program (16 upper-division units). Open to men and women.

Air Force R.O.T.C. is a college-based program whose primary goal is to provide students with a choice of well-paying, challenging, and relevant positions after graduation. The few years of service will provide young officers with leadership experience that will be invaluable for either an Air Force or civilian career.

Two routes for an Air Force commission are available to college students in Air Force R.O.T.C. Entering students may enroll in the four-year program, while students with at least two academic years remaining in college may apply for the two-year program.

The Air Force R.O.T.C. education program provides pre-professional preparation for future Air Force officers. It is designed to develop men and women who can apply their education to their initial active duty assignments as Air Force commissioned officers. In order to receive a commission, an Air Force R.O.T.C. cadet must complete all requirements for a degree in accordance with university guidelines as well as completing certain courses specified by the Air Force.

Air Force R.O.T.C. courses are taken for academic credit as part of student's electives. The two major phases of the curriculum are the General Military Course (G.M.C.) and the Professional Officer Course (P.O.C.). In Aerospace courses, all books, supplies, and uniforms are furnished at no cost to the student.

Air Force R.O.T.C. scholarships are available to qualified applicants in both the four- and two-year program. Each scholarship provides full tuition, laboratory, and incidental fees, and a semester allowance for curriculum-required textbooks. In addition, scholarship cadets receive a nontaxable $100 subsistence each month during the school year. All two-year program cadets regardless of scholarship status also receive this monthly allowance.

Faculty and Facilities

The teaching staff in the Department of Aerospace Studies is composed of highly educated and experienced Air Force officers who are selected for their professional experience, academic background, and instructor qualifications. Most of these officers have attended at least two Air Force schools in their particular fields and have received professional officer education at an Air University school. Completion of Air University's Academic Instructor School, the "teacher's college of the Air Force," and at least a master's degree is required.

Career Outlook

Although flying is the primary mission of the Air Force, it is not the only job that has to be done. Today, since science and technology are a large part of the National Defense, the Air Force needs the best scientists and engineers the nation can produce. It also needs other professional men and women with a broad range of knowledge and skills. Many young officers who enter the Air Force today do not expect to be pilots or astronauts. They want to be part of the large research and development program of the vast support organization that keeps our country strong and progressive. Exciting job opportunities exist in a broad range of Air Force specialities. In addition to the recurring need for pilots, the Air Force also needs personnel to work in navigation, missile operations, engineering, mathematics, physics, computer science, and in the support fields of personnel, administration, logistics, finance, education, security police, health, and others. In the years ahead, Air Force R.O.T.C. will continue to concentrate on preparing men and women to assume important and responsible positions of leadership in the modern Air Force.

Faculty

Lt. Colonel Shaun M. Sullivan, *Chair*

Captain Michael W. Outten
Captain Larry W. Norris
Captain Nancy A. Hornung

Eligibility for the General Military Course (G.M.C.)

1. Be a member of the four-year program.
2. Be a full-time student at CSU, Fresno.
3. Be age 14 or older.
4. Be a United States citizen.
5. Be of good moral character.
6. Meet the medical standards for admission to CSU, Fresno.
7. Not have been disenrolled from an officer training program (a waiver of this requirement can often be obtained.)

Eligibility for the Professional Officer Course (P.O.C.)

1. Be a citizen of the United States and not less than 17 years of age.
2. Be physically, mentally, and morally qualified in accordance with standards established by the Department of the Air Force.
3. Have two academic years, either undergraduate or graduate, remaining at the time of P.O.C. entry.
4. Take the Air Force Qualifying Test.
5. (a) For pilot and navigator: Be not more than 26½ years of age at date of commissioning.
   (b) For all other categories: Be not more than 34 years of age at date of commissioning.
6. Be a full-time student according to the rules of CSU, Fresno.
7. Be approved for A.F.R.O.T.C. training by the Professor of Aerospace Studies.

COURSES

Aerospace Studies (A Sp)

1A–B. The Air Force Today (1–1). (Courses must be taken concurrently with A Sp 3 Leadership Laboratory (one unit) if student desires an Air Force R.O.T.C. Commission.) The Air Force in the contemporary world. The total force structure, strategic offensive and defensive forces, general purpose forces, and support forces.

2A–B. The Development of Air Power (1–1). (Course must be taken concurrently with A Sp 113 Leadership Laboratory (one unit) if student desires an Air Force R.O.T.C. Commission.) The development of air power from balloons and dirigibles through contingency warfare and the peaceful employment of U.S. air power in relief missions.

3. Leadership Laboratory (1; max total 6). Must be taken each semester of the General Military Course (G.M.C.). Cadets experiment with and develop their military and leadership skills and techniques.

5. Drill and Ceremony Fundamentals (1). The elements of military drill, individual and group precision movements, development of command voice; technical, stylistic and aesthetic aspects of creative drill maneuvers, and encompasses both rehearsal and public performance.

> "I was delighted that my parents could come to Orientation Day with me. Afterwards, I heard many good comments about the orientation — especially from people out of town. Dean Corcoran gave a very positive image of this university!"
>
> *— Freshman, Undeclared Major*

15. Introduction to Air Force Flying Training (1; max total 4). Basic aerodynamics, weather, aerospace physiology, navigation, flight planning, air discipline, safety, survival, first aid, pilot/navigator training orientation, and career information. Prepares student for entry into Air Force Undergraduate Flying Training.

25. Air Force ROTC Field Training (3). Taken during summer preceding entry into P.O.C. Six-week field training to acquaint student with Air Force life; basic military skills; weapons and support systems; and discipline. The Air Force provides meals, housing, pay, and travel to and from base.

103C. Air Force ROTC Field Training (3). For those completed G.M.C. and prior-service cadets. Four weeks of training during any summer at Air Force installations. Physical training, drill, weapon familiarization, flying, orientation. The Air Force provides meals, housing, pay, and travel to and from base.

104A–B. Air Force Management and Leadership (3–3). (Course must be taken concurrently with A Sp 113 Leadership Laboratory (one unit) if student desires an Air Force R.O.T.C. Commission. Systematic study of published research on leadership theories and group dynamics; review of the principles and functions of management with emphasis on problem solving and practical application of management tools; communication skills, military speech and writing formats.

105A–BW. American Defense Policy (3–3). (Course must be taken concurrently with A Sp 113 Leadership Laboratory (one unit) if student desires an Air Force R.O.T.C. Commission.) (Students who have completed A Sp 104A,B and A SP 105 AW, BW will be deemed to have fulfilled the Upper Division Writing Requirement.) An examination of the needs for national security; an analysis of the evolution of the American defense strategy and policy; an examination of the methods for managing conflict; an extensive study of alliances and regional security to preserve American interests around the world; an analysis of arms control and the threat of war; and a study of the formulation of American defense policy and strategy. Special topics of interest focus on the military as a profession, officership, and the military justice system. Within this structure, continued emphasis is given to developing communicative skills.

113. Leadership Laboratory (1; max total 6). Prerequisite: A Sp 25, or equivalent military training. Must be taken each semester of the Professional Officer Course (P.O.C.). Cadets experiment with and develop their leadership skills and techniques.

AGRICULTURE
Agricultural Economics

School of Agriculture and Home Economics
Department of Agricultural Economics
Herbert O. Mason, Chair
San Ramon 1, Rooms 1–14
(209) 294-2949

B.S. in Agricultural Business
M.S. in Agricultural Business



The award winning agricultural business program at California State University, Fresno was recognized in 1985 as a national model by the Agribusiness Education Project, comprised of agricultural industry leaders and higher education scholars from around the country.

The agricultural business curriculum is taught by the faculty of the Agricultural Economics Department, which was established in 1970. Especially notable is the comprehensive and integrative program of study, with its problem solving orientation and practical experience emphasis.

Degree Programs

The *Bachelor of Science* degree in agricultural business (Ag Ec) combines core undergraduate courses in agricultural economics with basic business management and agricultural science foundation courses. This undergraduate major allows you to emphasize a career specialty, such as agricultural economics, farm management, agribusiness management, food industry management, agricultural marketing, agricultural finance, public policy, and international agriculture, as well as agricultural communications, consumer science, animal science, plant science, (plant, crop science, fruit science, ornamental horticulture, plant protection, soils/irrigation), mechanized agriculture, enology, dairy industry, food science, meat science, or nutrition.

The *Master of Science* degree in agricultural business (Ag Bs) combines core graduate courses in agricultural business with elective courses from business, agricultural economics, and the agricultural sciences. This graduate program of study is designed for those seeking to advance their career by enhancing their business management and economic analysis skills.

Instructional Facilities

Modern agricultural computing facilities are used to teach students computerized farm accounting systems, agricultural enterprise management, agribusiness simulations, statistical analysis programs, plus planning and decision making aids as part of their professional expertise.

All agricultural business students have access to a commodity market news service in the Marketing News Center and to a computerized data base system of more than 100 files through the Agri-Tech Information Network (ATI-NET) established by the school's California Agricultural Technology Institute (CATI).

Research Service

Faculty and students work through the Center for Agricultural Business (CAB), founded in 1986, to service the problem solving needs of San Joaquin Valley constituents. They cooperate with regional client groups in conducting applied research studies and holding information dissemination seminars on management, finance, marketing, microcomputers, and related topics.

Career Opportunities

Graduates of the Agricultural Business program hold a wide variety of essential positions in California's agricultural industry, including such professional occupations as:

Agricultural economist
Agricultural journalist
Agricultural statistician
Agribusiness firm controller
Agribusiness salesperson
Animal feed dealer
Bank loan officer
College instructor
Commodity trader
Computer firm representative
Consumer affairs specialist
Cooperative manager
Crop insurance agent
Development economist
Elected public official
Elevator manager
Estate and tax adviser
Export-import agent
Extension farm adviser
Farm accountant
Farm chemical distributor
Farm equipment dealer
Farm labor specialist
Farm magazine editor
Farm or ranch manager
Farm organization lobbyist
Farm personnel manager
Farm program administrator
Farm publication advertiser
Fast food franchise owner
Federal lands manager
Fertilizer company manager
Financial services adviser
Food merchandiser
Food processing supervisor
Food warehouse manager
Food wholesaler or retailer
Foreign service officer
Freight traffic manager
Fruit and vegetable broker
Government policy analyst
Grain purchaser
Grocery chain executive
International agriculturalist
Land developer
Legislative assistant
Livestock buyer
Management consultant
Market news analyst
Marketing researcher
Nursery business operator
Packing-house manager
Produce sales manager
Production credit fieldman
Public relations spokesperson
Public utility energy adviser
Radio-TV farm news director
Real estate appraiser
Regional resource planner
Seed company manager
State park supervisor
Supermarket manager
Trade association executive
Vocational agriculture teacher
Water district director
4-H youth counselor

Professional Preparation

While a student at CSU Fresno, you may establish credibility with prospective employers by participating in the following occupationally related activities:

Career planning and preparation in the Agribusiness Career Seminar (Ag Ec 195);

National Agri-Marketing Association (NAMA) student chapter, which serves as the Agricultural Business Club—offering professional contacts with industry leaders, and involvement in the yearly national marketing competition for academic credit (Ag Ec 180);

Industry internship opportunities for many career positions through management training programs with agricultural business firms and support institutions—the department awards internships on a competitive basis each semester and summer, and grants academic credit for this supervised experience (Ag Ec 194);

Farm laboratory experience under faculty supervision through participation in the student project program and concurrent enrollment in an Enterprise Management course (Plant, A Sci, Enol 196).

Faculty

Department Chair: Herbert O. Mason

Graduate Coordinator: Gregory C. Lassiter
NAMA Adviser: Dennis L. Nef

Juan C. Batista	Dennis L. Nef
Thomas I. Gunn	Carl L. Pherson
John W. Hagen	John R. Shields
Gregory C. Lassiter	David K. Smith
Herbert O. Mason	Douglas R. Williams

Members of the faculty are broadly trained with advanced degrees from top ranked universities across the nation and are highly experienced as teachers, consultants, and researchers. They bring practical insight to the classroom by being professionally active in service to California farms and agribusinesses, industry organizations, government agencies, and professional associations. Forming a strong advisee-adviser relationship with any one of the faculty can help you match your career goals with appropriate course work.

Bachelor of Science Degree Requirements
Agricultural Business Major

	Units
General Education *(including 9 upper-division units)*	54
Core	
Category 3: Ag Ec 71 (required if one year high school Algebra II completed)	
Breadth	
Division 1: Chem 2A (required)	
Division 2: Biol 10, Bot 10, Zool 10 (two courses required)	
Division 8: Ag Ec 1 (required)	
Division 10: CFS 38 or FScN 53 (recommended)	
Capstone	
Agriculture and Government Policy Cluster (recommended): Ag Ec 150 and Phil 125 or Pl Si 150	
Major (including 20 upper-division units)	60
Agricultural Science Foundation	(12)
(In addition to the Ag Ec requirement, select one course from three of the five remaining areas)	
Ag Ec: Ag Ec 2 (required)	
A Sci: A Sci 1	
FScN/Dairy/Enol: FScN 50 or 54, D Ind 23, Enol 15	
Me Ag: Me Ag 1	
Plant Sci: Cr Sc 1, FS 1, OH 1, or Pl Pr 1	
Sl: Sl 1	
Business Management Base	(15)
B A 18 or Ag Ec 28	
Acct 4A or Ag Ec 30	
Acct 4B or Ag Ec 32	
DS 73 or Ag Ec 71	
IS 50 or Ag Ec 76	
Agricultural Economics Core	(21)
Ag Ec 100, 110, 120, 130, 161, 170, upper division Ag Ec Course	
Career Specialty	(12)
This required major concentration or flexible emphasis of approved courses (including a minimum of 6 upper-division units in agricultural economics) is selected to match the student's career goal in consultation with the student's assigned faculty adviser. (See major program of study advising check sheet for course listings by concentrations in various disciplines.)	
Additional Requirement	1–3
Upper Division Writing Skills (by exam or Plant 110W)	
Electives	11–13
(courses supplementary to the major are strongly recommended)	
Total Requirements (including 40 upper-division units)	128

Advising Notes:

1. All new and continuing students must request the advisee check sheet for their program of study from the department and make an appointment with their assigned academic adviser prior to registration each semester.
2. Community college transfer students should request the university's Office of Evaluations to assess their academic record regarding CSU, Fresno degree requirements. They should also consult their major adviser to determine which CSU, Fresno Ag Ec courses are articulated for credit as equivalent to their community college courses.
3. Credit-No Credit grading is not permitted for courses included in the major. Internship units for Ag Ec 194, which is graded on a *CR-NC* basis, can be counted under the Electives category.
4. The General Education Core requirement of Math 4 in Category 3 should be satisfied during the first semester in residence at CSU, Fresno.
5. The General Education Breadth courses required of Agricultural Business majors within Division 1, 2, and 8 should be completed by the end of the first semester of the sophomore year.
6. The General Education Capstone cluster courses recommended for agricultural business majors are Ag Ec 150 and Phil 125 or Pl Si 150, both of which can be taken only after 56 degree units are completed. The Agriculture and Government Policy Capstone choice would appropriately be taken during the senior year.
7. Upper-division units (i.e., 100-level courses) may not be

applied toward the 40 upper-division unit degree requirement until 45 units have been completed.
8. All upper-division agricultural economics courses have prerequisites to which students must adhere; however, equivalent prerequisite courses may be substituted.
9. The Agricultural Science Foundation courses should be completed no later than the end of the first semester of the junior year.
10. The Business Management Base courses should be completed no later than the end of the first semester of the junior year.
11. The Agricultural Economics Core courses of Ag Ec 100, 110, 120, 130, and 161 should be completed no later than the end of the junior year. In particular Ag Ec 100 should be taken immediately upon completion of 45 units, including the prerequisite courses Ag Ec 1 and Math 4, and preferably before the other Ag Ec core courses. Ag Ec 170 and the Ag Ec elective should be taken during the senior year.
12. The career specialty within the major (identified by the major code number in the *Schedule of Courses*) consists of approved courses totaling 12 units (of which 6 must be upper-division units in agricultural economics) under either a formally recognized major concentration (see program of study advising checksheet) or an individually tailored flexible emphasis of logically integrated courses to meet the student's particular career goal.
13. Students planning to earn a Master of Science degree in Agricultural Business at CSU, Fresno should include approved courses in inferential statistics, linear regression, quantitative analysis, and organizational behavior in their bachelor's degree program.
14. Students intending to pursue graduate study in agricultural economics at another institution should include approved courses in intermediate macro-economic theory, differential and integral calculus, inferential statistics, and linear regression in their bachelor's degree program.
15. The Upper Division Writing Skills Requirement can be met by passing the university examination or by taking an approved upper-division writing skills course only after 56 units are completed. One unit of credit in Engl 100W may be earned for passing the examination if requested by the student; three to four units of credit will be earned by obtaining a letter grade of *C* or higher in an approved course (e.g., Plant 110W).
16. A dual major of agricultural business and agricultural science (e.g., animal and plant science or production options) must have 36 mutually exclusive units (including a minimum of 18 upper division). A dual major requires the approval of the department chairs administering these programs of study. General Education and Elective units may be applied (i.e., double counted) toward a second major or a minor. (See *Dual Major*, p. 98, in the catalog and consult with the appropriate department adviser.
17. Complete the Certification of Major Requirements form in consultation with your assigned adviser; and submit it to the department chair for approval during the next-to-last semester in residence. File an application for graduation early in your last semester and pay the required application fee.

School-Wide Programs

Cross disciplinary programs of study may also be pursued as a career specialty under existing undergraduate degree options in the School of Agriculture and Home Economics. See the preceding catalog section titled School of Agriculture and Home Economics for a description of these special programs:

Agricultural Communications,
Food Industry Management,
International Agriculture.

Master of Science Degree Requirements

The Master of Science degree in agricultural business (Ag Bs) is a 30-unit program designed to develop business management and economic analysis skills for individuals seeking career advancement in farm management, agribusiness management, agricultural finance, and agricultural marketing. While full-time students may complete this program in one calendar year, the late afternoon and evening format of course offerings permits fully employed part-time enrollees to earn their degree within two years.

Admission Criteria

Full classified standing requires: a baccalaureate degree in agricultural science, agricultural business, business, or other undergraduate major from an accredited institution; a 3.00 G.P.A. (last 60 semester units); and either a 450V/430Q G.R.E. score or a 500 score on the Graduate Management Aptitude Test (G.M.A.T.).

Conditional classified standing may be granted by the department to petitioning applicants with a 2.50 to 2.99 undergraduate G.P.A (last 60 units) if they have obtained a passing score on either the G.R.E. or G.M.A.T. and if two letters of recommendation from past or current employers have been received by the department. Such students will be fully classified when all prerequisite foundation courses have been completed with a minimum 3.00 G.P.A. Prerequisite foundation courses are not included in the 30-unit program.

Applicants whose preparatory education was principally in a language other than English must earn a minimum TOEFL score of 550.

Prerequisite Courses

The following specific prerequisite foundation courses, or their equivalents, are expected to be completed prior to enrollment in agricultural business (Ag Bs) or business (Bus numbered 221 or above) courses:

Agricultural sciences: Three courses from at least two of the agriculture departments: Animal Science and Agricultural Education; Enology, Food Science, and Nutrition; Plant Science and Mechanized Agriculture.
Economic principles: Econ 1A and Ag Ec 1 (or Bus 202); Ag Ec 100 (or B A 100 or Econ 100A).
Agricultural economics: Ag Ec 110, 120 (or LOM 124 or Bus 216), 130 (or Fin 130 or Bus 218), 161.
Business: Bus 205, 207, 208, 209, 211, 214. (Equivalents for all foundation courses in the School of Business and Administrative Sciences are listed in the *General Catalog* under the prefix *Bus.*)
Courses prefixed *Ag Bs* or *Bus* are open only to graduate students with full classified standing.

Program Requirements

All students must complete an 18-unit common *core* consisting of 15 units in agricultural business (Ag Bs) and the 3 unit Bus 221 Seminar in Business Research, which fulfills the writing proficiency requirement. Students may focus their program on a specialized area to meet career goals by appropriate selection of 9 units of *approved electives* of which 6 units are in the School of Business and Administrative Sciences and 3 units are in the

School of Agriculture and Home Economics. A 3-unit *project* or *thesis* completes the program of study.

Specific requirements are:

	Units
Agricultural business: Ag Bs 210, 220, 230, 250, 260	15
Business: Bus 221 and two approved graduate elective courses (Bus 223 and higher)	9
Agriculture: One approved elective graduate course in Agricultural Business (Ag Bs), upper-division undergraduate course in Agricultural Economics (Ag Ec), or a graduate/upper- division course in Agriculture	3
Agricultural business research: Ag Bs 298 or 299	3
Total minimum requirements	30

Note: Students may enroll in a maximum of 6 units of Ag Bs 298 or 299. Students enrolling in 6 units of project or thesis are required to complete 33 units.

Prospective students should request the program advising sheet from the department. Upon admission students should see the graduate coordinator for aid in program planning and selection of a graduate adviser.

In order to continue graduate enrollment the student must maintain a 3.0 G.P.A.; complete all prerequisite foundation coursework; pass an oral diagnostic examination; file for Advancement to Candidacy; complete the agricultural business core; pass a written examination covering the core course material; select a project or thesis committee; formally present a project or thesis proposal; and defend the research results.



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 University Farm.

Note: Cost to the student of extended field trips will vary each semester depending upon itinerary. Student should ask the course instructor.

Economic Principles (Ag Ec)

1. Introductory Agricultural Economics (3). Microeconomic principles of resource allocation, production, cost analysis and market price equilibrium with primary application to farms and agribusiness firms; supply and demand in commodity pricing under perfect and imperfect competition; survey of agricultural management and marketing problems and issues. (Former Ag Ec 31)

2. Agricultural Sector Analysis (3). Domestic and international forces affecting industry profitability of farm input suppliers, agricultural producers, commodity processors, food marketers; government fiscal, monetary, trade policies interaction with agricultural credit, price support, food subsidy programs; impact on agribusiness asset values, debt accumulation, income levels.

100. Intermediate Agricultural Economics (3). Prerequisite: Ag Ec 1 and Math 4. Microeconomic theory of agricultural production in factor-product, factor-factor, product-product decisions; production costs and economies of size; consumer choice theory; price and output determination under imperfectly competitive markets; marginal productivity theory and the derived demand for agribusiness inputs.

Farm Management (Ag Ec)

110N. Introductory Farm Management (3). Prerequisite: Ag Ec 1. Not open to students with credit in Ag Ec 110. Survey course for Non-Agricultural Business majors. Introduction to applied economic and farm business management topics including: farm accounting, financial statement analysis, management principles, computer assisted decision aids, farm budgeting, farm business planning, tax management, investment analysis, and agricultural finance. (2 lecture, 3 lab hours) (Former Ag Ec 112)

110. Farm Management (3). Prerequisite: Ag Ec 100. Production economics and management techniques for analysis of efficient farm resource use, planning and organization; analysis of budgeting and optimization techniques, and computer applications for developing farm management plans. (2 lecture, 3 lab hours) (Former Ag Ec 112)

114. Advanced Farm Management (3). Prerequisite: Ag Ec 110. Design, computerization, and analysis of profit maximizing, cost minimizing, and multi-period linear programming models; risk and uncertainty; data and information requirements for decision making; optimizing the level and mix of crop and livestock enterprises; development of farm management plans.

117. Agricultural Labor-Management Relations (3). Prerequisite: Ag Ec 1. Economic analysis of the farm labor market; labor productivity, agricultural mechanization and farm employment; farm labor laws and government regulations; agricultural labor relations, unionization, and collective bargaining; farm personnel administration practices and supervisory management principles. (Former Ag Ec 125 and 165)

Agribusiness Management (Ag Ec)

28. Introductory Agricultural Law (3). Fundamentals of agricultural business law including historical sources and development; legislative laws; administrative regulations, judicial decisions affecting agriculture; express and implied contracts with remedies for their breach in agricultural situations; real and personal property law plus secured transactions in agriculture. (Former Ag Ec 185T section)

120. Agribusiness Management (3). Prerequisite: Ag Ec 1. Organizational forms and management functions of agribusiness firms; human resource management systems; management science principles for optimizing plant location, equipment replacement, inventory control, and sales volume; operations research techniques, including probability-based network and decision models, for solving agribusiness problems.

122. Agricultural Cooperative Management (3). Prerequisite: Ag Ec 120. Philosophical, historical, and legislative evolution of U.S. agricultural cooperatives; uniqueness of cooperative organization, planning, direction, and control functions vis-a-vis standard corporations; legal, financial, and tax considerations in managing input-supply and marketing cooperatives; case studies and field trips to cooperatives. (Former Ag Ec 185T section)

124. Food and Fiber Industry Management (3). Prerequisite: Ag Ec 1. Production management of farm input manufactures, agricultural commodity processing, food/fiber product distribution; functional approach to transformation/value-added operations including planning, organizing, directing, coordinating, controlling; case applications to materials handling, product development, food packaging, quality control, transportation logistics, inventory management.

128. Advanced Agricultural Law (3). Prerequisite: Ag Ec 28 or B A 18. Case applications of agricultural business law; torts covering trespass, negligence, liability for farm livestock and chemicals; surface and mineral property rights; water law; farm labor law; agribusiness firm incorporation; agricultural cooperative regulation; state and federal marketing orders; farm estate taxation.

Financial Planning (Ag Ec)

30. Farm Accounting (3). Basic concepts and principles of financial accounting systems applied to farm operations; mechanics of recording single and double entry transactions under cash and accrual accounting methods; preparation and analysis of enterprise records and financial statements to generate management information. (2 lecture, 3 lab hours) (Former Ag Ec 111 and 151)

32. Agribusiness Managerial Accounting (3). Prerequisite: Ag Ec 30 or Acctg 4A. Application and analysis of accounting information for farm and agribusiness management; integration of economic and financial principles in preparing business plans; equipment cost control and crop enterprise accounting methods; capital investment and profit performance; introduction to computerized farm accounting systems. (2 lecture, 2 lab hours) (Former Ag Ec 185T section)

130. Agricultural Finance (3). Prerequisite: Ag Ec 1, and Ag Ec 30 or Acct 4A. Analysis of farm financial statements; legal instruments of financial transactions; institutional sources of farm credit; time value of money and capital budgeting for agricultural investment; cost of debt and equity capital; risk management strategies; insurance, tax, and farm estate planning (Former Ag Ec 127 and 177)

136. Farm and Ranch Appraisal (3). Prerequisite: Ag Ec 110. Principles of agricultural appraisal; physical and economic factors affecting land values; estimation of real estate value using income, cost, and market data approaches; case studies and field problems involving the valuation of local farm and ranch properties. (Former Ag Ec 116 and 185T section)

Agricultural Development (Ag Ec)

140. International Agricultural Development (3). Prerequisite: Ag Ec 1. Agricultural sector development and national economic growth in low income countries; research, extension, and policy strategies for transforming subsistence farmers into commercial growers; foreign aid efforts addressing food deficits, malnutrition, overpopulation, rural underemployment, environmental degradation, inappropriate technology, and capital shortages. (Former Agri 161)

147. Rural Development Administration (3). Prerequisite: Ag Ec 140. Application of public administration and business management principles to directing international agricultural technical assistance; infrastructure development, institution building, policy formulation, technology transfer, and rural entrepreneurship in market-oriented and state-planned economies; program planning, project supervision, and contract management overseas. (Former Agri 170)

Public Policy (Ag Ec)

150. Agricultural Policy (3). Prerequisite: Ag Ec 1. Analysis of public policies affecting the economic position of U.S. and California agriculture; government programs influencing agricultural production, commodity distribution, market prices, and farm income; selected topics concerning American food and fiber system; comparative foreign agricultural policies and U.S. trade. (Former Ag Ec 179)

153. Agricultural Trade (3). Prerequisite: Ag Ec 150. Comparative advantage, trade models, protectionist barriers, and balance of payments; world agricultural trade patterns and international commodity agreements; domestic farm programs and foreign trade policies; surplus food aid and concessionary sales overseas; trade liberalization versus preferences issue and economic development.

155. Natural Resource Economics (3). Prerequisite: Ag Ec 1. Economic analysis of public policies governing land use, water management, energy generation, mineral exploitation and forest administration; review of population pressures and resource conservation; examination of externalities, property rights issues, resource use planning, agricultural zoning, environmental regulations, and reclamation law. (Former Ag Ec 171)

Product Marketing (Ag Ec)

161. Agricultural Marketing (3). Prerequisite: Ac Ec 1. Commodity transformation and product flow through processing and distribution channels; market structure, conduct, and performance; marketing system efficiency and marketing bill components; over supply, marketing orders, grading and standards, and price stabilization; price forecasting, futures market trading, and risk management.

162. Commodity Futures Trading (3). Prerequisite: Ag Ec 161. Speculation and the price discovery process; fundamental analysis and long-run decisions to hedge; technical analysis and short-run timing of crop/livestock sales; trend line charts utilizing

moving averages; trading mechanics, price projection, and development of futures trading plans.

163. Agricultural Export Marketing (3). Prerequisite: Ag Ec 161. Determination of potential overseas markets for U.S. agricultural products through export marketing studies; foreign business environment and distribution channels; product preparation and transportation abroad; cultural-specific promotional and advertising programs; international sales agreements, financial transactions, plus banking and shipping documentation.

164. Agribusiness Sales Management (3). Prerequisite: Ag Ec 1. Marketing management strategies for stimulating business and consumer demand for agricultural goods and services; food and fiber merchandising using institutional, functional, value approaches; sales program organization and staff development for effective communication of product information and timely completion of transactions.

166. Agricultural Communications (3). Prerequisite: Ag Ec 1. Agricultural news and information gathering and dissemination to food producers and consumers through print/broadcast media and computer networks; formulation of promotional programs, advertising campaigns, and public relations for agricultural industries and institutions; mass communications writing, editing; simulated videotape presentations.

Decision Analysis (Ag Ec)

71. Agricultural Business Statistics (3). Prerequisite: Math 4. Application of descriptive statistics to analyze agricultural sector conditions; measures of central tendencies and dispersion, time series analysis, index numbers, seasonal variation, data collection and presentation, introduction to probability theory, and discrete and continuous probability distribution. (Former Ag Ec 41)

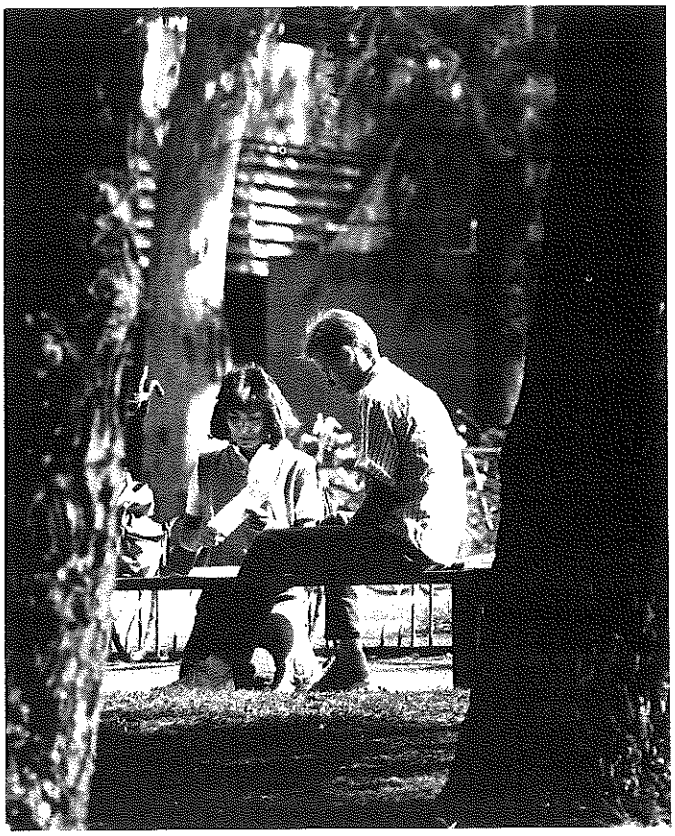
76. Agribusiness Microcomputer Applications (3). Prerequisite: Math 4. Applied microcomputing for agribusiness management. Evaluation of alternative microcomputing systems and software. Use of an electronic spreadsheet and database management programs; applications to farm accounting, crop and livestock enterprise management, and agricultural financial planning. (2 lecture, 2 lab hours) (Former Ag Ec 185T section)

170. Agribusiness Research Methods (3). Prerequisite: Ag Ec 71 or DS 73, Ag Ec 76 or IS 50, and Ag Ec 100; Upper Division Writing Skills requirement. Research methods applied to agricultural business; problem definition, hypothesis formulation, research design, data collection, and results analysis using descriptive and inferential statistics; mechanics of writing research proposals and technical reports and making oral presentations of findings.

174. Agricultural Systems Analysis (3). Prerequisite: Ag Ec 71 or DS 73, and Ag Ec 76 or IS 50. Systems science principles for agribusiness planning and controlling decisions; logic and probability in diagnosing problems, designing operations, and achieving objectives with general and subsystems models; identification of elements, relationships, and procedures for efficient input/output transformation; applications to computer programming. (Former Ag Ec 178)

Special Topics (Ag Ec)

80. Undergraduate Research (1–4; max total 4). Prerequisite: Ag Ec 1 and permission of instructor. Directed study or research on particular problems in the field of agricultural economics and business. Consult department policies and procedures governing undergraduate research.



85T. Topics in Agricultural Business (1–3, max total 6). Agricultural economics, farm management, agribusiness management, financial planning, agricultural development, public policy, product marketing, and decision analysis. Topics may require lab hours.

180. Undergraduate Research (1–4; max total 4). Prerequisite: Ag Ec 170 and permission of instructor. Directed study or research on particular problems in the field of agricultural economics and business. Consult department policies and procedures governing undergraduate research.

185T. Topics in Agricultural Business (1–3, max total 9). Prerequisite: Ag Ec 1. Agricultural economics, farm management, agribusiness management, financial planning, agricultural development, public policy, product marketing, and decision analysis. Topics may require lab hours.

Industry Relations (Ag Ec)

192. Agricultural Business Field Studies (2). Prerequisite: Ag Ec 1. Business and economic functions performed by specialized agricultural agencies with emphasis on physical operating patterns. Field trips to production, marketing and finance firms. Workshops with agribusiness managers. (Field trip fee, up to $75) (1 lecture, 2 lab hours) (Former Ag Ec 160)

194. Agribusiness Internship (1–8; max total 8). Prerequisite: junior or senior standing and approval of internship committee. Emphasis on development of decision-making ability through industrial experience integrated with basic principles acquired in the classroom. (Former Agri 173 section)

195. Agribusiness Career Seminar (1). Prerequisite: junior standing, or permission of instructor. Career exploration and academic preparation in agribusiness; assessment of personal and professional skills matching agricultural occupational choices; career planning, self-marketing strategies, and job-hunting tactics; resume and letter writing, interview and job-offer negotiations; workshops with industry representatives. (Former Ag Ec 185T section)

GRADUATE COURSES

(See *Course Numbering System,* p. 133. and Eligibility)

Agricultural Business (Ag Bs)

200. Seminar in Agricultural Business (1; max total 4). Prerequisite: permission of instructor. Written and oral reports concerning recent literature on current problems and issues related to agricultural business. (Former Agri 219)

210. Farm Management Analysis (3). Prerequisite: Ag Ec 100 and 110. Integration of production economics theory with management science techniques to develop farm management plans; analysis of farm management decisions under uncertainty using programming models, statistical analysis, and other operations research methods. (Former Agri 212)

220. Agribusiness Management Analysis (3). Prerequisite: Ag Ec 120. Diagnosis of management problems in terms of planning, controlling, directing, organizing, and staffing functions; management science techniques for decision making under certainty and uncertainty using deterministic and probabilistic models; case study assessment of organizational behavior theory and operations research methodology. (Former Agri 214)

225. Food Processing and Distribution Management (3). Prerequisite: Ag Bs 220. Economics of optimal location and size of agricultural processing plants; examination of product price relationships with packaging systems, transportation modes, and distribution logistics of farm commodities from grower to retailer; application of modern management tools to food industry case problems.

230. Agricultural Finance Analysis (3). Prerequisite: Ag Ec 130 or Fin 130 or Bus 205. Application of advanced portfolio theory, capital asset pricing models, and capital budgeting procedures to decision making under uncertainty for farming operations and agricultural businesses; case studies illustrating data-base management, tax management and optimal capital asset replacement scheduling.

240. Agricultural Sector Planning (3). Prerequisite: Ag Ec 130 or Fin 130, Ag Bs 250. Economic policies, incentive structures, and resource constraints affecting agricultural development; rural development theories, growth models, and sector strategies for increasing farm productivity; design, implementation, and evaluation of technical assistance programs; economic and financial appraisal of public and private investment projects.

250. Agricultural Policy Analysis (3). Prerequisite: Ag Ec 100. Exploration of policy-making processes; evaluation of government farm and food programs; determination of industry responses and firm adjustments to changing market structures and public policies; investigation of agricultural sector problems, issues and linkages with the national and international economies. (Former Agri 211)

260. Agricultural Marketing Analysis (3). Prerequisite: Ag Ec 161. Examination of demand and supply functions underlying market price determination; review of farm-retail marketing margins; analysis of spatial and intertemporal price equilibrium models; application of econometric techniques to empirical cases; preparation of marketing studies; development of distribution/merchandising strategies. (Former Agri 213)

265. Agricultural Price Forecasting (3). Prerequisite: Ag Bs 260. Specification of demand and supply equations; regression analysis of agricultural price forecasting models; estimation of price, income and cross elasticities and price flexibility coefficients; analysis of price trends and cyclical price variations; advanced hedging and speculation in commodity futures trading.

270. Research Communications in Agribusiness (3). Prerequisite: Bus 221. Individually directed readings in a field of special concern to the student's graduate program; appropriate research proposal writing and evaluation required. (Former Agri 220)

280T. Topics in Agricultural Business (3; max total 6). Prerequisite: upper division agricultural economics courses appropriate to the topic. Fields of study include: farm management, agribusiness management, financial planning, agricultural development, public policy, and product marketing. (Former Agri 210T)

290. Independent Study (1–3; max see reference). See Academic Placement—Independent Study, pages 96–97.

298. Project (3–6; max total 6). Prerequisite: prior advancement to candidacy; see *Criteria for Thesis and Project,* pages 467–468. Management audit of an operating agricultural business firm, replicated feasibility study, computer model, system simulation, or similar professional problem-solving activity with extensive written documentation. Public presentation of proposal and seminar, plus final oral defense required.

299. Thesis (3–6; max total 6). Prerequisite: prior advancement to candidacy; see *Criteria for Thesis and Project;* pages 467–468. Preparation, completion, and submission of an acceptable thesis for the master's degree.

Agriculture (Agri)

IN-SERVICE COURSES *(Agri)*

(See *Course Numbering System, p. 133.*)

300. Topics in Agriculture (1–3). Topics may require lab hours.

AGRICULTURE
Animal Science and Agricultural Education

School of Agriculture and Home Economics
Department of Animal Science and Agricultural Education
John A. Jacobs, Chair
Agriculture Bldg., Room 230
(209) 294-2971

B.S. in Agricultural Sciences
B.S. in Agricultural Education
Minor in Agricultural Sciences
M.S. in Agriculture

Programs of study offered by the Department of Animal Science include livestock production, dairy science, agricultural business, preveterinary medicine, animal health, meat technology, basic animal science, and agricultural communications. Courses within these areas integrate nutrition, physiology, genetics, reproduction, environmental management, behavior, health, disease, marketing, muscle biology, and animal evaluation.

The agricultural education (Ag Ed) major is designed to prepare students for positions as vocational agriculture teachers. Specializations may be developed in agricultural production, plant sciences, animal sciences, and mechanized agriculture.

Instructional Facilities

Theoretical instruction in the animal science disciplines of animal health, nutrition, reproduction, meats, physiology, and animal breeding is enhanced through practical application at the various farm laboratory units. The Beef, Dairy, Horse, Meats, Sheep, and Swine Units are maintained to support the educational purpose. In addition, the Meats, Veterinary, and Physiology, as well as the Animal Nutrition and Feed Processing laboratories are utilized to complement on-campus education. A 4,300 acre livestock and range management facility and another 800 acres of rangeland in the Sierra foothills complement the instructional program.

Career Opportunities

Students specializing in animal science may prepare for careers in the livestock industry in which they may be engaged in production management, consultation, research, teaching, agricultural communications, and other professional services as well as careers in business, government, and foreign service. Students specializing in agricultural education can pursue a variety of challenging careers in the educational field including the teaching of vocational agriculture in secondary or post-secondary public schools.

The courses offered in the disciplinary areas listed below provide the necessary background to prepare students for career objectives.

Animal Science—Production. Provides in-depth study in subject areas designed to prepare students for career opportunities in the various aspects of the livestock industry.

Dairy Science. Prepares students for commercial and registered dairy enterprises, dairy herd management, breed association representatives, artificial breeding, dairy sanitation, milk quality control, and other dairy/agricultural business related occupations.

Animal Science—Agricultural Business. Provides a curriculum designed to support a strong core of animal science with specialized training in agricultural business. Students who select this option may wish to consider a second major in agricultural business.

Preveterinary Medicine/Animal Health. Provides a structured program of courses in animal science and related biological/physical sciences that will prepare students for admission to schools of veterinary medicine and for employment with the animal health industry.

Meat Technology. Prepares students for employment in the meat industry by offering courses in the areas of meat science, muscle biology, food science and nutrition, food chemistry, and marketing.



Basic Science. Provides a science oriented curriculum in the disciplines of animal science. Prepares students for post-baccalaureate study or careers related to science, research, and the technical aspects of animal science.

Agricultural Communications. Combines courses in agriculture, radio-television, journalism, and public relations; designed to train students for employment opportunities in the communication media.

Agricultural Education. The agricultural education (Ag Ed) major is designed to prepare students for positions as vocational agriculture teachers. (See Agricultural Education major, pp. 145–146.)

Completion of an approved *Program of Study* in the above areas will enable graduates to pursue a career in any of the following:

Agribusiness salesperson
Agricultural finance
Agricultural journalism
Agricultural public relations
Animal health
Animal nutrition
Animal research
Animal science education
Artificial insemination service
Bank loan appraisal
Beef cattle production
Breed association field services
Cooperative extension services
College instructor
Cooperative manager
Dairy cattle classification
Dairy cattle production
Dairy goat production
Dairy herd management
Embryo transfer services
Extension farm adviser
Fair association management
Farm magazine editor
Farm or ranch manager
Feedlot management
Feed sales/management
Government service
Horse evaluation
Horse production
Horse training
Livestock appraisal
Livestock management
Livestock ranching
Management consultant
Meat inspection/meat grading
Meat processing
Packing house manager
Pharmaceutical sales
Radio/TV farm news director
Sheep production
Swine production
Veterinary laboratory services
Veterinary medicine
Veterinary services
Vocational agriculture teaching
4-H youth counselor

Faculty

Department Chair: John A. Jacobs

Graduate Coordinator: Anne V. Rodiek
Agricultural Education Credentialing Coordinator: Richard A. Rogers

David H. Bremel
David A. Daley
John A. Jacobs
Darren M. Nelson
Arthur A. Parham
Anne V. Rodiek
Richard A. Rogers
Charles M. Smallwood
Michael W. Thomas

The Animal Science and Agricultural Education faculty represent diverse specializations in the disciplines of animal science and teacher training. With doctoral degrees from many of the nation's outstanding agricultural universities, the faculty has combined philosophies of undergraduate education, research, curriculum development, industry relations, and career placement into a unique program that melds the practical and theoretical. Students are assigned an adviser who assists in both academic and career planning on an *individual basis.* The department places a high priority on a strong adviser-advisee relationship.

Bachelor of Science Degree Requirements in Animal Science

Agricultural Science Option I
Production Emphasis

The following courses are required for all animal science students majoring in agricultural science (animal science-production, dairy science, animal science-agricultural business, agricultural communications, or meat technology):.

	Units
General Education (including 9 upper-division units)	54
Core	
Category 3: Ag Ec 71 or Plant 100 (recommended, if one year of high school Algebra II completed)	
Breadth	
Division 1: Chem 2A and 2C	
Division 2: Zool 10	
Division 8: Ag Ec 1 (recommended)	
Division 10: CFS 38 or FScN 53 (recommended)	
Capstone	
Agriculture and Government Policy Cluster (recommended): Ag Ec 150 and Phil 125 or Pl Si 150	
Major (including 20 upper-division units)	45
Agricultural science foundation	(12)
Select A Sci 1 and three recommended courses from the other five disciplines:	
Ag Ec: Ag Ec 1, 76, 110N	
A Sci: A Sci 1 (required)	
FScN/Dairy/Enol: FScN 1, 50, 53, or 54; D Ind 23; Enol 15	
Me Ag: Me Ag 1	
Plant Sci: Cr Sc 1, FS 1, OH 1, or Pl Pr 1	
Soils/Irrigation (SI): SI 1	
Note: Ag Ec 76 and FScN 1 required for Meat Tech	
Animal science core	(33–34)
A Sci 11, 35, 65A, 125, 135, 145A, 155, 155L or 156, 165, 171A, 186	
Additional Requirements	2–19
Upper Division Writing Skills (by examination or Plant 110W, recommended)	
A Sci 1L	
Ag Bus concentration only: select 15 units from Ag Ec 28, 30, 76, 110N, 120, 130, and 161	
Note: One management course is required for Agricultural Business concentration	
Note: Chem 8 required for Meat Tech	
Electives (courses supplementary to major are strongly recommended)	10–27
Total Requirements (including 40 upper-division units)	128

Advising Notes:

1. All new and continuing students must consult with their faculty adviser prior to registration each semester.
2. *CR-NC* grading is not permitted for courses included in the major.
3. The General Education core requirement of Math 4 in Category 3 must be satisfied during the first semester in residence at CSU, Fresno.
4. Upper-division units (i.e., 100-level courses) may not be applied toward the 40 upper-division unit degree requirement until 45 units have been completed.
5. The Upper Division Writing Skills requirement can be met by passing the university examination or by taking an approved upper-division writing skills course only after 56 units are completed. One unit of credit in Engl 100W may be earned for passing the examination if requested by the student; three to four units of credit will be earned by obtaining a letter grade of *C* or higher in an approved course (e.g., Plant 110W).

6. Request advising check sheet from department and make appointment with an assigned academic adviser one semester prior to graduation, file an official Program of Study (see *Undergraduate Degree Requirements* under the School of Agriculture and Home Economics, p. 116).
7. A maximum of six units from the *Special Topics* and *Industry Relations* section (A Sci 180 to A Sci 199) will count as electives.

Agricultural Science—Option II
Science Emphasis

The following courses are required for all animal science students majoring in agricultural science—science emphasis (animal health/preveterinary medicine/basic science).

	Units
General Education (including 9 upper-division units)	54
Core	
Category 3: Ag Ec 71 or Plant 100 (recommended if 1 year of high school Algebra II completed)	
Breadth	
Division 1: Chem 2A, 2B; or 1A, 1B	
Division 2: Zool 1	
Division 8: Ag Ec 1 (recommended)	
Division 10: CFS 38 or FScN 53 (recommended)	
Capstone	
Agricultural and Government Policy Cluster (recommended): Ag Ec 150 and Phil 125 or Pl Si 150	
Major (including 20 upper-division units)	60
Core	(30)
A Sci 1, 1L, 35, 65A, 125, 135, 145A, 155, 155L or 156, 171A, 186	
Career Specialty	(30)
Chem 8, 109, 150	
Phys 2A	
Phy 140	
Zool 160	
Plus, 9 units from: beef, dairy, horse, sheep, or swine production courses	
Additional Requirements	14
Upper Division Writing Skills (by examination or Plant 100W, recommended), A Sci 165, Plus 7–9 units from:	
A Sci 166	
Chem 105	
Phys 2B (required for Pre-Vet)	
Zool 114 (required for Pre-Vet), 157, 158	
Micro 20, 104, 117, 150, 185	
Total Requirements (including 40 upper-division units)	128

Advising Notes:

1. All new and continuing students must consult with their faculty adviser prior to registration each semester.
2. *CR-NC* grading is not permitted for courses included in the major.
3. The general education core requirement of Math 4 in Category 3 must be satisfied during the first semester in residence at CSU, Fresno.
4. Upper-division units (i.e., 100-level courses) may not be applied toward the 40 upper-division unit degree requirement until 45 units have been completed.
5. The Upper Division Writing Skills requirement can be met by passing the university examination or by taking an approved upper-division writing skills course only after 56 units are completed. One unit of credit in Engl 100W may be earned for passing the examination if requested by the student; three to four units of credit will be earned by obtaining a letter grade of *C* or higher in an approved course (e.g., Plant 110W).
6. Request advising check sheet from department and make appointment with an assigned academic adviser; one semester prior to graduation, file an official *Program of Study* (See *Undergraduate Degree Requirements* under the School of Agriculture and Home Economics, p. 116).
7. A maximum of six units from the Special Topics and Industry Relations section (A Sci 180 to A Sci 199) will count as career specialty courses.
8. Preveterinary medicine students should consult their academic adviser regarding entrance requirements and admission procedures to the School of Veterinary Medicine, University of California, Davis.

Bachelor of Science Degree Requirements in Agricultural Education

The following courses are required for all students majoring in agricultural education (teacher preparation):

	Units
General Education (including 9 upper-division units)	54
Core	
Category 3: Ag Ec 71 or Plant 100 (recommended if 1 year of high school Algebra II completed)	
Breadth	
Division 1: Chem 2A	
Division 2: Bot 10 and Zool 10	
Division 4: Engl 20	
Division 8: Ag Ec 1	
Division 10: CFS 38 or FScN 53 (recommended)	
Capstone	
Agriculture and Government Policy Cluster (recommended): Ag Ec 150 and Phil 125 or Pl Si 150	
Major (including 20 units upper division)	54
Agricultural education core	36
Animal science	(9)
A Sci 1, 11; (select one of the following A Sci 21, 31, 41, 61)	
Plant science	(12)
Cr Sc 1, OH 1, FS 110, SI 100	
Mechanized agriculture	(9)
Me Ag 1, Me Ag 100, Me Ag 114	
Agricultural economics	(6)
Ag Ec 30, 110N	
Specialized field (select one)	18
Plant Science, Animal Science or Mechanized Agriculture (see Agricultural Education advising check sheet)	
Teacher education requirements	16
T Ed 151, 152, 155A, Ag Ed 135, 150	
Additional Requirements	1–3
Upper Division Writing Skills (by examination or Plant 110W recommended)	
Electives	1–3
Total Requirements (including 40 upper-division units)	128

Advising Notes:

1. All new and continuing students must consult with their faculty adviser prior to registration each semester.
2. *CR-NC* grading is not permitted for courses included in the major.
3. The general education core requirement of Math 4 in Category 3 must be satisfied during the first semester in residence at CSU, Fresno.
4. Upper-division units (i.e., 100-level courses) may not be applied toward the 40 upper-division unit degree requirement until 45 units have been completed.
5. Ag Ed majors seeking a Single Subject Teaching Credential must take the Upper Division Writing Examination (U.D.W.E.) at least once. Those who pass the examination may receive one unit of credit. (For details consult the *Office of Testing Services.*) Students who fail the U.D.W.E. may attempt the examination once during the following semester or enroll in Plant 110W and receive a grade of *C* or better in order to satisfy the writing skills requirement for graduation.
6. See the *Education—Teacher Education* section of this catalog, pages 271–281, for General Requirements for Initial Admission including the California Basic Educational Skills Test (CBEST).
7. Agriculture courses titled *Tours* or *Lectures* may be used to satisfy upper-division unit requirements but may not be counted to satisfy agricultural education core or specialized field requirements in the major.
8. Candidates for the Agriculture Specialist Credential must possess 3,000 hours or two years of occupational experience in agriculture. (For details, consult the agricultural education credentialing coordinator.)

Single Subject Credential Waiver Program

Completion of the Bachelor of Science degree in agricultural education meets the requirements of the Single Subject waiver program. The Single Subject Credential authorizes the holder to teach *general agriculture* in grades 7–12. Students with a B.S. degree in another agricultural major may obtain a Single Subject Credential by completing the remaining course work required for the B.S. degree in agricultural education.

Credential candidates must pass examinations in reading, writing, and mathematics in addition to numerous other State of California and CSU, Fresno requirements. Consult the agricultural education major adviser and the Department Chair of Teacher Education for details; file an official *Program of Study* (see *Undergraduate Degree Requirements* under School of Agriculture and Home Economics section, p. 116).

Agricultural Specialist Credential Program

The Agricultural Specialist Credential, which authorizes holders to teach secondary school vocational agriculture, is offered jointly by the School of Agriculture and Home Economics and the School of Education and Human Development. It requires completion of the Single Subject waiver program (see above), professional education courses (see *Department of Teacher Education—Single Subject Credential—Program Requirements, Professional Preparation,* p. 275), and an approved fifth-year program of 30 postgraduate units including Ag Ed 135, 150, 187, 189; T Ed 155B, 161; and Agri 280, 281.

Minor

A minor in agriculture consists of 21 units of which 9 must be upper division. At least 12 units must be taken in a particular department and/or discipline. The minor program is planned with an adviser and must be certified by the appropriate department chair and the school dean. The certified minor program will be filed with the Office of Evaluations.

Other Major Programs

An agricultural communications program of study, including courses in writing skills, agriculture, journalism, television, radio, and public relations may be developed under the agricultural science major.

Request advisee check sheet from department and make appointment with an assigned academic adviser; file an official *Program of Study* (see *Undergraduate Degree Requirements* under the *School of Agriculture and Home Economics,* p. 116).

Master of Science Degree Requirements

The Master of Science degree in agriculture with option in animal science is designed to extend professional competence in agricultural research, agricultural production, and agricultural teaching, and to provide the first graduate degree for students anticipating advanced graduate work in the agricultural sciences. Course work in animal science includes animal nutrition, meats, physiology, breeding and genetics, management, and health.

Admission Requirements

The Master of Science degree in agriculture with an option in animal science assumes preparation equivalent to a CSU, Fresno undergraduate major in animal science. An undergraduate major earned in a field other than animal science is acceptable for admission to the master's program in Agriculture (animal science option) when supplemented by animal science core or equivalent courses: Chem 2A–2B, Chem 8, Zool 10, A Sci 35, A Sci 125, 135, 145A, 155, 165 or 166, and two animal science production-type courses.

General admission by the university does not imply acceptance in the master's program by the Department of Animal Science. Separate application must be made to the School of Agriculture and Home Economics.

Applicants to the master's program in Agriculture are required to have the G.R.E. on file in the university Test Office at the time of application. A minimum G.R.E. score of 450V and 430Q or a total of 880 must be achieved. Applicants must also have a minimum G.P.A. of 2.75 in the last 60 units.

Applicants whose preparatory education was principally in a language other than English must earn a minimum TOEFL score of 550.

Prerequisite Courses

Students having undergraduate degrees in fields other than animal science may be admitted to the program but will be assigned additional prerequisites to clear deficiencies in their academic background. Such prerequisite course work will be assigned in addition to the 30-unit master's degree course work.

Program Requirements

Under the direction of a graduate adviser, each student prepares and submits a coherent program individually designed within the following framework:

Specific Requirements—Animal Science Option	*Units*
Agriculture core: Agri 200, 201, 220	9
Approved Animal Science electives; select from: Agri 241, 242, 243, 244, 245, 246, 247, 248, 240T	12

Approved electives, 200-level or approved 100-level courses in Animal Science, Chemistry or related area(s) 3
Seminar: Animal Science (Agri 260) 1–1
Culminating experience: Agri 299 (Thesis) 4
Total minimum requirements 30

Advising Notes:

1. Several of the 200-level and approved elective courses have prerequisites other than courses listed as admission requirements.
2. Students must request specific information concerning the Master of Science degree from the department office. Upon admission, students should see the graduate coordinator for aid in program planning, selection of a graduate adviser, and selection of a thesis committee.
3. To progress through the graduate program, the student must maintain a minimum 3.0 G.P.A.; complete all prerequisite course work; attain classified standing; meet university writing requirement; pass departmental qualifying examination; file for Advancement to Candidacy, complete program requirements, and pass an oral thesis defense.
4. The student shall meet the university writing requirement by earning a minimum of 450 verbal on the G.R.E. If a minimum of 450 verbal is not met by a student, the student shall meet the requirement by then earning a score of 80 or higher in the writing competency examination or by earning a *B* or better in a designated *W* course to be specified by the graduate committee of the School of Agriculture and Home Economics.

> "We try to maintain a close relationship with our alumni. They give us a call when they have a position available, which helps us in placing our graduates."
>
> — *Professor, Agriculture*

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 University Farm.

Note: Cost to the student of extended field trips will vary each semester depending upon itinerary. Student should ask the course instructor.

Animal Science Principles (A Sci)

1. Animal Science (3). Overview of the breadth and depth of the livestock and poultry industry; types and breeds, world distributions, foods and products produced by farm animals, reproduction, breeding, nutrition, and marketing. (Former A Sci 10)

1L. Animal Science Laboratory (1). Prerequisite: A Sci 1 (or concurrently). Laboratory practices to accompany A Sci 1. (2 lab hours) (Former A Sci 10L)

35. Feeds and Feeding (3). Prerequisite: Chem 2A. Principles of nutrition; nutrients and their metabolism; comparison of qualitative nutrient requirements of non-ruminant and ruminant animals and ration balancing to meet these requirements. (Former A Sci 70)

65A. Introduction to Animal Health (4). The stockman's approach to animal health and disease control in domestic animals. Classification of animal diseases, their causes and appropriate treatments with emphasis on preventative medicine. (3 lecture, 3 lab hours) (Former A Sci 120)

110L. Anatomy and Physiology Laboratory (1). Prerequisite: A Sci 110. To be taken upon completion of A Sci 110. (3 lab hours)

120L. Animal Health Laboratory (1). Prerequisite: A Sci 120. To be taken upon completion of A Sci 120. (3 lab hours)

125. Principles of Animal Breeding (3). Prerequisite: A Sci 1 (or concurrently). Basic genetic principles and the application of those principles of livestock production; basic processes of inheritance, qualitative genetics, variation in economic traits in livestock, quantitative inheritance and its measurement, principles of selection progress, current methods of livestock improvement.

135. Animal Nutrition (3). Prerequisite: A Sci 35. Principles of nutrition and metabolism; digestive physiology of farm animals. (Former A Sci 170)

145A. Anatomy and Physiology of Farm Animals (4). Prerequisite: Zool 1 or 10. General structures of farm animals and physiological functions of organs of the animal body. (3 lecture, 3 lab hours) (Former A Sci 110)

146. Physiology of Lactation (3). Fundamentals of anatomy, physiology and endocrinology of milk synthesis and secretion; milking machine systems and management; pathological and environmental factors affecting lactation. (Former A Sci 142)

155. Animal Reproduction (3). Prerequisite: A Sci 1. Recommended concurrently with A Sci 155L or 156. Principles of reproductive physiology and their application to domestic animals.

155L. Animal Reproduction Laboratory (1). Prerequisite: A Sci 145A, A Sci 155 (or concurrently). Laboratory practices to accompany A Sci 155. (3 lab hours)

156. Artificial Insemination—Embryo Transfer (2). Prerequisite: A Sci 145A. Basic principles of artificial insemination and embryo transfer with emphasis on application to cattle. (Former A Sci 152)

165. Infectious Diseases of Domestic Animals (4). Prerequisite: Zool 1 or 10. Microbiological concepts related to bacterial, viral, and fungal diseases in domestic animals with emphasis on specific diseases of veterinary importance. (3 lecture, 3 lab hours) (Former A Sci 65)

166. Non-Infectious Diseases and Parasitology (3). Prerequisite: Zool 1 or 10, A Sci 145A. Definition and prevention of metabolic, nutritional, and other noninfectious diseases of cattle, horses, swine, and sheep. Life cycles, diagnosis and control of common parasitic diseases. (2 lecture, 2 lab hours) (Former A Sci 136)

Production and Management (A Sci)

11. Livestock Selection and Evaluation (3). Prerequisite: A Sci 1 (or concurrently). Basic factors involved in selection and evaluation of livestock; relationships of live market animal traits to carcass desirability. (2 lecture, 3 lab hours)

21. Beef Cattle Production (3). Prerequisite: A Sci 1 (or concurrently). Overview of world and United States beef production. Evaluation of the structure of the beef industry (consumer, packer, retailer, feedlot, seedstock, commercial cow-calf, stocker). Discussion of genetics, nutrition, reproduction, and meat science as applied to beef cattle. (2 lecture, 3 lab hours)

31. Swine Production (3). Prerequisite: A Sci 1 (or concurrently). Principles and practices of purebred and commercial pork production, nutrition, reproduction, environmental management, health, marketing, selection, and records. (2 lecture, 3 lab hours; field trips)

41. Sheep Production (3). Prerequisite: A Sci 1 (or concurrently). Management of purebred, commercial, and small farm flocks; principles and practices in breeding, feeding, care of ewes and lambs, and marketing of lamb and wool. (2 lecture, 3 lab hours)

51. Horse Production (3). Prerequisite: A Sci 1 (or concurrently). Not open to students with credit in A Sci 152A. Breeds, selection, care, and feeding of light horses. (2 lecture, 3 lab hours)

61. Dairy Cattle Production (3). Prerequisite: A Sci 1 (or concurrently). Principles and practices of milking, feeding, breeding, evaluating, housing, health, behavior, and management of dairy cattle. (2 lecture, 3 lab hours) (Former A Sci 12 and 12L)

71. Meats and the Consumer (4). Not open to animal science majors or students with credit in A Sci 171. Consumer problems in buying meat to include quality and price selection, identification, nutritive value; storage, processing, preparation for consumption; and government inspection and standards. (3 lecture, 2 lab hours) (Former A Sci 131)

81. Introduction to Livestock Judging (3). Introductory course in evaluating livestock for breeding and market purposes. Utilizes visual and performance data in establishing the economic value of animals representing the beef, sheep, and swine industries. (2 lecture, 3 lab hours) (Former A Sci 185T)

121A. Advanced Beef Management (4). Prerequisite: A Sci 21. Prevailing and alternative management systems and techniques of beef production in the United States and California including economic analysis. (3 lecture, 3 lab hours) (Former A Sci 111 and 111L)

131A. Advanced Swine Management (4). Prerequisite: A Sci 31. A comprehensive study of the swine industry. Laboratory exercises designed to improve the management decision ability of students. (3 lecture, 3 lab hours; field trips) (Former A Sci 160T section)

151. Advanced Horse Management (3). Prerequisite: A Sci 51. Advanced principles of horse management, reproduction, breeding systems, nutrition, facilities, business aspects, exercise physiology, training colts. (2 lecture, 3 lab hours)

152A. Practical Horsemanship (3). Intended for students who desire a general knowledge of the modern light horse industry; evaluation and selection, horsemanship principles, training techniques, diseases and unsoundness, nutrition, breeding, buildings and equipment. (Former A Sci 145)

161. Advanced Dairy Farm Management (4). Prerequisite: A Sci 61. Planning the development and operation of a complete modern dairy production unit, including all costs and managerial responsibilities required for a successful operation. (3 lecture, 2 lab hours; field trips) (Former A Sci 112)

171A. Introduction to Meats (4). Prerequisite: A Sci 1 (or concurrently). Basic meats course, inspection, factors that affect quality and quantity of meat; selection and preparation of meats and meat products. Two lab sections offered; Lab A includes slaughtering and processing; Lab B is consumer oriented with processing but no slaughtering. (3 lecture, 3 lab hours) (Former A Sci 121)

172. Meat Technology (3). Fabricating and pricing of wholesale and retail meats; technology of fresh and processed meat; sausage making; quality control. (2 lecture, 3 lab hours) (Former A Sci 123, A Sci 160T section)

Special Topics and Industry Relations (A Sci)

180. Undergraduate Research (1–4; max total 4). Open to juniors and seniors. Exploratory work on a suitable agricultural problem in animal science.

181. Advanced Livestock and Dairy Evaluation (2; max total 6). Prerequisite: A Sci 81 or consent of instructor. Detailed analysis of methods of evaluating animal form related to functional efficiency, economic value, and sound livestock production and management. Written and oral summaries of evaluations (meats, beef, sheep, swine, horse, dairy; elect one or more species). (1 lecture, 3 lab hours; field trips) (Former A Sci 101)

182. Fitting and Showing Livestock (1–2; max total 4). Development of skills in the fitting and showing of beef, sheep, swine, dairy, and horse animals; discussion, demonstration, and participation in the application of basic skills. Students may elect one or more species. (2 lab hours per unit) (Former A Sci 105)

183. Animal Science Tour (2; max total 4). A field study tour of animal science enterprises including ranches, processing plants, and facilities of other universities. (Field trip fee, $50 to $70) (Former A Sci 175)

184. Animal Science Lectures (1; max total 4). A series of lectures by prominent, successful animal scientists and agribusiness executives presenting current developments in their field. (Former A Sci 177)

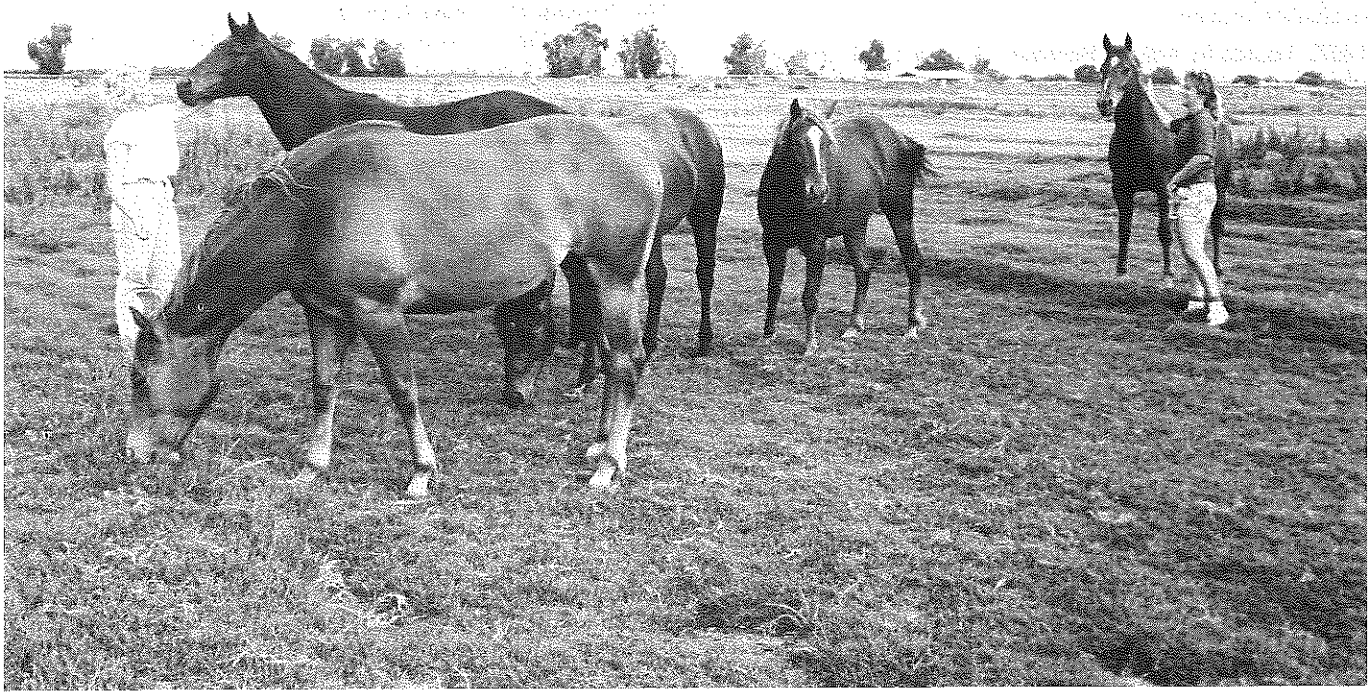
185T. Topics in Animal Science (1–4; max total 4 per discipline if no topic repeated). Prerequisite: junior standing, permission of instructor. Anatomy, physiology, pathology, nutrition, genetics, livestock management. Topics may require labs. (Former A Sci 160T section)

186. Animal Science Seminar (1). Open to seniors majoring in animal science. Latest developments in research; assigned papers in animal science to be presented in both oral and written form. (Former A Sci 150)

190. Independent Study (1–3; max see reference). See *Academic Placement—Independent Study,* pages 96–97.

194. Agricultural Internship (1–8; max total 8). Prerequisite: junior or senior standing and approval of internship committee. Emphasis on development of decision-making ability through industrial experience integrated with basic principles acquired in the classroom. (Former Agri 173)

196. Enterprise Management (1; max total 6). Prerequisite: Me Ag 3; A Sci 21, 31, or 41; or permission of instructor; concurrent participation in project program required. Theory and field application of management principles in beef, sheep, swine, and other appropriate animal science enterprises. (Former Agri 106 section)



Agricultural Education (Ag Ed)

80. Undergraduate Research (1–4; max total 4). Open to freshmen and sophomores with permission of instructor. Exploratory work on a suitable agricultural problem in agricultural education.

135. Introduction to Agricultural Education (3). Survey of agricultural education; vocational surveys; occupational analysis; relationship of agriculture to occupational opportunities; qualifications for teaching agriculture. Includes field trips to high school vocational agriculture departments.

150. Agricultural Resource Materials and Equipment (3). Prerequisite: junior standing. Development and application of techniques for obtaining and using resource materials including government documents, university and experiment station reports. Development, application and evaluation of visual aids and instructional equipment utilized in agricultural education. (Former Agri 150)

160T. Topics in Agriculture (1–4; max total 6 per discipline if no topic repeated). Prerequisite: junior standing, permission of instructor. Agricultural education. Topics may require lab hours.

180. Undergraduate Research (1–4; max total 4). Open to juniors or seniors with permission of instructor. Exploratory work on a suitable agricultural problem in agricultural education.

187. Organization, Administration, and Supervision of Agricultural Education (3). Prerequisite: senior standing. A study of the California and federal plans for vocational education as they pertain to agricultural education.

189. Adult and Continuation Education in Agricultural Mechanics (3). Prerequisite: senior standing. History, philosophy, organization, administration, and development of teaching rural and urban adult education programs in agricultural mechanics.

190. Independent Study (1–3; max see reference). See *Academic Placement*—Independent Study, pages 96–97.

GRADUATE COURSES

(See *Course Numbering System,* p. 133.)

Agriculture (Agri)

200. Biometrics in Agriculture (3). Prerequisite: Math 101 or Plant 100 or concurrently; permission of instructor. Advanced concepts in the design of agricultural experiments. Emphasis is placed on the selection of appropriate designs to meet the objectives of well-planned experiments. Relative merits of various designs and topics in analysis, interpretation, and regression are covered.

201. Agricultural Laboratory Techniques (3). Prerequisite: one of the following courses: Bot 104; Chem 105, 109, 151; Enol 115; FScN 130; or an equivalent course from another institution and classified standing. Agricultural problem solving through the

application of advances in laboratory technology to soils, plant and animal nutrition, water quality and crop management. Theory and practice operation of scientific instruments and techniques will be taught. Student defined project and report required. (2 lecture, 3 lab hours) (Former Agri 250T section)

220. Research Communications in Agriculture (3). Prerequisite: completion of university writing skills requirement. Individually directed readings in a field of special concern to the student's graduate program; appropriate research writing and evaluation required.

240T. Topics in Animal Science (3; max total 12). Prerequisite: upper-division animal science appropriate to study topic; permission of instructor. Investigation of topic in animal science; anatomy, physiology, pathology, nutrition, genetics, or economics. Topics may require lab hours.

241. Endocrine and Reproductive Physiology (3). Prerequisite: A Sci 155. Physiology which deals with neural and hormonal integration and control of the animal body, including scientific aspects of the processes of reproduction and application of current knowledge in improving reproductive efficiency.

242. Environmental Physiology of Domestic Animals (3). Prerequisite: A Sci 145A; permission of instructor. A study of environmental factors affecting domestic animals under field and controlled conditions.

243. Metabolism and Energy Physiology (3). Prerequisite: Chem 8. Current aspects of the integral processes involved in metabolism and energy physiology of laboratory and farm animals. Application of the principles concerned in intermediary metabolism. Selected readings in the current literature within the field.

244. Vitamin and Mineral Nutrition (3). Prerequisite: A Sci 135. A survey of the biochemical and physiological importance of vitamins and minerals in the nutrition of man and his animals. Included is the diagnosis, prevention, and treatment of both vitamin and mineral deficiencies.

245. Advanced Animal Breeding (3). Prerequisite: A Sci 125, 155; permission of instructor. The application of genetic principles to the breeding of livestock. The study of applied selection and measurements of the results.

246. Ruminant Nutrition (3). Prerequisite: A Sci 135, Chem 150. Ruminant physiology of digestion, absorption, and metabolism and nutrients, and the relationship of enzymes and hormones. (Former Agri 240T section)

247. Concepts in Non-Ruminant Nutrition (3). Prerequisite: A Sci 135 or equivalent, graduate standing or consent of instructor. Digestion, absorption, nutrient utilization, and interrelationships in poultry, swine, and other non-ruminants. (Former Agri 240T section)

248. Meat Science and Muscle Biology (3). Prerequisite: A Sci 171A, graduate standing or consent of instructor. Evaluation of muscle as meat; biological characteristics, growth and development of skeletal muscle, glycogen metabolism, and factors affecting quality of meat. (Former Agri 240T section)

260. Seminar in Animal Science (1; max total 2). Prerequisite: permission of instructor. Written and oral reports on selected areas of research on problems in animal science.

280. Seminar in Agricultural Education (1–3; max see below). Maximum total credit 9 units in any given area or any combination of the three areas. Prerequisite: permission of instructor; admission to teacher preparation program; bachelor's degree in agriculture. Advanced problems in agriculture; research and experimentation in a selected area; animal science, plant science, or agricultural mechanics.

281. Problems in Agricultural Education (1–3; max total 3). Prerequisite: graduate standing. Individual supervised research in agricultural education; appropriate reports and evaluation required. Individual conferences.

290. Independent Study (1–3; max see reference). See *Academic Placement—Independent Study,* pages 96–97.

299. Thesis (2–4; max total 4). Prerequisite: see *Criteria for Thesis and Project*, pages 467–468. Preparation, completion, and submission of an acceptable thesis for the master's degree.

IN-SERVICE COURSES *(Agri)*

(See *Course Numbering System*, p. 133.)

300. Topics in Agriculture (1–3). Topics may require lab hours.

M.S. Agriculture; Option in Agricultural Chemistry resulting from studies in enology

M.S. Agriculture; Option in Food Science and Nutrition
Students majoring within the Department of Enology, Food Science, and Nutrition are prepared for a wide range of professions in the food industry—the largest single industry in the United States. CSU, Fresno is centered in the greatest food production and processing area in the world. Some of the largest and best wine, dairy, and food companies cooperate with CSU, Fresno to provide students with a view of commercial realities in this industry. There is strong demand for dietitians and nutritionists by the health care and food service industries. Courses in many other areas—such as chemistry, biochemistry, microbiology, business, and agricultural economics—may be used as electives to achieve individual professional goals.

Facilities

The department facilities include the Enology and Food Science Building and the Dairy Industry Building. These facilities are used by students and faculty to provide a practical education founded on solid science and technology.

Career Opportunities

Graduates of the areas of study within the Department of Enology, Food Science, and Nutrition have enjoyed outstanding employment opportunities in the food industry. Historically, graduates have been placed in challenging positions with salary advancement and professional prestige envied by other industries throughout the free world. The following programs of study are available:

Dairy Industry graduates enjoy starting salaries as high as any group of graduates of the university. The demand for dairy industry graduates exceeds the number of graduates available in California and nationwide.

California is recognized, both nationally and internationally, as the foremost leader in **enology.** CSU, Fresno is one of only two universities in the United States that offers a full program of study in enology. Enology graduates have taken employment leading to top positions with prestigious wineries that are recognized as the finest in California and in the world.

Food Science graduates are prepared for an endless variety of employment in the food industry including laboratory, food processing and production, and governmental functions. New product development, management, distribution, and field service opportunities are present in many scientific, technological, and business endeavors.

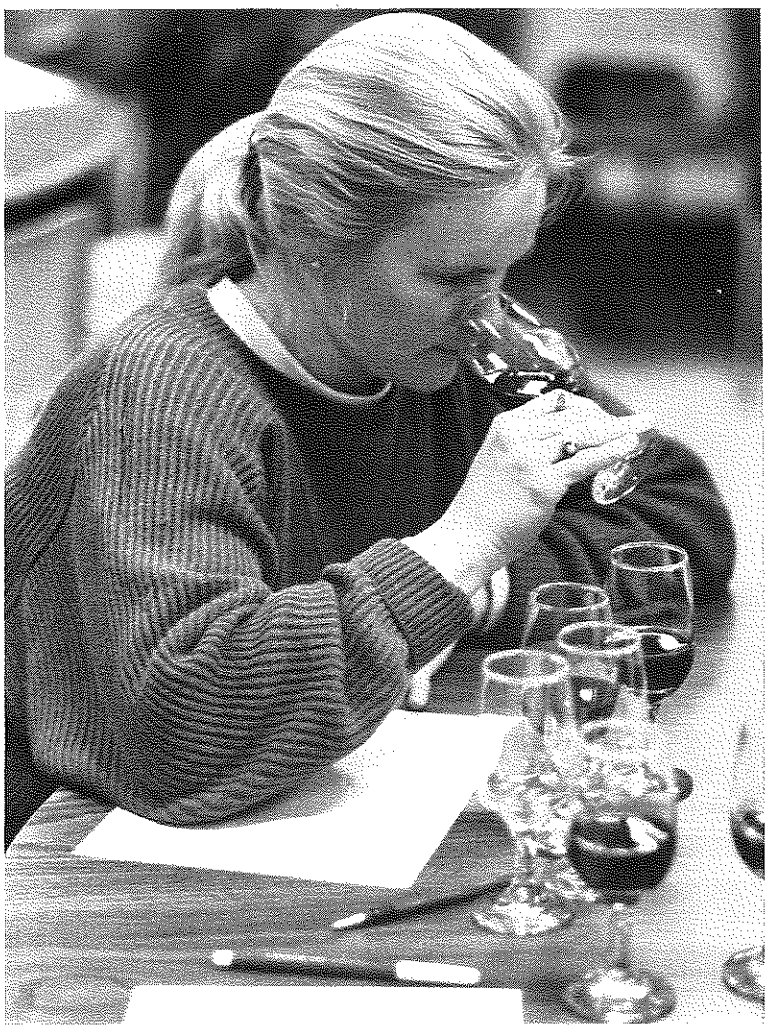
Food in Business graduates have access to food preparation and food service industries as well as the nutrition profession. The intense public interest in all aspects of nutrition provides employment, challenge, and reward to food in business graduates.

Dietetics and Food Administration graduates are prepared for challenging and rewarding employment in dietetics, nutrition, and food service. Employment is always available in hospital dietetics, nutrition consulting, school and community nutrition, education, commercial and institutional food services.

AGRICULTURE
Enology, Food Science, and Nutrition

School of Agriculture and Home Economics
Department of Enology, Food Science, and Nutrition
***(To be appointed),* Chair**
Art Home Economics Bldg., Room 103
(209) 294-2164

B.S. in Agricultural Science
Option I: Production Emphasis
Option II: Science Emphasis
Dairy Industry
Enology
Food Science
Food in Business
Dietetics and Food Administration
Minor in Agriculture
M.S. in Agriculture



Faculty

Department Chair: (To be appointed)

Graduate Coordinator, Food Science and Nutrition: Dean R. Frazeur
Graduate Coordinator, Agricultural Chemistry: Barry H. Gump
Coordinator, Nutrition and Dietetics: N. Joanne Caid
Director, Enology Program: Carlos J. Muller

Shirley J. Bowden
N. Joanne Caid
Dean R. Frazeur
David E. Goldbloom
Elena F. Kissick
Carlos J. Muller
Fred S. Nury

The faculty continue to be recognized for quality hands-on education as well as scholarly contributions to their academic disciplines. Each student is assigned to a faculty adviser to maximize the educational experience at CSU, Fresno. The faculty are noted for cooperation and activity within each industry to prepare and place graduates in their chosen career.

Bachelor of Science Requirements

Agricultural Science—Option I
Production Emphasis

Units

General Education (including 9 upper-division units) 54
- Core
  - Category 3: Math 70 (if 1 year high school Algebra II completed)
- Breadth
  - Division 1: Chem 2A and 2B or 1A and 1B (required)
  - Division 2: Biol 10, Bot 1, 10, or Zool 20
  - Division 3: Psych 10 (recommended)
  - Division 8: Ag Ec 1 (recommended)
  - Division 10: FScN 53 (recommended)
- Capstone
  - Agriculture and Government Policy Cluster: Ag Ec 150 and Phil 125 or Pl Si 150; or Energy and Society Cluster: IT 106 and P Sci 168, Geog 134 or Econ 117 (recommended)

Major (including 20 units upper division) 45
- Agricultural science foundation ..... (12)
- In addition to the FScN requirement, select one course from three of the five remaining areas:
  - Ag Ec
  - A Sci
  - FScN 1 or 54 (required)
  - Me Ag
  - Plant
  - Soils
- Career specialty core (select one) ..... (33)
  - **Dairy Industry:** 23, 103, 113, 143, 153; FScN 110, 125, 130, 141, 170, 193
  - **Enology:** Enol 15, 25, 35, 100, 101, 110, 115, 135, 165, 175, 178, 185
  - **Food in Business:** FScN 48, 50, 54, 150, 151, 155 or 156, 158 or 193, 160, 169, plus additional courses selected in consultation with your assigned adviser.
  - **Food Science:** FScN 100, 103, 110, 125, 130, 141, 151, 153, 170, plus additional courses selected in consultation with your assigned adviser.

Additional requirements 9–21
(select one career specialty area)
- Upper Division Writing Skills (by examination or Plant 110W)
- **Dairy Industry:** Chem 150; Micro 20; FScN 141
- **Enology:** Me Ag 109; Chem 150; Micro 104; FS 104; Jour 113
- **Food in Business:** Chem 8; Mgt 104; Mktg 100, 102, 132 or 138; Acct 4A
- **Food Science:** Chem 150; Micro 104

Electives 8–20
(Courses supplementary to the major are strongly recommended)
- **Dairy Industry; Food Science suggested courses:** A Sci 71 or 171A; electives in D Ind, Enol, Micro, H S, I T, FScN, Plant Science (Plant, Cr Sc, FS, OH, Pl Pr), or other related disciplines
- **Enology suggested courses:** Bot 104; D Ind 113; Geog 114; H S 111, 143, 160, 161, 162; I E 125; I T 102, 112; Jour 113; Phil 122, Me Ag, Chem, Enol, FScN, Micro, Plant Science (Plant, Cr Sc, FS, OH, Pl Pr), Bus, Mgt, Mktg, HRM, and Finance courses under Ag Econ or in the School of Business

Total Requirements (including 40 upper-division units) 128

Advising Notes:

1. Request advisee check sheet from department and make appointment with an assigned academic adviser prior to registration each semester.
2. File an official Program of Study (see *Undergraduate Degree Requirements* under the School of Agriculture and Home Economics section, p. 116).
3. *CR-NC* grading is not permitted for courses included in the major.
4. Upper-division units (i.e., 100-level courses) may not apply toward the 40 upper-division unit degree requirement until 45 units have been completed.
5. The agricultural science foundation courses should be completed no later than the end of the first semester of the junior year.
6. The career specialty in the major consists of 15 units of approved courses under either a formally recognized emphasis area (see department advising check sheet) or an individually tailored emphasis area of logically integrated courses to meet the student's particular career objective.
7. The Upper Division Writing Skills requirement can be met by passing the university examination or by taking an approved upper-division writing skills course. One unit of credit (in English 100W) may be earned for passing the examination if requested by the student; three to four units of credit will be earned by obtaining a letter grade of *C* or higher in an approved course (e.g., Plant 110W).

Agricultural Science—Option II
Science Emphasis

Units

General Education (including 9 upper-division units) 55
- Core
  - Category 3: Ag Ec 71, D S 71 or 73 or Math 11 (if one year high school Algebra II completed)
- Breadth
  - Division 1: Chem 2A and 2B
  - Division 3: Psych 10
  - Division 8: Soc 1 or Anth 2
  - Division 10: CFS 38 or FScN 53 (recommended)

Capstone
Agriculture and Government Policy Cluster (recommended) Ag Ec 150 and Phil 125 or Pl Si 150
Major (including 20 upper-division units) 60
Agricultural science foundation ..... (30)
FScN 48, 50 or 56 and 56L, 54, 153; plus additional courses selected in consultation with assigned adviser.
Career specialty core ..... (30)
Chem 8, 109, 150; Micro 20; Phy 33; plus additional courses selected in consultation with assigned adviser
Additional requirements 1–3
Upper Division Writing Skills (by examination or Plant 110W recommended)
Electives 10–12
Total requirements (including 40 upper-division units) 128

Advising Notes:

1. Request advisee check sheet from department and make appointment with an assigned academic adviser prior to registration each semester.
2. File an official *Program of Study* (see *Undergraduate Degree Requirements* under the School of Agriculture and Home Economics section, p. 116).
3. *CR-NC* grading is not permitted for courses included in the major.
4. Upper-division units, (i.e., 100 level courses) may not be applied toward the 40 upper-division unit degree requirement until 45 units have been completed.
5. The Upper Division Writing Skills requirement can be met by passing the university examination or by taking an approved upper-division writing skills course. One unit of credit (in English 100W) may be earned for passing the examination if requested by the student; three or four units of credit will be earned by obtaining a letter grade of *C* in an approved course (e.g., Plant 110W).

Agricultural Science—Dietetics and Food Administration

The following courses are required for all students majoring in agricultural science—dietetics and food administration emphasis, for American Dietetics Association Plan IV certification in *general dietetics:*

Units

General Education (including 9 upper-division units) 55
Core
Category 3: Ag Ec 71, D S 71 or 73, or Math 11 (if one year high school Algebra II completed)
Breadth
Division 1: Chem 2A and 2B (Required)
Division 3: Psych 10
Division 8: Soc 1 or Anth 2
Division 10: CFS 38 or FScN 53 (recommended)
Capstone
Agriculture and Government Policy Cluster (recommended) Ag Ec 150 and Phil 125 or Pl Si 150
Major (including 24 units upper division) 48
Food Science and Nutrition Core
FScN 50, 54, 149, 150, 151, 153, 155, 156, 157A–B, 158, 159, 160; Ag Ec 1; Phy 33
Additional requirements 23–25
Upper Division Writing Skills (by examination or Plant 110W recommended) Chem 8, 105, 109, 150, 151; Micro 20; Mgt 104
Electives 0–2
Total requirements (including 40 upper-division units) 128

Advising Notes:

1. Request advisee check sheet from department and make appointment with an assigned academic adviser prior to registration each semester.
2. File an official *Program of Study* (see *Undergraduate Degree Requirements* under the *School of Agriculture and Home Economics section,* p. 116).
3. *CR-NC* grading is not permitted for courses included in the major.
4. Upper-division units, (i.e., 100 level courses) may not be applied toward the 40 upper-division unit degree requirement until 45 units have been completed.
5. The Upper Division Writing Skills requirement can be met by passing the University examination or by taking an approved upper-division writing skills course. One unit of credit (in English 100W) may be earned for passing the examination if requested by the student; three or four units of credit will be earned by obtaining a letter grade of *C* or higher in an approved course (e.g., Plant 110W).

Minor

A minor in agriculture consists of 21 units of which 9 must be upper division. At least 12 units must be taken in a particular department and/or discipline. The minor program is planned with an adviser and must be certified by the appropriate department chair and the school dean. The certified minor program will be filed with the Office of Evaluations.

Other Major Programs

Individualized programs of study combining enology/food science production and agricultural business coursework may be developed under the *Agricultural Business* major in consultation with an appropriate departmental adviser. A general agriculture program of study may be developed under the *Agricultural Education* major. An agricultural communications program of study, including courses in writing skills, agriculture, journalism, television, radio, and public relations may be developed under the *Agricultural Science* major.

Request advisee check sheet from department and make appointment with an assigned academic adviser; file an official *Program of Study* (see *Undergraduate Degree Requirements* under the School of Agriculture and Home Economics section, p. 116).

Master of Science Degree Requirements

The Master of Science degree in agriculture, with options either in agricultural chemistry or in food science and nutrition, is designed to provide the student with professional competence in the technology and science of food related disciplines. Enologists seeking the masters degree are required to do so under the agricultural chemistry option.

The food science and nutrition option provides a graduate level proficiency in the food sciences, dietetics, and nutrition. This degree is applicable to food related specializations in food research, production, chemistry, microbiology, dairy industry, nutrition, dietetics and food administration, and other food sciences and technology. The Master of Science in agriculture degree is a 30-unit program.

Admission Criteria

A baccalaureate degree in agricultural science, chemistry, biochemistry, microbiology, dairy industry, food administration, food science, enology, dietetics or nutrition from an accredited institution, a 3.00 G.P.A. (last 60 units or overall); a minimum G.R.E. score of 450 verbal and 430 quantitative or a total score of 880; and a minimum score of 550 on the TOEFL for international students whose native language is not English.

Applicants with a 2.75 to 2.99 undergraduate G.P.A. (last 60 units) may request admission with *conditional* classified standing to the program from the department if they have a minimum G.R.E. score of 450 verbal and 430 quantitative or a total score of 880 and have submitted three letters of recommendation from employers or faculty at the university attended most recently.

Master of Science in Agriculture—Option in Agricultural Chemistry

Prerequisite Courses

The Master of Science degree in agriculture with an option in agricultural chemistry is essentially a change of major for most students. It therefore requires preparation beyond that obtained in traditional agriculture undergraduate majors at CSU, Fresno.

Applicants to the Agricultural Chemistry Option (required of enology majors) are expected to have completed the following prerequisite foundation courses prior to entering the graduate program.

I. *Undergraduate Core Courses* — *Units*

Micro 104 Microbiology	5
Bot 104 Plant Physiology	4
Chem 105 Quant Analysis	4
Chem 128 Inter Org Lecture	3
Chem 129 Inter Org Lab	2
Chem 101 or 125 Intro Phy Chem/Lab Instrument	3
Math 70 Calculus	4
Physics 2A–B General Physics	4–4
Plant 100 App Agri Statistics	3
Ind Tech 102 or a course in computer literacy	3

II. *Agricultural Science Core—Undergraduate (SAHE requirements)* 12

III. *Additional requirements specified by department.*

Program Requirements

Specific Requirements—Agricultural Chemistry Option

	Units
Agricultural Core: Agri 200, 201, 220	9
Required Courses:	
Chem 260 Adv Research Tech	3
Agri 229 or Chem 280	1–1
Approved electives in agricultural science or related areas appropriate to individually designed program	
A maximum of 6 units of electives can be 100 series if not applied toward undergraduate degree requirements.	
Minimum of 6 units of 200 series course work	12
Culminating Experience:	
Agri 299 (4) or Chem 299 (4) (Thesis and defense)	4
Total Minimum Requirements	30

Master of Science in Agriculture—Option in Food Science and Nutrition

Prerequisite Courses

The master of science degree in agriculture with an option in food science and nutrition assumes preparation equivalent to a CSU, Fresno undergraduate major in dairy industry, food science, dietetics or nutrition, or related fields.

Students having undergraduate degrees in other fields or from other institutions who need to make up course deficiencies may be admitted with *conditional* classified standing to the program. They should consult with the graduate coordinator. The following specific prerequisite foundation courses, or their equivalents, are to be completed in addition to the 30-unit master's degree course work and prior to achieving classified standing.

Chem 150, FScN 100, 110, 125 or D Ind 153, 130, 141, 170; or Chem 150, 151, Phy 33, Micro 20, FScN 150, 153, 157A–B, for food science and dietetics or nutrition career specialties respectively.

Specific Requirements—Food Science and Nutrition Option

Plan A	*Units*
Agriculture Core: Agri 200, 201, 220	9
Required Courses: Agri 229	1–1
Select Four: Agri 203, 204, 205, 206, 207, 222, 223, 224, 225, 226	12
Approved electives appropriate to individually designed program (approved 200 or 100 level courses in agricultural science or related areas)	4
Culminating Experience: Plan A—Agri 299 (Thesis and defense)	3
Total Minimum Requirements	30

Specific Requirements—Food Science and Nutrition Option

Plan C	*Units*
Agriculture Core: Agri 200, 201, 220	9
Required Courses: Agri 229	1–1
Select Four: Agri 203, 204, 205, 206, 207, 222, 223, 224, 225, 226	12
Approved electives appropriate to individually designed program (approved 200 or 100 level courses in agricultural science or related areas)	7
Culminating Experience: Comprehensive Examination	0
Total Minimum Requirements	30

To progress through the graduate program, the student must maintain a 3.0 G.P.A., complete all prerequisite foundation course work, attain classified standing, meet the university writing skills requirement, pass a written departmental qualifying examination, file for Advancement to Candidacy, complete program requirements, formally present a project or thesis proposal, and defend the research results.

University Writing Skills Requirement. Students shall meet the university writing requirement by earning a minimum of 450 verbal on the Graduate Record Examination (G.R.E.). If this is not achieved, students shall meet the requirement by either earning a score of 80 or higher on the university writing competency examination or by earning an *A* or *B* in a designated *W* course to be specified by the graduate committee of the School of Agriculture and Home Economics.

Prospective students should request the program advising sheet from the department. Upon admission students should see the

graduate coordinator for aid in program planning, selection of a graduate adviser, and selection of a thesis committee chair.

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 University Farm.

Dairy Industry (D Ind)

23. Dairy Foods and Man (3). The history and geography, processes and processing of dairy products; their description, composition, and nutritive values; current role of the dairy industry and dairy foods. (Field trips)

80. Undergraduate Research (1–4; max total 4). Open to freshmen and sophomores with permission of instructor. Exploratory work on a suitable agricultural problem in dairy industry.

103. Manufacturing Dairy Products (3). Prerequisite: D Ind 23; junior standing. Making common varieties of cheese, mix making and freezing desserts, churning butter, and culturing dairy products. (2 lecture, 3 lab hours; field trips)

113. Dairy and Food Plant Sanitation (3). Prerequisite: D Ind 23; Micro 104 or equivalent, or permission of instructor. Dairy and food plant sanitation as related to food safety; requirements of regulatory agencies, cleaning and sanitational procedures; housekeeping and waste disposal. (Field trips)

143. Market Milk Products (3). Prerequisite: D Ind 23. Market milk production, marketing, processing and distribution; common laboratory practices and processing methods. (2 lecture, 3 lab hours; field trips)

153. Dairy Inspection (3). Prerequisite: D Ind 23 or permission of instructor. Application of the California Agricultural and the United States Public Health Codes to the inspection of dairies, dairy plants, and dairy products. (Field trips)

160T. Topics in Agriculture (1–4; max total 6 per discipline if no topic repeated). Prerequisite: junior standing, permission of instructor. Dairy industry. Topics may require lab hours.

180. Undergraduate Research (1–4; max total 4). Open to juniors or seniors with permission of instructor. Exploratory work on a suitable agricultural problem in dairy industry.

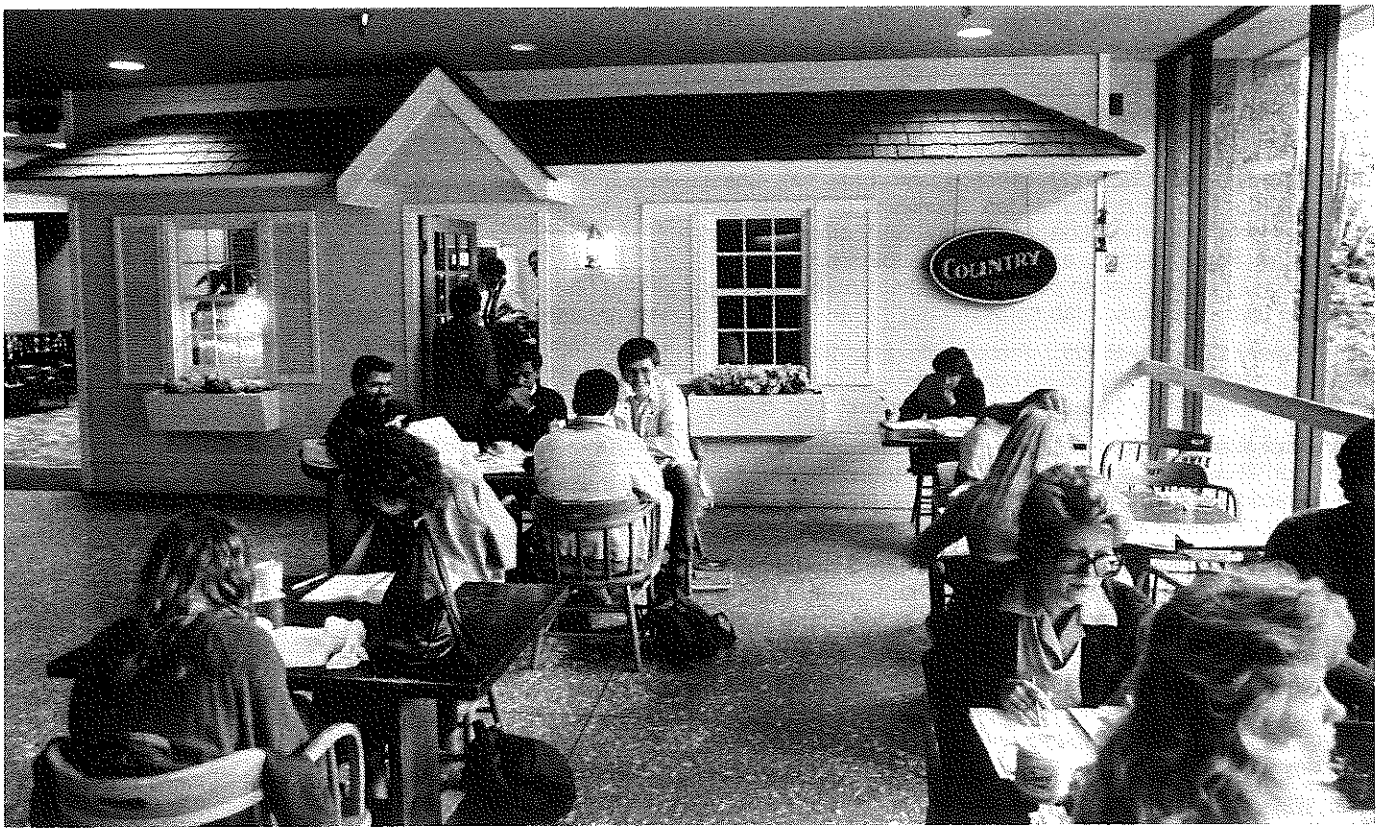
190. Independent Study (1–3; max see reference). See *Academic Placement—Independent Study,* page 96–97.

Enology (Enol)

15. Introduction to Enology (3). History and development of the wine industry; mechanics of various processes and factors affecting wine quality and consumer acceptance.

25. Organoleptic Wine Evaluation Techniques I (2). Parameters which determine organoleptic quality in wines. Principles of wine appreciation.

35. Organoleptic Wine Evaluation Techniques II (2; max total 4). Prerequisite: Enol 25 or equivalent. Critical organoleptic evaluation of various wine types and styles including premium varietals.



100. Winery Practice (3). Prerequisite: Enol 15; Chem 8 or concurrent. Pilot plant experience in wine making operations, including harvest, scheduling, crushing, fermentation, safety, sanitation procedures, recordkeeping, analysis, and operation of enology facility equipment. (1 lecture, 6 lab hours)

101. Fermentation Laboratory (1; max total 4). Prerequisite: Enol 15 or concurrent. Vinification/Fermentation Laboratory practice at the CSUF Enology Pilot Plants. Individual wine making. Required every fall semester of all Enology majors not enrolled in Enol 100, 165, 194 or 196. Students must supply their own grapes. (3 lab hours)

102T. Topics in Sensory Evaluation of Wines (1–6; max total 6 if no topic repeated). Prerequisite: Enol 15 and 35; Enol 100 recommended. Critical evaluation of selected varietal wines with regard to appellation of origin, vintage and wine-making practices. (15-hour weekend lecture-demonstration)

105. Advanced Sensory Evaluation of Wines (3). Prerequisite: Enol 25, 35, 115 (or concurrently). Factors affecting the quality of wines in terms of growing region, grape maturity, harvesting, vinification, cellaring, blending and storage practices; attributes and defects in premium varietals. Statistical concepts. (2 lecture, 2 lab hours)

110. Enological Science (4). Prerequisite: Chem 8, 150; Enol 15, 165; Micro 104; FS 104. Critical study of chemical and biochemical interactions in wine making.

115. Wine Analysis (4). Prerequisite: Chem 8, Chem 105; 100 or 165. Principles and practices of wine and fermented beverage analysis. (2 lecture, 6 lab hours)

125. Wine Microbiology (4). Prerequisite: Enol 15; Micro 104; Chem 150 or FScN 110 recommended. Identification, physiology, and biochemistry of bacteria and yeasts involved in wine making and spoilage of wines. Vinous and malo-lactic fermentations. Sherry organisms and other film yeasts. (2 lecture, 4 lab hours)

135. Field Studies (2; max total 4). Prerequisite: Enol 15 or permission of instructor. A six-day field trip during the spring recess visiting wineries to study the techniques and handling methods employed by the many vintners.

145. Brandy Production (3). Prerequisite: Enol 100; Chem 101 or 109 or I T 112 recommended. Distillation principles and practices for the production of brandy and other distilled beverages. Raw materials, aging and organoleptic evaluation. Students may be required to purchase supplementary materials for class use. (2 lecture, 3 lab hours)

155. Winery Equipment (2). Prerequisite: Enol 100. Description and specifications of modern commercial winery equipment. Principles of operation. Layout and cost. (1 lecture, 3 lab hours)

160. Fruit Wine Production (3). Prerequisite: Permission of instructor. Theory and practice of fruit wine production. Harvesting, selection, grading, and fermentation techniques. Use of enzymes. (1 lecture, 6 lab hours) (Former FScN 162T section)

162T. Topics in Enology and Fermentation Science (1–4; max total 12 if no topic repeated). Prerequisite: Enol 15. Topics in wine making and fermentation science. Some topics may include labs.

165. Wine Technology (3). Prerequisite: Enol 100 or 160. Technological study of winery equipment; evaluation, location, and operation; sanitation procedures. (2 lecture, 3 lab hours; 3- or 4-day field trip)

173. Wine Marketing (2). Prerequisite: Enol 35, 100; Ag Ec 1. Marketing principles as applied to wine. Role of wholesalers, distributors, retailers, cooperatives. Advertising. Regulations. Interstate and international trade. (Former Enol 162T section)

175. Winery Management (3). Prerequisite: Enol 15 and permission of instructor. Physical properties of a winery; administrative organizational set-up; personnel; purchasing, packaging, and shipping; local, state, and federal regulatory statutes.

178. Regulations—Wine and Brandy (2). Prerequisite: Enol 100. B.A.T.F. and other agencies. Rules and regulations concerning wine and brandy. Licensing. Record keeping, taxation, enological practices, rule making. Viticultural areas and appellations. Interstate and international commerce. Export requirements.

180. Undergraduate Research (1–4; max total 4). Open to juniors or seniors with permission of instructor. Exploratory work on a suitable agricultural problem in enology.

185. Cellar Operations (3). Prerequisite: Enol 165. Survey of cellaring operations and equipment; blending; fining; ion exchange; finishing; and bottling. (2 lectures, 3 lab hours; local field trips)

190. Independent Study (1–3; max see reference). See *Academic Placement—Independent Study,* pages 96–97.

193. Wine Marketing Internship (2–8; max total 8). Prerequisite: Enol 173; Enol 105 and Ag Ec 166 recommended; approval of internship committee. Emphasis on development of decision-making ability through marketing organization experience integrated with principles acquired in the classroom.

194. Enology Internship (1–8; max total 8). Prerequisite: junior or senior standing and approval of internship committee. Emphasis on development of decision-making ability through industrial experience integrated with basic principles acquired in the classroom. (Former Agri 173 section)

195. CSUF-UCD Cooperative Wine Talks (1; max total 2) Prerequisite: junior standing. Wine industry seminars conducted in cooperation with UC Davis Department of Viticulture and Enology, hosted alternately by CSUF and UC Davis during the spring semester. (16-hour weekend seminar)

196. Enterprise Management (1–6; max total 6). Prerequisite: Enol 100, 115, 155, 175, 185; FS 104; Me Ag 109; I T 102 and 112 recommended. Application of management principles in wine production. Operation of the CSUF commercial winery. Open only to Enology majors or to Viticulture majors with the appropriate background.

199. Undergraduate Seminar (1; max total 2). Prerequisite: senior standing. Oral presentations of topics of current interest in enology, wine grapes and fermentation science.

Food Science and Nutrition (FScN)

1. Introduction to Food Science and Technology (3). Modern food processing; world food problems; basic characteristics of processed foods and the technology of their production.

48. Nutrition in the Life Cycle (3). Nutritional requirements during prenatal period, infancy, childhood, adolescence, and young/middle/older adult with emphasis on social, psychological, cultural and clinical factors. (Former FScN 148, 152A–B)

50. Basic Foods (3). Introduction to high quality food. Emphasis on principles of food safety, nutrition, food preparation, and sensory evaluation. (2 lecture, 2 lab hours)

52. Diet Therapy (3). Not open to Dietetic and Food Administration majors. Introduction to normal nutrition and diet related to disease.

53. Nutrition and Health: Realities and Controversies (3). Optimal nutrition to reduce the risk of cancer, heart disease, allergies, hyperactivity, and other diseases. Social, psychological, and cultural dictates that affect food selection and health. Personal strategies to develop a nutrition plan for better health.

54. Elementary Nutrition (3). Elementary knowledge of high school chemistry and biology strongly recommended. Scientific principles underlying normal nutritional requirements.

56. Food for Health (2). Planning a nutritious diet implementing the dietary goals for the United States and dietary guidelines for Americans. Cooking principles, recipe modification, and food selection at supermarkets and restaurants to increase dietary complex carbohydrates and decrease fat, sugar, and sodium.

56L. Food for Health Lab (1). Prerequisite: FScN 56 or concurrently; recommended for non-majors. Food preparation implementing the Dietary Goals for the United States and Dietary Guidelines for Americans with an emphasis on cooking for health to increase complex carbohydrates and decrease fat, sugar, and sodium. (2 lab hours) (Former FScN 55)

80. Undergraduate Research (1–4; max total 4). Open to freshmen and sophomores with permission of instructor. Exploratory work on a suitable agricultural problem in food science.

100. Food Appraisal and Evaluation (3). Prerequisite: Math 4, FScN 1. Analysis, measurement, and methods used in evaluation of organoleptic, kinesthetic, and other quality factors in foods. (2 lecture, 3 lab hours)

103. Individual and the Food Environment (3). Individual and food situation; impact of food environment; food issues and problems; anticipating impending crises; planning, developing, monitoring and evaluating the food programs.

110. Food Chemistry and Biochemistry (4). Prerequisite: Chem 8, 150 (or concurrent); D Ind 23 or FScN 1. Mechanisms of chemical and biochemical changes in foods during production, processing, and utilization.

125. Government Regulation of the Food Industry (3). Prerequisite: Junior or senior standing. Federal (U.S.) laws and regulations pertaining to the greater food industry; background, development and objectives of food laws and regulations, State food laws and regulations and their relation to U.S. food laws and regulations; product liability and recall systems. (Former FScN 162T section)

130. Food Analysis (4). Prerequisite: one year of general chemistry, Chem 105; D Ind 23 or FScN 1 (FScN 110 recommended). Principles of food analysis; sampling, separation, physical measurements, chemical and biochemical techniques. (2 lecture, two-3 hour labs)

141. Food Processing (3). Prerequisite: Chem 8 (or concurrent), D Ind 23 or FScN 1. Basic and applied food processing operations. Fundamentals and applications of refrigeration; heat transfer systems and pneumatics; unit operations in food processing, food development, control laboratories, food storage. (2 lecture, 3 lab hours; field trips) (Former FScN 140A–B)

147. Nutrition and the Athlete (3). Scientific principles underlying normal nutritional requirements and the application of these principles to athletic performance. Role of diet in training. (Former FScN 162T section)

149. Food and Nutrition Resources (3). Prerequisite: FScN 50, 52 and 54. Identification of food and nutrition resources and learning needs at various stages of the life cycle; principles of learning and teaching food and nutrition in patient care. Selection of valid content and learning activities in clinical setting.

150. Advanced Foods (3). Prerequisite: FScN 50 and Chem 2A–B or 2A–C. Experimental approach to foods emphasizing sensory and objective tests, standards for high quality foods and scientific principles which affect food preparation and product development. (2 lecture, 3 lab-discussion hours)

151. Experimental Food Study (3; max total 6). Prerequisite: FScN 150. Principles, procedures, sensory and objective evaluation methods necessary to organize professionally and carry through a food research project. Lectures, demonstrations, individual research and field trips. (1 lecture, 4 lab-discussion hours)

153. Advanced Nutrition (3). Prerequisite: FScN 54 and Chem 150. Present knowledge of the metabolism of carbohydrates, fats, proteins, vitamins and minerals. Dietary evaluation. Laboratory: identification and characterization of nutrients in foods; experiments on their digestion and metabolism. (2 lecture, 3 lab hours)

155. Food Service Management I (3). Prerequisite: FScN 50; Mgt 104 recommended. Recruiting, interviewing, hiring and training techniques. Orientation to labor relations, regulatory agencies, menu planning and recipe standardization. Computer applications to the food service industry.

156. Food Service Management II (3). Prerequisite: FScN 155. Work simplification; plant layout; selection, procurement and maintenance of equipment and furnishings for food service units. Quantity food, selection, specifications and purchasing.

157A–B. Diet in Disease (3–3). (A) Prerequisite: FScN 153; Phy 33; Chem 150 (or concurrent). Exploration of nutritional aspects and dietary treatment of disease. (B) Prerequisite: FScN 157A. Advanced concepts of nutritional therapy with emphasis upon calculation of quantitative diets and parenteral feedings. (Former FScN 154)

158. Food Service Management III (4). Prerequisite: FScN 156; permission of instructor; T.B. clearance and health and accident insurance required. Preparation and service of conventional and convenience foods in patient and nonpatient food service. Emphasis on human relations, food safety and sanitation, production controls, work simplification, quality assurance and energy conservation. (2 lecture, 4 lab hours)

159. Institution Experience (3). Prerequisite: FScN 157B, 158 and Phy 33; permission of instructor; T.B. clearance and health and accident insurance required. Supervised work experience in hospital dietary departments or public health care facilities. Experience in counseling clients, presenting employee in-service presentation, studying client's nutritional problems, and writing regular and modified diets. (1 lecture, 4 lab hours)

160. Meal Management (3). Prerequisite: FScN 50. Principles of foods and nutrition applied to meal planning, preparation, and service for various cultural groups. Economic, aesthetic, nutritional, and managerial aspects of meal planning. (2 lecture, 2 lab hours)

162T. Topics in Food, Nutrition and Dietetics (1–4; max total 12 if no topic repeated). Prerequisite: FScN 50, 54. Topics relating to food, nutrition and dietetics. Some topics may have labs.

163. Beverage and Juice Concentrate (3). Prerequisite: Enol 15 or FScN 1; FS 1 recommended. Principles and practice of fruit juice and concentrate production. Vacuum pan operation, essence recovery. (2 lecture, 2 lab hours; field trips) (Former FScN 162T section)

166. Community Nutrition (3). Prerequisite: FScN 54. Principles and practices of nutrition as applied to the community at large.

169. Nutrition and the Consumer (3). Consumer's view of nutrition; factors influencing food choices. Evaluation of dietary guides and popular nutritional issues.

170. Food Microbiology (3). Prerequisite: D Ind 23 or FScN 1; Micro 20; Micro 104 recommended. Control of microorganisms, including pathogens, in production and handling of foods. Food spoilage organisms and microbiological methods of examining foods. (2 lecture, 3 lab hours)

172. Marketing Dietetics (1). Exploration of the diverse role of the professional dietitian and the scope of services demanded of the dietitian in business, industry, and health care. Strategies for successful marketing of the dietitian's services and techniques for revenue generation will be developed.

180. Undergraduate Research (1–4; max total 4). Open to juniors or seniors with permission of instructor. Exploratory work on a suitable agricultural problem in food science.

190. Independent Study (1–3; max see reference). See *Academic Placement—Independent Study*, pages 96–97.

191. Food Science Literature (1). Prerequisite: senior standing. Review of recent literature.

192. Readings and Conference (1–3). Prerequisite: Permission of instructor. Individually directed readings; reports and evaluation. (hours arranged)

193. Supervised Work Experience (1–6; max total 6). Prerequisite: second semester junior standing and permission of instructor. Supervised work experience in one of the following areas: dairy industry, dietetics, food science and nutrition.

GRADUATE COURSES

(See *Course Numbering System,* p. 133.)

Agriculture (Agri)

200. Biometrics in Agriculture (3). Prerequisite: Math 101 or Plant 100 or concurrently; permission of instructor. Advanced concepts in the design of agricultural experiments. Emphasis is placed on the selection of appropriate designs to meet the objectives of well-planned experiments. Relative merits of various designs and topics in analysis, interpretation, and regression are covered.

201. Agricultural Laboratory Techniques (3). Prerequisite: One of the following courses: Bot 104, Chem 105, 109, 151, Enol 115, FScN 130, or equivalent courses from another institution and classified standing. Agricultural problem solving through the application of advances in laboratory technology to soils, plant and animal nutrition, water quality and crop management. Theory and practice operation of scientific instruments and techniques will be taught. Student defined project and report required. (2 lecture, 3 lab hours) (Former Agri 250T section)

203. Advances in Food Processing (3). Prerequisite: FScN 141, Me Ag 109 or Enol 165. Advanced studies in food processing: canning, freezing, dehydration, fermentation, and food preservation. (Former Agri 221T section)

204. Food Carbohydrate and Sweeteners (3). Prerequisite: Chem 150 and FScN 110. Chemistry and biochemistry of food carbohydrates and their changes during processing and storage; nutritional aspects. (Former Agri 221T section)

205. Food Lipids (3). Prerequisite: Chem 150 and FScN 110. Study of the chemistry and biochemistry of food lipids and their changes during processing and storage. Rancidity, hydrolytic and oxidative. Nutritional aspects. Mechanisms of formation and degradation. Importance in flavor and texture. (Former Agri 221T section)

206. Food Quality Assurance and Control (3). Prerequisite: Graduate standing. Principles and application of quality control and assurance in the food industry; method used; product recall systems and statistical quality control systems; government involvement and requirement with food at the local, state, national and international levels. (Former Agri 221T section)

207. Food Product Development (4). Prerequisite: FScN 130 and 151; FScN 141 recommended. Development of new food products; standardization, quality control and safety assurance, food acceptance and evaluation; labeling and marketing. (2 lecture, 4 lab hours)

220. Research Communications in Agriculture (3). Prerequisite: completion of university writing skills requirement. Individually directed readings in a field of special concern to the student's graduate program; appropriate research writing and evaluation required.

221T. Topics in Food Science (3; max total 12). Prerequisite: upper-division food science course appropriate to study topic; permission of instructor. Advanced studies in a given area; food preservations; processing effect on chemical components; flavor, texture, and other quality factors in foods. Topics may require lab hours.

222. Advanced Food Fermentations (3). Prerequisite: Chem 150, Micro 104, 130, FScN 170. Recommended: D Ind 113. Chemical, biochemical and physiologic processes of microorganisms important in food production. Lectures and lab demonstrations. (Former Agri 221T section)

223. Current Research in Nutrition (3). Prerequisite: FScN 153, 157A–B, Chem 150, 151. Review and discussion of the recent scientific literature in nutrition, physiological chemistry and medicine. (Former H Ec 250T section)

224. Clinical Nutrition (3). Prerequisite: FScN 157A–B and Chem 150, FScN 153. Recent developments in the treatment of disease through modification of the normal diet. Nutritional assessment. (Former H Ec 250T section)

225. Nutrition Counseling (3). Prerequisites: FScN 149 and 157A–B. Application of nutrition counseling principles to the well individual and family, and to those requiring therapeutic dietary modification. (Former H Ec 250T section)

226. Special Issues in Food Science and Nutrition (3). Prerequisite: Graduate standing. Current issues in food science and nutrition: food safety and nutrition; diet and health; methodology for analyzing food composition; nutrient; bioavailability in foods.

229. Seminar in Food Science (1; max total 4). Prerequisite: permission of instructor. Investigation of current research and problems related to food science. Oral and written reports.

290. Independent Study (1–3; max see reference). See *Academic Placement—Independent Study,* pages 96–97.

299. Thesis (2–6; max total 6). Prerequisite: see *Criteria for Thesis and Project,* pages 467–468. Preparation, completion, and submission of an acceptable thesis for the master's degree.

IN-SERVICE COURSES *(Agri)*

(See *Course Numbering System,* p. 133)

300. Topics in Agriculture (1–3). Topics may require lab hours.

The Home Economics program is accredited by the American Home Economics Association.

Facilities

The Department of Family Studies and Home Economics is housed in the Art-Home Economics Building on the west side of the campus. Two well equipped laboratory rooms as well as several showcases facilitate learning for students in the clothing and textiles, fashion merchandising area. The Consumer Science and Housing students utilize laboratory facilities for demonstration of household equipment. Day care facilities for the infant-toddler laboratory, pre-school laboratory and after school children are maintained for instructional purposes. Students plan, implement, and evaluate activities for the children. The laboratories also service other departments on campus who use these facilities for observational purposes.

Career Opportunities

Career opportunities for home economists are available in the areas of child and family studies, clothing and textiles, fashion merchandising, foods in business, consumer science and housing, and home economics teacher education. Students may qualify for these career opportunities by selecting appropriate electives in their special area of interest. Students must consult with a departmental adviser in selecting appropriate courses for their special areas of interest. Appropriate selection of courses offered in the disciplinary areas listed below will provide the necessary background to prepare students for careers as home economists.

Child and Family Studies courses focus on individual and family development through the life cycle with analysis of the forces affecting personal and family development and relationships. Career possibilities include: elementary teacher, child care consultant, child advocate, administrator of family services and child care program administrator.

Clothing and Textiles courses prepare students for careers such as textiles technician, product and research evaluator, product promoter, industry or trade association representative, museum costume curator, textile conservator, space program consultant, and cooperative extension agent.

Consumer Science and Housing courses focus on the family as a social and economic unit and prepare students for careers as consumer affairs professionals with banks and finance companies, home service advisers, consumer representatives in business, and consumer relations specialists. Other opportunities include work in product testing and research, debt counseling, government agencies, cooperative extension, communications, and equipment consultant services.

Fashion Merchandising courses focus on the many facets of the apparel industry, display techniques, social and psychological aspects of clothing, clothing construction, and fashion analysis, as well as practical application through working in the industry. Career opportunities are found in retail, wholesale and private apparel industries.

AGRICULTURE
Family Studies and Home Economics

School of Agriculture and Home Economics
Department of Family Studies and Home Economics
Eugene Wm. Krebs, Chair
Art Home Economics Bldg., Room 204
(209) 294-2283

B.A. in Home Economics
Minor in Home Economics
M.S. in Home Economics

Programs of study:

Child and Family Studies
Clothing and Textiles
Fashion Merchandising
Foods in Business
Consumer Science and Housing
Home Economics Teacher Education



Foods in Business courses prepare students for careers as sales representative for manufacturers of cookware and kitchen appliances, menu consultant, manager of food services, food broker, food stylist, food editor, spokesperson and market researcher.

Home Economics Teacher Education courses under the credential program focus on the preparation of teachers, who will teach in public schools and professionals who will serve as consultants in business and government.

Faculty

Department Chair: Eugene Wm. Krebs

Graduate Coordinator: Vivian Y. Kunimitsu
Clothing and Textiles Coordinator: Carolyn B. Jackson
Consumer Science and Housing Coordinator: William R. Fasse
Child and Family Studies Coordinator: Richard D. Berrett
Fashion Merchandising Coordinator: Nina J. Dilbeck
Foods in Business Coordinator: Elena F. Kissick
Home Economics Education Coordinator: Frances H. Harkins

Richard D. Berrett
Shirley J. Bowden
N. Joanne Caid
Dianne K. DeVries
Nina J. Dilbeck
William R. Fasse
David E. Goldbloom
Frances H. Harkins
Carolyn B. Jackson
Michele M. Kilner
Elena F. Kissick
Eugene Wm. Krebs
Judith L. Kuipers
Vivian Y. Kunimitsu
William C. Rice

The faculty members are highly qualified professionals with advanced degrees from universities across the nation. They bring practical insights and experience to the classroom through local and national professional activities: owning and directing child development centers, operating counseling centers, consulting, serving on advisory boards, and participating in workshops. Students will find departmental faculty vitally helpful in guiding them through their academic experience as well as helping them pursue career goals.

Bachelor of Arts Degree Requirements Home Economics Major

Units

General Education (including 9 upper-division units) 54–55
- Core
  - Category 2: Speech 3 (recommended)
  - Category 3: (recommend Psych 142; Soc 25; or Math 11 for CFS students if Math 4 requirement has been met)
- Breadth
  - Division 1: Chem 2A (required for clothing and textile, foods in business, and home economics teacher education)
    Chem 2B (required for foods in business)
    Chem 2C (recommended for child and family studies)
  - Division 2: Zoology 10 (recommended for child and family studies)
    Biology 10 (required for home economics education, foods in business, and clothing and textiles)
  - Division 3: Psych 10 (required for home economics teacher education, foods in business, and clothing and textiles)
  - Division 8: Sociology 2 (recommended for child and family studies
    Ag Ec 1 (required for clothing and textiles, consumer science, foods in business, fashion merchandising, home economics teacher education)
  - Division 10: CFS 38 (recommended)
    H S 124, Psych 132, or Psych 171 (recommended for child and family studies)
- Capstone
  - Juveniles and Adolescence Cluster
    Crim 120 and CFS 136 (recommended)

Major (including 20 upper-division units) 48
- Department Core.....(18)
  - H Ec 1; and select one course from each area: CFS 108 or 131; F M 20 or 120; CSH 105 or 113, FScN 50, 53, or 54; GID 70, 107, or CSH 116
- Career Specialty (select one):.....(30)
  - **Child and family studies:**
    CFS 32, 37, 131, 133, 134, 135, and 12 upper-division units in consultation with adviser
  - **Clothing and textiles:**
    F M 22, 24 or 26; 120, 121, 123, 124, 126 (FM 20 if not taken in core) and 11 upper-division units in consultation with adviser
  - **Consumer science and housing:**
    CSH 105, 110, 111, 113, 114, 115, 116, 117, 118 and 3 upper-division units in consultation with adviser
  - **Fashion merchandising:**
    F M 22; 24 or 26; 120, 124, 126, 127, 128, 129 (F M 20, CSH 113, GID 107, if not taken in core) and 8 upper-division units in consultation with adviser
  - **Foods in business:**
    FScN 48, 50 (if not taken in core), FScN 53 or 54 (if not taken in core); 150, 151, 155 or 156; 158 or CSH 114; FScN 160, 169, and 5–6 upper-division units in consultation with adviser
  - **General home economics:**
    Minimum 6 units from each discipline: CFS, CSH, F M, FScN, GID
  - **Home economics teacher education:**
    (See Single Subject Credential Waiver Program for recommended courses, pp. 272–276.)

Additional requirement.....1–19
- Upper Division Writing Skill (by examination or course)
  - **Clothing and Textiles:**
    Econ 1A
  - **Consumer Science and Housing:**
    Econ 1A
  - **Fashion Merchandising:**
    Acct. 3 or 4A, Mtg 104 or 106 or 110, Mktg 100, 130, 138
  - **Foods in Business:**
    Acct 4A, Chem 8, Mktg 100, Mgt 104, 132 or 138

Elective.....0–16
- (Courses supplementary to the major strongly recommended)

Total Requirements (including 40 upper-division units) 124

Single Subject Credential Waiver Program

Students who successfully complete the Single Subject Credential waiver program are not required to take the N.T.E. (See Teacher Education—General Requirements for Initial Admission and Requirements for Admission to Student Teaching). The Single Subject Credential waiver program in home economics consists of CFS 131, 135; CSH 113, 114, 116, 117; F M 20, 24 or 26; FScN 50, 54, 169; H Ec 1, 148, 241; GID 70, 107. For additional program requirements, see Teacher Education—Single Subject Credential Program Requirements.

Advising Notes:

1. Students must consult with their faculty adviser prior to registration each semester. Check with department for advising check sheet and academic adviser assignment.
2. *CR/NC* grading is not permitted in courses used to fulfill major requirements.
3. Upper-division units (i.e., 100 level courses) may not be applied toward the 40 upper-division unit degree requirement until 45 units have been completed.
4. Career objectives should be selected on basis of individual interest.
5. The Upper Division Writing Skills requirement can be met by passing the university examination or by taking an approved upper-division writing skills course only after completion of 56 units. One unit of credit (i.e., English 100W) may be earned upon request for passing the examination.
6. Complete the *Certification of Major Requirements* form in consultation with your adviser and file an application for graduation prior to your last semester.

Minor

A minor in home economics consists of 21 units of which 9 must be upper division. At least 12 units must be taken in a particular department and/or discipline.

Master of Science Degree Requirements

The Master of Science degree in home economics with an option in education is designed to increase the competencies of secondary school teachers and other home economics related occupations. The education option is designed to prepare teachers for positions in two- and four-year colleges, and to provide the foundation that will qualify some to pursue the doctoral degree. Through appropriate choice of courses students may concentrate their programs of study in any one of the areas of home economics: child development and family relations; clothing and textiles, fashion merchandising; and consumer science and housing.

Admission Criteria

A baccalaureate degree in home economics from an accredited institution; a 3.00 G.P.A. (last 60 units); minimum G.R.E. scores of 450 verbal and 430 quantitative or a combined minimum of 880; TOEFL score of 550 for applicants whose preparatory education was principally in a language other than English.

Prerequisite Courses

Students having undergraduate degrees in other fields or institutions, or students who may need to make up course deficiencies should consult with the graduate coordinator. The following specific prerequisite foundation courses, or their equivalents, are to be completed prior to enrollment in the 30-unit master's degree course work:

H Ec 1, Contemporary Home Economics

Select one course from each area:

CFS 38, 39, 108, or 131;

CSH 105 or 113;

F M 20 or 120,

FScN 50, 53, or 54;

GID 70, 107 or CSH 116;

An introductory statistics course, such as Math 11, Soc. 25, Psych 142.

Program Requirements

Home Economics Education Option

The student, under the direction of a graduate adviser, prepares and submits a program individually designed within the following framework:

	Units
Home economics core: H Ec 200, 241, and 242	9
Approved electives:	
H Ec 200-series course in concentration area (3 units), 12 units in 100- or 200-level courses, in home economics or related areas with a maximum of 6 units at 100-level	15
Culminating requirement: H Ec 298 or H Ec 299	6
Total minimum requirements	30

Writing Skills Requirement:

The student shall meet the university writing requirement by earning a minimum of 450 verbal on the G.R.E. If a minimum of 450 verbal is not met by a student, the student shall meet the requirement by then earning a score of 80 or higher in the writing competency examination or by earning a *B* or better in a designated *W* course to be specified by the graduate committee of the School of Agriculture and Home Economics.

An oral defense of the thesis is required before successful completion of the program.

Prospective students should request the program advising sheet from the department. Upon admission students should see the graduate coordinator for aid in program planning, selection of a graduate adviser, and selection of a thesis or project committee chair.

M.S. in Agriculture

Food Science and Nutrition (Dietetics)

Students interested in dietetics are referred to the Department of Enology, Food Science and Nutrition for the M.S. in Agriculture, Food Science and Nutrition Option.

COURSES

General (H Ec)

1. Contemporary Home Economics (3). Home economics in America; past and present professional needs, successes and weaknesses; future of the field. Academic preparation for a variety of occupations; participation in the worlds of work, marriage, family, and community.

190. Independent Study (1–3; max see reference). See *Academic Placement—Independent Study,* pages 96–97.

192. Readings and Conference (1–3). Prerequisite: Permission of instructor. Individually directed readings; reports and evaluation. (Hours arranged)

193. Cooperative Education (1–6; max total 6). Prerequisite: Completion of at least 45 units, good academic standing and permission of the department. Combines study with paid work experience in a supervised career-related position. Reports and conferences required. Credit-No Credit grading only.

Consumer Science and Housing (CSH)

10. Management for Effective Living (3). Human relationships, housing, family finance, consumer problems, meal management and nutrition as they relate to individual and family living. *(Former C S 10)*

105. Decision Making and Problem Solving (3). Management concepts related to individual careers and family living. Analysis of values, goals, and standards and their relationship to decision making in the allocation of human and nonhuman resources with case studies in problem solving. *(Former C S 105)*

110. Consumer Buying Strategies (3). Emphasis on consumer buying strategies, sources of information relevant to consumer decision making and the activities and problems of buying goods and services in the marketplace. *(Former C S 110)*

111. Household Equipment and Energy Use (3). Selection, methods of operation, specifications of household appliances; utilization of energy; energy conservation strategies; kitchen and utility planning. (2 lecture, 2 lab hours) *(Former C S 111)*

112T. Topics in Consumer Science and Management (1–4; max total 12 if no topic repeated). Current topics relating to consumers and home management; consumers in action (lobbying), financial counseling, product standards and safety, home ownership. Some topics may have labs. *(Former C S 112T)*

113. Economics for Consumers (3). Prerequisite: Econ 1A recommended. Consumer spending related to social and psychological factors influencing consumers. Legislation that protects and relates to the consumer on local, state, and federal level. *(Former C S 113)*

114. Consumer Science and Family Studies Practicum (3). Prerequisite: Permission of instructor. Integrated field experience in various phases of home economics as they apply to Consumer Science and Family Studies. (6 lab hours) *(Former C S 114)*

115. Family Finance (3). Financial activities of the individual and family; planned spending, bank services, consumer credit, insurance savings, investments, taxes; financial aspects of home ownership and estate planning. *(Former C S 115)*

116. Consumer Aspects of Home Ownership (3). Emphasis on benefits and obligations of home ownership. Analysis of the consumer processes of selecting, buying, and maintaining a home. (Former C S 112T section, C S 116, HIE 116)

117. Resource Management of Aging (3). The individual during the later stages of the life cycle with emphasis on the special problems of the elderly in management of personal and community resources. *(Former C S 117)*

118. Consumer and Family Law (3). A "law-for-the-layman" course. Broad coverage of individual and family rights in the areas of domestic relations, marriage, divorce, parenting, abortion, consumer protection, property rights, liability and court proceedings. *(Former C S 118)*

171. Housing and Society (3). An analysis of housing alternatives for individuals, families, and special groups. Social, legal, and economic factors affecting the housing market. Special shelter considerations for the elderly, disabled, single parent, and shared households are explored in lecture and field trips. (2 lecture, 2 lab) (Formerly IDH 171 and C S 171)

Fashion Merchandising (FM)

20. Beginning Textiles (3). Fiber classification; methods of production, fabric construction; mechanical finishes. Selection, use, and care of fabrics in relation to consumer needs.

22. Fashion Analysis (1). Factors influencing trends in dress. Selection of color, line and form related to individual needs.

24. Clothing Construction I (3). Pattern and fabric selection; basic construction techniques, use of commercial patterns; application of these factors to consumer buying. Color line and design in apparel selection. (6 lab hours)

26. Clothing Construction II (3). Prerequisite: FM 24 or experience in clothing construction. Individualization of basic and designer patterns: alteration principles; techniques of handling new fabrics. Selection of color, line and form related to individual and family needs. (6 lab hours)

120. Social and Psychological Aspects of Clothing (3). The psychological, social, and economic aspects of clothing as related to the individual, family, and society. An understanding of fashion, its development and distribution.

121. Tailoring (3). Prerequisite: FM 22, 24, or 26. Tailoring a suit or coat using various techniques. (6 lab hours)

122T. Topics in Clothing and Textiles (1–4; max total 12 if no topic repeated). Topics relating to clothing, textiles and fashion merchandising. Some topics may have labs.

123. Pattern Design (3). Prerequisite: FM 22 and 24 or 26. Application of flat pattern method to apparel design (6 lab hours)

124. Textile Finishing (3). Prerequisite: FM 20. Finishing, dyeing and printing techniques, material and equipment. Evaluation through standard laboratory tests. (2 lecture, 2 lab hours)

125. Weaving Techniques (3; max total 6). Basic and advanced weaving techniques. Handweaving methodology for the beginning and intermediate student with emphasis directed to on-loom 2–4 harness techniques, pattern drafting and decorative experiments with ikat resist dyeing methods. Emphasis on weave construction. (6 lab hours)

126. History of Costume (3). Important periods of costume; their relationship to political, social and economic conditions of the times and their importance in evolution and inspiration of modern dress. (Former FM 122T section)

127. Fashion Merchandising (3). Prerequisite: FM 20, IDH 107. Aspects of fashion marketing and fashion related careers. Resource personnel and field trips. (2 lecture, 2 lab hours)

128. Fashion Display Techniques (3). Prerequisite: IDH 107, FM 127. Design fundamentals applied to the aesthetic arrangement of promotional and institutional displays in the retail store. Resource personnel and local field trips. (2 lecture, 2 lab hours)

129. Fashion Merchandising Practicum (3; max total 6). Prerequisite: FM 127, senior standing. Integrated field experience in various areas of fashion merchandising.

130. Fashion Study Tours (3). An in-depth study of industrial, retail and wholesale sites in California. Field experiences will be included to insure optimum learning opportunities. (Course Fee $125) (1 lecture, 4 lab hours) (Former FM 122T section)

Child and Family Studies (CFS)

32. Intimate Interpersonal Relationships (3). Analysis of various motivations for intimate relationships, including those which lead to marriage; attitudes, values, and behaviors will be examined using the interactional framework.

37. Introductory Child Development Practicum (3). Observation and interaction with the young child in a laboratory setting. Utilize a case study to focus on the child's growth and development to gain an understanding of his/her relationship to family, peers and adults. (2 lecture, 3 lab hours)

38. Lifespan Development (3). A balanced study of the basic theories, research, applications, and principles of human development at each stage of life from conception to old age. All major topics of development and key relationships are presented in an integrated manner. (Former CFS 132T section)

39. Child Development (3). Physical, intellectual, social and emotional development of the child from conception through adolescence, in the cultural context of the family approached from an interdisciplinary perspective.

108. The Individual and Family Interaction (3). Individual and family development and interaction, diversity of family life styles and forces that influence family relationships and the quality of life will be studied within the family context.

131. Family Relationships (3). Marital and family dynamics will be explored within the context of family theories. Topics include love, mate selection, sexuality, communication patterns, parenthood and dissolution.

132T. Topics in Child Development and Family Relationships (1–4; max total 12 if no topic repeated). Prerequisite: CFS 39 and/or 131. Topics relating to child development and family relationships. Some topics may have labs.

133. Children and Family Crises (3). Prerequisite: CFS 39 and 131. Crises experienced by children and their families; separation, dissolution, divorce, remarriage and the consequent formation of step-relationships, death, alcoholism, and drug abuse included.

134. Cultural Aspects of Child Rearing (3). Prerequisites: CFS 39 and 131 or CFS 39 and Soc 165. Cultural and subcultural aspects of child rearing; survey of research studies and findings on cultural child-rearing attitudes and practices.

135. Contemporary Parenting (3). Prerequisite: CFS 39. Examination and critique of several contemporary theories of effective adult/child relationships.

136. Middle Childhood and Adolescence (3). Prerequisite: CFS 39 or consent of instructor. Family influences on the physical, intellectual, social and emotional development of children in middle childhood and adolescence. Emphasis on the search for identity, heterosexual development, vocational choice and inter-personal relations.

137. Infant in the Family (3). Prerequisite: CFS 39. A functional and theoretical study of the infant's physical, emotional, social and intellectual development during the first two years of life within the family. (2 lecture, 2 lab hours)

138. Program Plans for Children (3). A study of the various types of organizations and the administration of programs for young children. Principles of administration and policies related to school organization including administrator's responsibilities, staffing, personnel policies, parent programs, curriculum, budgeting, housing, and equipment. (Former CFS 132T section)



139. Child Development Practicum (3). Prerequisite: CFS 37. Assume the responsibility of a nursery school head teacher; plan learning episodes for the young child based on his or her needs, abilities, and interests; work with parents and do diagnostic assessments of children. (2 lecture, 3 lab hours)

Food Science and Nutrition (FScN)

Students interested in foods in business refer to the Department of Enology, Food Science, and Nutrition for course listing.

Home Economics Education (H Ec)

148. Occupational Home Economics Program Planning (3). Required for credential candidates. Individualized modules concerning the design, development, implementation and evaluation of home economics related occupational programs.

149T. Topics in Home Economics Education (1–3; max total 12 if no topic repeated; max 3 in one area). Topics include Consumer Science Resources; Organization and Management of Food and Nutrition; Clothing and Textiles and Fashion Merchandising; Housing and Interior Environment; Child Development and Family Relations. Some topics may have labs.

GRADUATE COURSES

(See *Course Numbering System,* p. 133.)

200. Research Methods in Home Economics (3). Prerequisite: A statistics course, Math 11 or Soc 25 or equivalent; completion of the university writing skills requirement. Methods, techniques of research; locating and formulating problems; collection and interpretation of data; preparation of research paper; analysis of professional literature.

210T. Seminar in Consumer Science and Family Management (3; max total 12 if no topic repeated). Prerequisite: Permission of instructor. Analytical study of problems pertaining to identifiable segments of the populace; intercultural, socioeconomic, age level and ethnic and community groups. Topics such as: Aspects of Aging, Cultural Aspects of Management, Home and Community Relationships, Ergonomics—Aspects of Work Simplification.

220T. Seminar in Clothing, Textiles and Fashion Merchandising (3; max total 6 if no topic repeated). Prerequisite: H Ec 200. Research and analysis of historical material and contemporary developments in clothing, textiles and fashion merchandising. Topics may include aspects of historical costume and textiles, technological developments in textiles, and trends in purveying fashion. Some topics may have labs.

230T. Seminar in Child Development, Family Relations (3; max total 12 if no topic repeated). Prerequisite: Permission of instructor. Research, methodology, and issues in family relationships and child development. Course considers seminars in the following: Fatherhood: The Parent Role; Family in Transition, Relational Patterns in Marriage and Family; The Family; Middle and Later Years. Some topics may have labs.

240T. Seminar in Home Economics Education (3; max total 6 if no topic repeated). Prerequisite: H Ec 200. Applied research; current and future trends of vocational, career, and consumer Home Economics Education. Topics include: Administration, Evaluation, and Supervision in Home Economics; and Home Economics in Higher Education. Some topics may have labs. (Former H Ec 281T section)

241. Seminar in Trends and Issues in Home Economics Education (3). Prerequisite: permission of instructor. Background of home economics, its present status, its impact on the future. Individual research in analysis of trends and issues having impact on the family, the individual, and the quality of life. (Former H Ec 240T section)

242. Survey Home Economics Research (3). Examination of research in each area of Home Economics. Consideration of major ideas, trends, and movements in the field. (Former H Ec 240T section)

290. Independent Study (1–3; max see reference). See *Academic Placement—Independent Study,* page 96–97.

292. Readings in Home Economics (2–3; max total 6 if no topic repeated). Prerequisite: H Ec 200, and permission of instructor. Individually directed readings in a field of special concern to students in the graduate program; appropriate reports and evaluations required; individual conferences, no formal class meetings.

298. Project (2–6; max total 6). Prerequisite: prior advancement to candidacy. See *Criteria for Thesis and Project,* pages 467–468. The project is a significant undertaking of an approved pursuit appropriate to the applied arts, examples: Extensive curriculum design, development of new consumer products, a survey of disappearing textile techniques or similar professional endeavors with written documentation. Abstract required.

299. Thesis (2–6; max total 6). Prerequisite: prior Advancement to Candidacy, see *Criteria for Thesis and Project,* pages 467–468. Preparation, completion, and submission of an acceptable thesis for the master's degree.

IN-SERVICE COURSES

See *Course Numbering System,* page 133.

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

AGRICULTURE
Industrial Technology

School of Agriculture and Home Economics
Department of Industrial Technology
Gary E. Grannis, Chair
M. Grosse Industrial Arts Bldg., Room 212
(209) 294-2145

B.A. in Industrial Arts
B.S. in Industrial Technology
Minor in Industrial Arts
M.A. in Industrial Arts
B.V.E. in Vocational Education

Individual programs are planned to provide for professional careers in teaching and in business and industry. The industrial arts degree program prepares candidates for careers in teaching and selected industries. The graphic and interior design option within industrial arts prepares individuals to enter either the commercial art/advertising design or interior design professions.

The Industrial Technology Program is accredited by the National Association for Industrial Technology. Emphasis is placed on training men and women for industrial management positions. Because of the diverse nature of industry, two program options have been developed: Construction and Manufacturing. The principal components of the degree are (1) major technology (option), (2) industry specialty, (3) physical science, (4) business management, and (5) general education. The major technology specialty prepares the student for his/her position in the chosen field of industry. Recent program development includes industrial automation concepts, frequently referred to as computer-aided design (CAD) and computer aided manufacturing (CAM).

Facilities

A recent building addition has provided well equipped modern laboratories. Special facilities acquired include computerized engine dynamometer testing, computer graphics, materials testing, microprocessors, process control, and robotics.

Career Opportunities

It is projected that industrial technologists will be in high demand for many years. Industry needs qualified individuals who can contribute to better product reliability, efficiency, and improved productivity. Improvement in the economy has also significantly improved the career placement for manufacturing and construction graduates. Examples of positions held by manufacturing graduates are assistant plant engineer, factory representative, fleet service representative, manufacturing engineer, mechanic systems coordinator, operations supervisor, production planning analyst, production scheduling coordinator, and quality control supervisor. Examples of positions held by construction graduates are project manager, project engineer, project administrator, estimator, project scheduler, architectural representative, mechanical designer, project superintendent, and construction administrator.

Industrial arts teachers are currently in short supply nationwide, including California. The demand is projected to be even greater by the year 1990. The main reason for this demand is the fact that many current teachers will reach retirement age.

The interior design program has the distinction of being one of only five programs in California accredited by the Foundation for Interior Design Education Research (FIDER). Interior design combines an excellent foundation of color, design, drafting, including computer aided design (CAD), professional practice, space planning, and presentation skills with unique strengths in architecture, construction, and materials. Graduates have been placed in interior design firms, architectural firms, construction companies, art galleries, product suppliers, contract and residential showrooms.

The commercial art program trains individuals as graphic artists for such industries as television, printing, newspaper, magazine, film, and advertising. Demand for such candidates has been excellent in both small and large businesses.



Faculty

Department Chair: Gary E. Grannis

Construction Coordinator: Frank H. Goishi
Manufacturing Coordinator: Richard F. Newcomb
Graphic and Interior Design Coordinator: Richard S. Jenne
Teacher Education Coordinator: Kenneth D. Moshier
Graduate Coordinator: Gary H. Winegar

Merle S. Adrian
Leslie L. Aldrich
Tony M. Au
Ronald L. Blanton
Glen H. Blomgren
Chester E. Christison
Clift C. Cullen
Arthur L. Foston
Edward A. Gaiser
Manuel R. Garcia
Frank H. Goishi
Gary E. Grannis
Norman A. Gullickson
R. Louis Gysler
Patricia Hennings-Smith
Richard S. Jenne
David E. Leue
Gary K. McCurry
Kenneth D. Moshier
Richard F. Newcomb
Gary B. Paglierani
James H. Rockwell
Frank E. Schroeter
Lawrence E. Smith
Wesley M. Williams
Gary H. Winegar

The faculty are well qualified within their respective areas of instruction and each student is assigned an adviser within his/her field of study. The department is recognized for its diversification of faculty representing the makeup of professionals that must interact in the field. Several are recognized for outstanding contributions and leadership within the professions.

Teacher Credential Program

The following breadth courses are required for the Single Subject Waiver Program in Industrial Arts: I Ed 12, 41, 52, 60, 70, 80, 92 and I T 102. Additionally, a minimum of 12 units is required from two areas of concentration. Choose from:

Automotive. I T 120, 121, 122, 124, 129
Drafting. Const 42, 44; I T 141, 143
Electricity/Electronics. I T 53, 131, 153, 154
Graphic Arts. I Ed 162; I T 160, 161, 165
Metals. I Ed 71, 74; I T 170, 171, 173
Woodworking. I T 82, 182, 184, 185

Bachelor of Arts Degree Requirements

Industrial Arts Major

The following courses are required for all students majoring in industrial arts.

Units

General Education (Including 9 upper-division units) 54
- Core
  - Category 3: Math 4
- Breadth
  - Division 1: Chem 2A or Physics 2A (Recommended)
- Capstone
  - Energy and Society Cluster
    - I T 106 and Econ 117 (recommended)

Major (including 16 upper-division units) 40
- Industrial arts core ..... (23)
  - I Ed 12, 41, 52, 60, 70 or 74, 80, 92; I T 102
- Concentration Requirements ..... (17)
  - Select 8–9 units in each of two areas of concentration: automotive, construction, design, drafting, electricity/electronics, general metal, graphic arts, industrial crafts, machine tool metal, power mechanics, woodworking.

Additional Requirements 1–3
- Upper Division Writing Skill (by examination or designated *W* course)

Electives 27–29
- (courses supplementary to the major strongly recommended)

Total Requirements (including 40-upper division units) 124

Advising Notes:

1. All courses required for the major must receive a letter grade, including additional major requirements in General Education.
2. All concentration requirements must receive prior approval by a department adviser.
3. The Upper Division Writing Skills requirement can be met by passing the university examination or by taking an approved upper-division writing skills course only after 56 units are completed. One unit of credit (i.e., Engl 100W) may be earned for passing the examination; three to four units of credit will be earned by obtaining a letter grade of *C* or higher in an approved course (i.e., IS 105W).
4. Two courses, I T 198 and 199, may not be applied toward the 16-unit upper-division requirement.

Graphic and Interior Design Option

The following courses are required for all students majoring in Industrial Arts-Graphic and Interior Design Option:

Units

General Education (including 9 upper-division units) 54
- Core
  - Category 3: Math 4 or equivalent
- Breadth
  - Division 3: Psych 10 (recommended)
  - Division 8: Econ 1A, 1B, or Ag Ec 1
  - Division 10: Art 30 (recommended)
- Capstone
  - Energy and Society Cluster
    - I T 106 and Econ 117 (recommended)

Major 68–69
- Core ..... (14–15)
  - I Ed 41 or Const 42; I Ed 60, 80; I Ed 92 or CSH 171; I T 102
  - *(Note:* Const 42 and CSH 171 required for Interior Design Speciality)
- Design ..... (17)
  - GID 70, 72, 107, 141, 143, 144
- Career specialty (select one) ..... (37)
  - Commercial Art/Advertising Design ..... (37)
    - GID 142, 146, 147, 148; I T 161, 165, Art 116, and 19 units selected in consultation with your assigned adviser
  - Interior Design ..... (37)
    - FM 20; GID 71, 117, 170, 174, 175A, 175B, 176, 177, 178A, 178B, 181, 182

Additional Requirement 1–2
- Upper Division Writing Skill (by examination or designated *W* course)

Electives 0
- Interior Design Speciality: Additional courses supple-

mentary to the major are optional. Additional course work beyond the degree is recommended by (FIDER) Foundation for Interior Design Education Research: Const 5, 10, 31, 32, 50, 120, 131, 132, 142, GID 173, 179, 180, I T 115; OH 2; Art 116

Total Requirements (including 40 upper-division units).....124

Advising Notes:

1. All courses required for the major must receive a letter grade, including additional major requirements in General Education.
2. Student work may be retained for a limited period for display and accreditation visits.
3. Students are encouraged to take the University Writing Competency Examination (after the completion of 56 units) so as not to exceed 124 units. Students may request one unit of credit for passing the examination (i.e., Engl 100W); three to four units of credit will be earned by obtaining a letter grade of *C* or higher in an approved course (i.e., IS 105W).

Bachelor of Science Degree Requirements

Industrial Technology—Manufacturing Industries Option

The following courses are required of all students majoring in Industrial Technology—Manufacturing Industries Option:

Units

General Education (including 9 upper-division units).....54
- Core
  - Category 3: Math 71, 72 or 75 (if 1 year high school algebra II completed)
- Breadth
  - Division 1: Chem 2A and 2B or Physics 2A and 2B
  - Division 8: Econ 1A, Econ 1B, or Ag Ec 1
- **Capstone**
  - Energy and Society Cluster (recommended): I T 106 and Econ 117

Major (including 18 upper-division units).....74
- Manufacturing core.....(39)
  - I Ed 74, 92; I T 102, 104, 107, 114, 115, 117, 118, 198, 199; Acct 3; Mgt 104, 106
- Technical specialty (select one).....(35)
  - Computer-Aided Design.....(35)
    - Const 44; I T 135, 141, 144, 147, 149, 177, 177L; C Sci 20; IS 161, 165; plus 2 units approved by your adviser
  - Electricity/Electronics.....(35)
    - I T 110, 112, 131, 131L, 132, 153, 154, 156, 157, 159; Const 164; plus 4 units approved by your adviser
  - Electronic Communications.....(35)
    - I S 53, 151, 161, 165; I T 119, 131, 131L, 132, 153, 157, 158, plus 4 units approved by your adviser
  - Graphic Communications.....(35)
    - I Ed 60, 142; I T 160, 161, 163, 164, 165; plus 16 units approved by your adviser
  - Manufacturing Automation.....(35)
    - I S 53, 151, 165; I T 119, 131, 131L, 132, 134, 154, 159, 177, 177L; plus 4 units approved by your adviser
  - Metals.....(35)
    - I Ed 70, 71; I T 110, 121, 170, 171, 172, 173, 174, 175, 177, 177L; plus 2 units approved by your adviser
  - Transportation.....(35)
    - I Ed 12, 71; I T 110, 112, 120, 121, 122, 125, 129; plus 8 units approved by your adviser
  - Wood Products.....(35)
    - I Ed 80; I T 82, 112, 182, 184, 185; Chem 8; plus 2 units approved by your adviser

Additional Requirements.....0
- Upper Division Writing Skill (by examination or designated *W* course)

Electives.....0

Total Requirements (including 40 upper-division units).....128

Advising Notes:

1. All courses (except I T 192 and 194) required for the major must receive a letter grade, including additional major requirements in General Education.
2. Students are encouraged to take the University Writing Competency Examination (after the completion of 56 units) so as not to exceed 128 units. Students may request one unit of credit for passing the examination (i.e., Engl 100W); three to four units of credit will be earned by obtaining a letter grade of *C* or higher in an approved course (i.e., IS 105W).
3. I Ed 41 and 52, which are prerequisites to some core and technical specialities in Industrial Technology, may be waived if equivalent work experience and/or training is demonstrated.

Industrial Technology—Construction Option

The following courses are required of all students majoring in Industrial Technology—Construction Option:

Units

General Education (including 9 upper-division units).....54
- Core
  - Category 3: Math 71, 72, or 75 (if 1 year high school algebra II completed)
- Breadth
  - Division 1: Physics 2A
  - Division 8: Econ 1A, 1B, or Ag Ec 1
- Capstone
  - Energy and Society Cluster I T 106 and Econ 117 (recommended)

Major (including 18 units upper division).....74
- Construction Core.....(59)
  - Const 5, 10, 42, 50, 105, 107, 114, 116, 120, 122, 124,142,162,164; I T 102; Acct 3; Mgt 104, 106; S E 11 or Me Ag 101; C E 127
- Technical Specialty (select one).....(15)
  - Construction Management.....(15)
    - Const 150, 151, 160; I T 154; Mktg 138
  - Architecture.....(15)
    - Const 31, 32, 131, 132, 134

Additional Requirements.....0
- Upper Division Writing Skill (by examination)

Electives.....0

Total Requirements (including 40 upper-division units).....128

Advising Notes:

1. All courses required for the major must receive a letter grade, including additional major requirements in General Education.
2. Students are encouraged to take the University Writing Competency Examination (after the completion of 56 units) so as not to exceed 128 units. Students may request one unit of credit for passing the exam (i.e., Engl 100W); three to four

units of credit will be earned by obtaining a letter grade of *C* or higher in an approved course (i.e., IS 105W).

3. I Ed 41 and 52, which are prerequisites to some core and technical specialities in Industrial Technology, may be waived if equivalent work experience and/or training is demonstrated.

Other construction specialties may be developed under department advisement.

Minor

A minor in industrial arts consists of 20 units of which 9 must be upper division. At least 12 units must be taken in one of the following specific areas of concentration: automotive, construction, design, drafting, electricity/electronics, general metal, graphic arts, industrial crafts, machine tool metal, power mechanics, or woodworking.

Master of Arts Degree Requirements

The Master of Arts degree program in industrial arts offers graduate study in both industrial and educational related professional and technical fields. Emphasis is directed toward the attainment of advanced competency in the respective areas of industrial arts, manufacturing technology, and construction. Through selected courses, within the department and other disciplines, knowledge and experience may be acquired in research and development, management and administration, technological studies, and educational studies that are related to all areas of the field.

For general information, see *Graduate Programs of Study* under the School of Agriculture and Home Economics section, page 117:

Admission Criteria: A baccalaureate degree in industrial arts or related fields from an accredited institution.

Prerequisite Courses: The Master of Arts degree program in Industrial Arts assumes preparation equivalent to a CSU, Fresno undergraduate major in industrial arts or industrial technology. Students having undergraduate degrees in other fields or from other institutions should refer to the industrial arts or industrial technology programs listed in this catalog along with consultation with the graduate coordinator to determine the prerequisite foundation courses that may be required. (Foundation courses are not included in the master's program.)

Writing Skill Requirement: A student enrolled in the Master of Arts program will meet the university writing requirement for graduate work by earning a minimum of 450 verbal on the Graduate Record Examination (G.R.E.). If a minimum of 450 verbal on the G.R.E. is not met, the student shall meet the requirement by then earning a score of 80 or higher on the Writing Competency Examination or by earning a *B* or better in a designated *W* course to be specified by the graduate committee of the S.A.H.E.

Full Classified Standing: A baccalaureate degree is required and an undergraduate major in industrial arts (I.A.) or in industrial technology (I.T.) or in a related area; 2.75 G.P.A. (last 60 semester units); a 450V/430Q G.R.E. score or a 400V minimum with a 880 total score; three letters of recommendation; completing departmental admission forms; and having a pre-admission consultation session with the department graduate coordinator.

All foreign students who do not possess a bachelor's degree from a post secondary institution where English is the principal language of the institution must also obtain a minimum score of 550 on the Test of English as a Foreign Language (TOEFL) before departmental acceptance for admission to the master's degree program.

Advancement to Candidacy requires completing 9-units of work toward the degree, satisfying the writing skill requirement, passing the Departmental Qualifying Examination, and filing a Petition for Advancement to Candidacy with the S.A.H.E.

Program Requirements

Under the direction of a graduate adviser each student prepares and submits a coherent program individually designed within the following framework:

Specific requirements are:	*Units*
Industrial arts: I Ed 223, 280, 286; and other specified 200-series courses determined after examination of the student's record and performance on the departmental qualifying examination	16–18
Other subject fields: A S 153 or equivalent; approved elective appropriate to individually-designed program	4–6
Electives in industrial education/technology or related fields: Approved electives appropriate to individually-designed program	4–6
Culminating Experience: I Ed 298 or 299	2–4
Total minimum requirements	30

Prospective students should request the program advising sheet from the department. Upon admission students should see the graduate coordinator for aid in program planning, selection of a graduate adviser, and selection of a thesis or project committee.

COURSES

Note: Expense to students in courses with variable fees will depend upon the specific projects selected by the student. Student should consult with the course instructor.

Industrial Education (I Ed)

12. Basic Automotive Systems (3). Design, construction and mechanical functions of automotive engines, fuel systems, electrical systems, power transmission, brakes, and wheel suspension; proper use and safety of tools and equipment. (6 lab hours)

30. Plastics Technology (3). Introduction to the plastics field. Technical information on composition, characteristics and uses of plastics; equipment design principles and manufacturing processes. (Course fee variable; not less than $3.50) (6 lab hours; field trips)

41. Industrial Design Graphics (3). Application of the fundamentals of industrial design graphics. Sketching, lettering, orthographic projection, working drawings, auxiliary views, dimensioning, developments, pictorial drawings, duplication; interrelationship to the design process. (6 lab hours)

52. Basic Electricity (3). Not open to students with credit in Ind A 51. Introduction to electricity including fundamentals of electrostatics, alternating and direct current electrical circuits, electrical calculations, magnetics, circuit applications, electrical measuring and test equipment. (Course fee variable; not less than $3) (6 lab hours)

60. Basic Graphic Arts (3). Introduction to the graphic arts; letterpress, photo offset lithography, screen printing; layout,

composition, imposition, presswork, bindery. (Course fee, $6) (6 lab hours; field trips)

70. Basic Metalworking (3). Introduction to and exploration in various areas including sheet metal, bench metal, art metal, wrought iron, foundry and forging. (Course fee, $6.50) (6 lab hours)

71. Metallurgical Processes (3). Fundamentals of metallurgy; properties and characteristics of metals; survey of metal welding processes, equipment, and procedures; theory-discussion and laboratory experience in oxygen-fuel welding, cutting, brazing, and shielded metallic arc welding. (6 lab hours) (Course fee variable)

74. Basic Machine Tool Metalworking (3). Basic methods of machining metals, including drilling, turning, boring, milling, grinding, and shaping; hand tools, precision measuring instruments, and layout; speeds and feeds; steel and its heat treatment. (Course fee, $7.50) (6 lab hours)

80. Basic Woodworking (3). Basic woodworking and finishing process and materials; use and care of hand tools, portable electric tools, light woodworking machinery, basic units in wood technology. (Course fee variable; not less than $10) (6 lab hours)

92. Safety for Industrial Education (2). Principles of industrial education safety as applied to industrial, occupational, and school settings; principles of safety, safety legislation, first aid; machine, electrical, eye, noise, and fire prevention safety.

133. Industrial Crafts (3; max total 6). Creative and recreational experiences in craft media including plastics, leather, wood, metal, enamels, historical, cultural, technological information. (Course fee, $4.50) (6 lab hours)

162. Graphic Arts Crafts (3). Various processes and media used in graphic arts; creative and recreational aspects for the student; silk screen, linoleum block, intaglio, papermaking, thermographs, marbling, bookbinding, student projects. (Course fee, $6.35) (6 lab hours; field trips)

178. Jewelry and Metalsmithing (3; max total 6). Design, fabrication techniques, and properties of materials as related to jewelry, gemology, and metalsmithing. Historical, contemporary, and creative emphasis. Designing and constructing articles of jewelry and hollow ware by hand and machine processes. (Course fee, $10) (6 lab hours) (Former Ind A 178)

190. Independent Study (1–3; max see reference). See *Academic Placement—Independent Study,* pages 96–97. *(Course fee variable)*

191T. Technical Topics in Industrial Education (1–3; max total 6). Prerequisite: permission of instructor. Investigation and analysis of selected subjects in industrial education. (2–6 lab hours)

Industrial Technology (I T)

53. Electronic Devices and Circuits (3). Prerequisite: I Ed 52. Characteristics and applications of electronic devices in analog and digital circuits including power supplies, amplifiers, oscillators, and switching circuits; introduction to linear integrated circuits. (Course fee variable; not less than $3.50) (6 lab hours)

82. Wood Machining (3). Prerequisite: I Ed 80. Development of proficiency in the operation and maintenance of modern woodworking machinery and spray finishing equipment; safety education, cutting principles and techniques, machine design and capabilities. (Course fee variable; not less than $10) (6 lab hours)

102. Industrial Data Processing Concepts (3). Not open to students with credit in Ind A 151B. Computer fundamentals; flowcharting and programming techniques; industrial and technical programming systems and support components; data base organization and systems management; and industrial and technical management. (Field trips)

104. Materials of Product Design (3). Prerequisite: I Ed 41. Origins, kinds, properties, and uses of materials of product design and development in modern industry; mechanical and nonmechanical functions of materials; experimentation with industrial materials of significance in the design of industrial products. (Course fee variable; not less than $3.50) (6 lab hours)

106. Energy Conversion and Utilization (3). Fundamental sources of energy, including the following energy conversion systems: direct mechanical, external combustion, internal combustion, solar power, wind power, electrical and atomic systems. Experiments and demonstrations. (6 lab hours; field trips)

107. Facilities Planning (3). Facility planning techniques as applied to facility location, zoning, building codes, line balancing, shipping-receiving, offices, material handling, storage, project scheduling, and computerized layout.

110. Fluid Power (3). Prerequisite: I Ed 52. Selective study of fluid power principles and applications; hydraulics, pneumatics and vacuum; includes pumps, controls, transmission systems, actuators and fluidics. In-depth study of air conditioning-heating theory and applications. (Course fee variable; not less than $5) (6 lab hours; field trips)

112. Industrial Process Control and Instrumentation (3). Prerequisite: I Ed 52. Industrial process control system principles and components; computers, controllers, transducers, and actuators; mechanical and electrical instrumentation. (6 lab hours)

114. Industrial Materials and Processes (3). Chemical ceramics and physical properties of metals, plastics, wood, ceramic, fuels, lubricants, and other industrial materials. Structural properties, wear, corrosion, destructive and nondestructive testing; fabrication applications and potentials, cutting, fusion, casting, forming, and other industrial processes. (6 lab hours)

115. Interactive Graphics for Industry (3). Prerequisite: I Ed 41. Computer graphics applications; special emphasis in manufacturing, construction, and interior design applications. Exposure to computer-aided design and presentation graphics packages.

117. Quality Assurance (3). Prerequisite: I T 102, Mgt 104, 106. Quality assurance principles and practices in industry: quality assurance systems, acceptance sampling, testing, source surveillance; probability and statistical concepts, process control techniques, and measurement procedures as applied to quality.

118. Production Operations (3). Prerequisite: I T 102, 104; Mgt 104, 106. A survey of production manufacturing operations: quality assurance, work sampling, testing, time and motion study; routing, scheduling and inventory control; flow processes, material handling, and automation. (Field trips)

119. Computer-Integrated Manufacturing Concepts (3). Prerequisite: A computer programming language; I T 118 or equivalent. Computer integration of manufacturing functions. Emphasis on computer-aided design (CAD), manufacturing (CAM), and business (CAB) systems; applications, operations, and evaluation. (Former Ind A 100 and I T 105)

120. Automotive Engine Systems (3). Prerequisite: I Ed 12, 52. Advanced study of automotive engines and support systems. Includes piston and rotary engine theory, fuel systems and fuel technology, electrical systems, small engines, diesel, gas turbine, emission control and diagnostic center power analysis. (6 lab hours; field trips)

121. Automotive Engine Machining (3). Prerequisite: I Ed 12, 74. Advanced study of automotive engine machining including precision measurements, principles of engine operation, machining of engine components, crack detection, assembly procedures, lubricating and cooling systems. (Course fee, $6) (6 lab hours; field trips)

122. Automotive Chassis Analysis (3). Prerequisite: I Ed 12. Advanced study of automotive chassis components including power transmission, brake systems, wheel suspension, air conditioning, lubricants theory and testing, body repair and refinishing. (6 lab hours; field trips)

124. Automotive Engine Diagnosis and Repair Procedures (3). Prerequisite: I Ed 12. Laboratory work with emphasis on engine trouble shooting, use of dynamometer and diagnostic equipment together with mechanical repair techniques. (Course fee, $5) (Technical reports) (6 lab hours)

125. Multifuel Engine Power Analysis (3). Prerequisite: I Ed 12. Laboratory and computerized dynamometer study in the testing of new fuels or combinations of fuels, alternative engine design, emissions, analysis and dissemination of research data. (2 lecture, 3 lab hours; Field trips) (Former I T 191T section)

129. Automotive Chassis Diagnosis and Repair Procedures (3). Prerequisite: I Ed 12. Laboratory work with emphasis on chassis diagnosis and mechanical repair procedures. (Technical reports) (6 lab hours)

131. Elements of Digital Computers (3). Number systems, Boolean logic, and fundamentals of digital devices; basic applications of logic devices in computers and control systems. (Field trips)

131L. Elements of Digital Computers Laboratory (1). Prerequisite: I T 131 or concurrent enrollment. Demonstrations and experiments with digital devices and circuits. (3 lab hours)

132. Microprocessor Applications (3). Prerequisite: I T 131, 131L. Microprocessor characteristics and programming; application and interface to digital and analog control and communication circuits; introduction to microcomputer hardware. (6 lab hours)

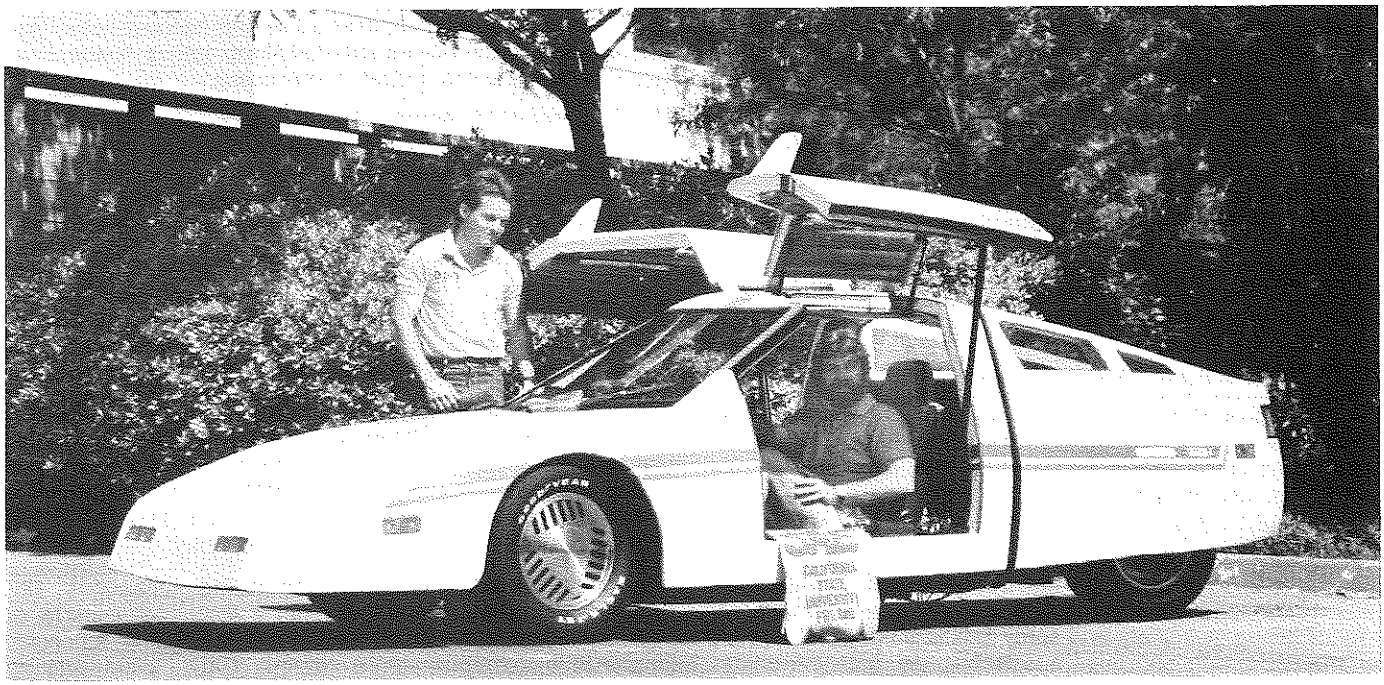
134. Programmable Automation (3). Prerequisite: I T 177. Study, analysis, and programming of industrial automated systems such as programmable controllers, industrial robots, microcomputers, and process controllers. Programming exercises and applications to manufacturing technology.

135. Computer-Aided Process Planning (3). Prerequisite: I T 115, 177. Applications of computers to process planning, group technology; tool and fixture design; and route sheet preparation.

141. Machine Design Graphics (3). Prerequisite: I Ed 41. Advanced technical drawing and design. Use of dimensioning/tolerancing, fabrication and materials standards, handbooks and industrial catalogs. Application of various machining and forming operations, including computer-aided design, in the investigation and completion of design problems. (6 lab hours; field trips)

143. Manufacturing Illustration (3). Prerequisite: I Ed 41. Practical application of the fundamentals of developing perspectives, isometric drawings, isometric projections, dimetric drawings, trimetric drawings, and the rotation of views in the preparation of detailed pictorial assembly drawings of machines and machine parts from a set of working drawings. (6 lab hours)

144. Tool Design Graphics (3). Prerequisite: I Ed 41. Application of graphics to industrial work holding devices; their application, drawing and design. Construction of working drawings aided by standards, company catalogs, and handbooks. Final designs subjected to student presentation and evaluation. (6 lab hours; field trips)



TECH-1: The three-wheel vehicle, built by Industrial Technology students, entered in The 1986 World Exposition's The Innovative Vehicle Design Competition, Vancouver, Canada, July 11–18, 1986.

147. Computer-Aided Design (3). Prerequisite: I T 115. CAD systems utilized in manufacturing industries. Using CAD system for generating 3D geometric data base and solid modeling. System justification, selection and management.

149. CAD Software Maintenance and Development (3). Prerequisite: FORTRAN Programming Language, I T 115, 147. CAD database philosophies, CAD applications software maintenance; software programming tools to interface with computer-aided manufacturing system.

153. Fundamentals of Electronic Communication Systems (3). Prerequisite: I T 53. Electronic systems and applications including basic transmitters, amplitude and frequency modulation transmitters and receivers; transistor applications; antennas; television. (6 lab hours; field trips)

154. Fundamentals of Electrical Power Generation, Transmission (3). Prerequisite: I Ed 52; I T 106 recommended. Equipment and systems for electrical power generation, transmission and distribution. (6 lab hours; field trips)

156. Fundamentals of Electric Motors (3). Prerequisite: I Ed 52; I T 154 recommended. Application, operation and control of alternating and direct current motors. (Course fee variable; not less than $4) (6 lab hours; field trips)

157. Fundamentals of Telecommunications (3). Prerequisite: I T 153. Introduction to telecommunications. Electromagnetic wave theory, propagation, and spectrum. Transmission, switching, and imperfections. Telecommunication systems. (6 lab hours; field trips)

158. Local Area Network Fundamentals (3). Prerequisite: I T 157. Data communication problems, concepts, protocols, specifications; Local Area Network (LAN), Manufacturing Automation Protocols (MAP). Technical and Office Protocol (TOP), computer integration; MAP specification, implementation, and testing.

159. Industrial Electronics (3). Prerequisite: I T 53, 112 and 153 or 119 and 132; 154, 156 recommended. Industrial electronics systems analysis; applications of analog and digital electronic circuits, devices, and systems to industrial process and machine control (6 lab hours)

160. Graphic Communication Developments (3). Prerequisite: I Ed 60. An investigation of the graphic reproduction processes including laboratory experiences, practical application, and frequent industrial trade tours. In-depth study of individually selected topics resulting in written and oral research reports. (Maximum materials fee $10.00) (6 lab hours; field trips)

161. Photo Offset Lithography (3). Prerequisite: I Ed 60. Photo offset lithography techniques and processes: design, layout, cold type composition, and paste-up, line, and half-tone copy, imposition, multicolor printing. (Course fee, $15) (6 lab hours; field trips) (Former Ind A 161)

163. Graphic Communications Management (2). Manufacturing processes, procurement, pricing, classification, and use of paper and ink. Estimating various kinds of printing produced by the major processes. (Field trips)

164. Graphic Communications Organization (2). Structure of the graphic communications industry, technological developments and trends, plant and production analysis, organizational structures. (Field trips)

170. Advanced Principles of Metalworking (3). Prerequisite: I Ed 70. Study and experience in the technological, scientific, and historical aspects of nonferrous metal casting, core-making; forging, principles of metal spinning. (Course fee, $6.50) (6 lab hours)

171. Advanced Metallurgical Processes (3). Prerequisite: I Ed 71. Lecture-discussion and laboratory experiences in advanced shielded metallic arc welding, gas tungsten arc welding, gas metal arc welding, plasma arc cutting, air arc cutting, and automated oxygen-fuel cutting; weld specimen preparation, testing (destructive/nondestructive), and welding metallurgy. (6 lab hours) (Course fee variable)

172. Fluid Metal Processes (3). Prerequisite: I T 170. Theory and practice in processes of industrial casting, casting design considerations, pattern making, core making, sand mold casting, permanent mold casting, die casting, centrifical casting, and related processes. (Course fee, $6.50) (6 lab hours)

173. Metal Fabrication Processes (3). Sheet metal pattern drafting and layout applicable to parallel, radial, and triangulation methods using light gauge metals; individual problems in planning, using, and maintaining hand and machine tools. (Course fee, $6.50) (6 lab hours)

174. Advanced Machine Tool Metalworking (3). Prerequisite: I Ed 74. Advanced machining and tooling, special machine tools, and precision measuring instruments; laboratory experiences in use of ferrous and nonferrous metals, cast iron and semisteel castings; coolants related to modern manufacturing process. (Course fee variable; not less than $2.50) (6 lab hours)

175. Machine Tool Technical Problems (3). Prerequisite: I T 174. Advanced technical work in metals, layout, fabrication, heat treatment and machinability; specifications of materials; introduction to gearing principles, tool and die work, jigs, and fixtures. Experimental projects and technical reports. (Course fee variable; not less than $3.75) (6 lab hours)

177. Computer Numerical Control (2). Prerequisite: I Ed 74, I T 102. Control principles, applications, and programming; APT programming language, post processing; equipment principles and evaluation and justification.

177L. Computer Numerical Control Laboratory (1). Prerequisite: I T 177 or concurrently. Principles, techniques, and applications of computer numerically controlled machine tools; manual and computer assisted programming; laboratory experience with computer numerically controlled machines. (3 lab hours)

182. Woodworking Specialties (3; max total 6). Prerequisite: I T 82. Specialized activities related to the field of woodworking: upholstering, inlaying and veneering, advanced wood turning, plastic laminate fabrication, bending and laminating, molded plastic parts, paneling, caning, glass and mirrors, picture framing, furniture restoration, wood finishing. (Course fee variable; not less than $10) (6 lab hours)

184. Wood Technology (3). Prerequisite: I T 82. Wood structure, identification, physical testing; study of wood products and processing industries. (Course fee variable; not less than $2) (6 lab hours; field trips)

185. Advanced Wood Machining (3). Prerequisite: I T 82. Design, construction, and finishing of furniture, cabinet work, millwork. Production methods, analysis of cutting processes. (Course fee variable; not less than $10) (6 lab hours)

190. Independent Study (1–3; max see reference). See *Academic Placement—Independent Study,* pages 96–97. *(Course fee variable)*

191T. Technical Topics in Industrial Technology (1–3; max total 6). Prerequisite: permission of instructor. Investigation and analysis of selected subjects in industrial technology. (2–6 lab hours)

192. Manufacturing Technologist Certification Review (1). Prerequisite: Junior standing. Preparation for Engineer-in-Training Examination in Manufacturing by the Society of Manufacturing Engineers. Basic mathematics, physics statics, and strength of materials. Materials science and metallurgy. Engineering drawings and blueprint reading; metrics and the SI system. (Former I T 191T section)

194. Cooperative Education in Industrial Technology (1–4; max. total 12). Prerequisite: Courses appropriate to the work experience; permission of department cooperative education coordinator; junior standing. Integration of work experience with academic program, individually planned through program adviser.

195. Modern Industrial Facilities (1–2; max total 4). Observation, analysis, and critique of production methods and facilities of selected industries of interest to Industrial Technology and/or Industrial Arts majors within options, emphases, or unit areas of study. (Course fee variable)

198. Technical Report Writing (2). Prerequisite: senior standing in industrial technology. Technical writing for the industrial technologist; preliminary organization and development of the senior problem.

199. Senior Problem in Industrial Technology (2). Prerequisite: I T 198 and permission of instructor. Approved problem or research project in the area of the student's option and emphasis.

Construction Management (Const)

5. Construction Materials (3). Not open to students with credit in Ind A 115. Introduction to basic construction materials: concrete, masonry, metals, woods, thermal materials, finishes, equipment and specialties. (2 lecture, 2 lab hours, field trips)

10. Estimating and Bidding (3). Prerequisite: Const 5, 42. Basic methods used to evaluate, fix cost, calculate worth, make accurate quantity take-offs and labor time estimates; preparing bids for prospective buyers.

31. Architectural Graphics (3). Introduction to basic techniques and media used in architectural graphic communication including: perspective techniques, sciagraphy, models, and photography; emphasis on various ways of making drawn representations of architectural design proposals. (6 lab hours)

32. Architectural Design (3). Introduction to architectural design theory; analysis of architectural design problems, assessment of human needs, establishment of architectural design criteria, and development of architectural design concept. (6 lab hours)

42. Architectural Drawing (3). Architectural drafting techniques and standards; progress from fundamentals to completion of light construction working drawings, floor plans, elevations, details, application of building codes. (Course fee, $5) (6 lab hours)

44. Descriptive Geometry (3). Prerequisite: I Ed 41 or permission of instructor. Descriptive geometry as related to design processes. A nonmathematical approach to geometric magnitudes and the relationship between points, lines and planes in space. Application of these principles in solving a variety of technological design problems. (6 lab hours)

50. Basic Building Systems (3). Exploration of theoretic principles relating to the various building systems. (2 lecture, 2 lab hours; field trips)

105. Construction Structures (3). Prerequisite: Const 5; Phys 2A; Math 5 (recommended). Properties, strength and functional applications of basic construction materials: woods, metals and concrete. Recent developments in new materials and applications. (2 lecture, 2 lab hours; field trips)

107. Advanced Construction Structures (3). Prerequisite: Const 105. Analysis of construction materials in its application to different structural systems. (Former Const 191T section)

114. Construction Management (3). Prerequisite: senior standing in Construction. The construction manager's relation to internal organization, owner, architect, engineer, public, press, legal aid, unions, trades, equipment, utilities, insurance, finances, government and others.

116. Scheduling and Control (3). Prerequisite: I T 102 recommended; senior standing. Critical path method; planning, scheduling, and control of construction projects including logic, time assignment and computation, analysis, replanning, diagramming practices, monitoring and updating, computer utilization; role of management. (6 lab hours)

120. Construction Contracts and Specifications (3). Prerequisite: Const 42. Principles and methods for developing and applying construction contracts and specifications.

122. Construction Laws (3). Laws, acts, orders, bulletins, rules and regulations affecting the construction industry.

124. Construction Labor Law (3). Prerequisite: Const 122. Study of federal and state labor-oriented regulations as applied to construction industry practices. Interaction between technical and legal aspects of collective bargaining, pre-hire agreements, hiring hall referrals, open shop construction, work force management, labor standards, employment discrimination, strikes and picketing.

131. Advanced Architectural Graphics (3). Prerequisite: Const 31. Architectural graphic techniques as tools of three dimensional analysis and representation in the design process. (6 lab hours)

132. Advanced Architectural Design (3). Prerequisite: Const 32. Development of understanding of the forces affecting the manmade environment through function identification, systems analysis, and development of architectural design solutions to problems at an intermediate level of complexity. (6 lab hours)

134. Architectural Design Problems (3). Prerequisite: Const 132 or permission of instructor. Conceptual planning and design of a large scale architectural project responding to the social and cultural context of the environment. Employing team research and analysis leading to the design and presentation on individual solutions with graphic and three-dimensional techniques. (6 lab hours)

142. Construction Detailing (3). Prerequisite: Const 42. Standard structural details for building constructed of wood, concrete, masonry, and steel. Graphic communication among architects, engineers, contractors. (6 lab hours; field trips)

150. Heavy Building Construction (3). Prerequisite: Const 105, 116, 120, senior standing. Problems and methods of solution in the construction of heavy buildings; site, excavations, foundations, framework, heavy timber, reinforced concrete, structural steel, masonry construction, and related elements. (2 lecture, 2 lab hours; field trips)

151. Heavy Construction (3). Prerequisite: Const 150. Problems and methods of solutions in heavy construction from tunneling highways, to industrial structures; administrative pro-

cedures, quantity surveying, estimating, scheduling and implementation. (2 lecture, 2 lab hours; Field trips)

160. Solar Energy in Building (3). The practical application of solar energy for hot water, space heating/cooling, swimming pool heating, housing design, solar communities and electrical production. Coverage will include performance calculations, cost analysis, collector sizing, available solar energy and solar collector materials and components.

162. Mechanical Systems in Construction (3). Heating, ventilating and air conditioning systems in buildings and plants; basic functions, specifications; construction installation and testing procedures. Lectures, demonstrations, guest speakers from industry. (Field trips)

164. Building Electrical Systems (3). Prerequisite: I Ed 52. Electrical systems for power, light, heat, signals, and communications in commercial, industrial and residential buildings. (Course fee, $7) (6 lab hours; field trips)

190. Independent Study (1–3; max see reference) See *Academic Placement—Independent Study, pages 96–97. (Course fee variable)*

191T. Technical Topics in Construction (1–3; max total 6). Prerequisite: permission of instructor, investigation and analysis of selected subjects in construction. (2–6 lab hours)

193. Supervised Work Experience (3–6; max total 6). Open only to Industrial Arts and Industrial Technology majors. Prerequisite: junior standing and permission of instructor. Supervised work experience in all technological fields relating to the various industries. Periodic consultations with instructor.

Graphic and Interior Design (GID)

70. Interior Design Foundations (3). Prerequisite: Recommend GID 71 concurrently. Social, psychological, economic, and aesthetic aspects of interior design. Integration of design principles; space planning, furniture selection, creative expression, and consumer information pertaining to living space. (Former IDH 70)

71. Interior Design Studio (2) Prerequisite: GID 70 (or concurrently). Introductory residential experience in interior design processes. Studio work; floor plans, elevations, electrical plans, spatial arrangements, graphics and design presentations, two dimensional design techniques, introduction to ink. (Course fee, $5) (4 lab hours) (Former IDH 71)

72. Interior Design Presentation (2; max total 4). Prerequisite: GID 70, 71; Const 42. Introductory experiences in interior design presentation and technique, architectural graphics, space analysis and three dimensional design problems, and use of color media. (4 lab hours) (Course fee, $5.00) (Former IDH 72)

107. Applied Color and Design (3). Introduction to the application of color and design; properties of color, simple graphic methods, and three dimensional design. Studio work and discussions. (6 lab hours) (Former IDH 107)

117. Space Planning (2). Prerequisite: GID 70, 71, Const 42. Introduction to interior space planning for typical residential and commercial projects. Design considerations; human dimensions, anthropometrics. Elderly, physically disabled and basic design reference standards. (4 lab hours) (Former IDH 172T)

141. Technical Illustration (3). Principles and practice of drawing and laws of light and shade; subject matter ranges from the simplest basic shapes to more complex real forms including renderings in pencil and opaque color of industrial products, interior, architectural, and automotive projects. (6 lab hours) (Former I Ed 141)

142. Advertising Design (3). Prerequisite: I Ed 60. Advertising and illustration problems from rough sketches to finished art work. Emphasis on good design and professional techniques. Preparation of art work for reproduction including overlays, art type, photo mechanical procedures and advertising production methods. (Course fee, $2) (6 lab hours) (Former I Ed 142)

143. Rendering (3). Prerequisite: GID 141. Exploration of a variety of illustration techniques as they apply to interior design, commercial art, and advertising. Emphasis on professional application and quality. Black and white and full color techniques. (Course fee, $7) (6 lab hours) (Former I Ed 143)

144. Perspective Drawing (3). Prerequisite: GID 141 recommended. Theory of one-, two- and three-point perspective, followed by extensive application. Laws of perspective and light and shade as applied to increasingly complex subject matter. (6 lab hours) (Former I Ed 144)

146. Advanced Rendering (3–3; max total 6) Prerequisite: GID 143. Advanced rendering for industrial design, architecture, interior commercial art and illustration. Includes limited and full color problems with emphasis on professional presentation. Individual exploration encouraged. (Former I Ed 146)

147. Advertising Illustration (3). Prerequisite: GID 141. Illustration as it applies to advertising situations. Composition and techniques designed for quick reading and ease of execution. Black and white, and limited color. (6 lab hours) (Former I Ed 147)

148. Advanced Advertising Design (3–3; max total 6). Prerequisite: GID 142. Advanced advertising/graphic design from conceptual to finished art. Includes problems and more advanced approaches relating to various media such as logo design, billboards, T.V., etc. Emphasis on production procedures, professionalism and building a strong portfolio, including critiques. (6 lab hours) (Former I Ed 148)

165. Typography (3). Prerequisite: I Ed 60. Typographic principles, elements, and technique: type classification and selection, copyfitting, design and layout. Modern composition; computerized phototypesetting systems. Paste-up techniques. (Course fee, $4) (6 lab hours; field trips) (Former IT 165)

170. Commercial Interior Design (3). Prerequisite: GID 70, 71, 72, 117; Const 42. Introduction to the application of contemporary designs and office systems as related to the field of light commercial interiors (2 lecture, 2 lab hours) (Former IDH 170)

172T. Topics in Graphic and Interior Design (1–4; max total 12 if no topic repeated). Prerequisite: GID 70, 72. Topics related to graphic and interior design. Some topics may have labs. (Former IDH 172T)

173. Interior Design Tours (3). A sampling of architecture and interior space. Tours include northern, central, and southern California architecture. Residential and contract showrooms visited. Expenses for required off-campus visits incurred by the student. (Course fee, $125) (6 lecture-lab hours) (Former IDH 173)

174. Contemporary Architecture and Interiors (3). Emergence of contemporary architecture and interiors, forces, architects and designers responsible for 20th century designs. Emphasis on change in form, style, materials and client demand. (Former IDH 174)

175A. History of Architecture and Interiors: Ancient World to Baroque Period (3). Prior course in Art History recommended. A stylistic survey of characteristics common to each historical period of architectural and furniture design. (Former IDH 175A)

175B. History of Architecture and Interiors: Baroque Period Through 19th Century (3). Prior course in Art History recommended. A stylistic survey of characteristics common to each historical period of architectural and furniture design. (Former IDH 175B)

176. Interior Design Materials (3). Prerequisite: GID 70; FM 20. Selection, specifications and computations of interior design materials available for the residential and commercial market. Consumer and specifier considerations; application, distribution, installation, and evaluation. Lecture, small group research and field trips. (Course fee, $10) (2 lecture, 2 lab hours) (Former IDH 176)

177. Professional Interior Design Practices (3). Prerequisite: GID 70, 176; Acct 3. Basic principles, procedures and office systems necessary to professionally organize and carry through a creative interior design project from the original client contact to final billing and collecting. (1 lecture, 4 lab hours) (Former IDH 177)

178A. Advanced Residential Interior Design (3). Prerequisite: GID 72, 107, 144, 170, 175A–B, 176; Const 42. A series of advanced interior design solutions for residential environments. Design for new construction, remodeling and restoration for a variety of life styles, budgets and physical conditions. Working drawings presentation techniques and specifications. (Course fee, $5) (6 lab hours) (Former IDH 178A)

178B. Advanced Commercial Interior Design (3). Prerequisite: GID 72, 107, 144, 170, 175A–B, 176; Const 42. A series of design solutions for a diversity of commercial spaces: public buildings, health care, food service, professional offices and merchandising facilities. Space planning, equipment lighting, systems, codes, layout, presentation and specifications. (6 lab hours) (Former IDH 178B)

179. Interior Design Exhibits and Competitions (2–3; total 5). Prerequisite: GID 72, 170; Const 42; permission of instructor. Provides a structure for students to participate in a design show or manufacturer interior design competition. Course can be taken for 2 units (as an assistant) or 3 units (as a student designer). (Former IDH 179)

180. Restoration and Preservation (3). Prerequisite: GID 174, 175A–B, 176 and permission of instructor. Principles and methods of restoration, case studies of the restoration and preservation of historically significant structures in the United States. Working drawings, details and specifications. (2 lecture, 2 lab hours) (Former IDH 180)

181. Interior Design Internship (3; max total 6). Prerequisite: senior standing; GID 176, 178A or 178B; permission of instructor. Supervised work experience in interior design related business or industry. (6 lab hours) (Former IDH 181)

182. Interior Lighting (3). Prerequisite: GID 70, 71, 72, 117 or concurrently, Const 42. Introduction to lighting in residential and commercial interiors as related to the field of interior design. Includes lecture, guest speakers. (Lecture 3 hours) (Field trips) (Former IDH 182)

190. Independent Study (1–3; max see reference). See *Academic Placement—Independent Study*, pages 96–97. (Course fee variable.) (Former IDH 190)

GRADUATE COURSES *(I Ed)*

(See *Course Numbering System,* p. 133.)

223. History and Philosophy of Industrial Education and Technology (3). A study of the developmental history of the technological and educational related fields of industry including philosophical and pragmatic foundations, issues, movements, and trends.

224T. Professional Topics in Industrial Education (2–3; max total 6 on master's degree with no area repeated). Advanced study in professional industrial education; administration, supervision, vocational guidance, economic, and sociological implications.

228. Evaluation in Industrial Education (3). Techniques and philosophy of evaluation in industrial education; types of test items, item analysis, and interpretation of test results; evaluation of research, facilities, textbooks, and evaluative criteria.

270. Technical Problems (2–3; max total 9 if no area repeated; max combined total with I Ed 290 is 12). Technical work in selected areas; research under supervision of instructor.

280. Problems in Industrial Education and Technology (3). Prerequisite: A S 153 and Advancement to Candidacy. Seminar in research procedures in industrial education and technology; basic bibliography, research form and methods.

281. Research Design in Industrial Education (3). Research formats and applied experimentation techniques; critical path analysis and program evaluation review techniques.

284T. Topics in Industrial Technology (2–3; max total 9 on master's degree if no area repeated). Advanced study in technical areas; current industrial practices, developments, and trends related to design, materials, and processes.

286. Safety and Related Problems in Industrial Education and Technology (3). Safety principles in occupational, industrial and school settings, safety legislation, inspections, equipment, workman's compensation, first aid, fire, noise and general safety.

287. Planning and Organizing Industrial Education Curriculum (3). Prerequisite: T Ed 161. Study of the planning, organizing, and control functions utilized in the development and management of industrial education programs and curriculum.

288. Seminar in Industrial Arts and Technology (2–3; max total 6 on master's degree). Advanced individual and group study of selected problems: organizational relationships, effective communication of ideas, technological trends and developments, economic and social considerations.

290. Independent Study (1–3; max total 6 if no area repeated; max combined total with I Ed 270 is 12). See *Academic Placement—Independent Study, pages 96–97.*

298. Project (2–4; max total 4). Prerequisite: prior advancement to candidacy. See *Criteria for Thesis and Project,* pages 467–468. Completion of an approved project appropriate to the candidate's area of specialization involving the development of a physical prototype or other similar professional problem solving activity with extensive written documentation. Abstract required.

299. Thesis (2–4; max total 4). Prerequisite: prior advancement to candidacy. See *Criteria for Thesis and Project,* pages 467–468. Preparation, completion, and submission of an acceptable thesis for the master's degree.

IN-SERVICE COURSE *(I Ed)*

(See *Course Numbering System,* p. 133.)

341. Problems in Industrial Arts (2–3; max total 6 if no area repeated)

AGRICULTURE
Plant Science and Mechanized Agriculture

School of Agriculture and Home Economics
Department of Plant Science and Mechanized Agriculture
Allan A. Hewitt, Chair
Agricultural Science Building, Room 222
(209) 294-2861

B.S. in Agricultural Science
Minor in Agriculture
M.S. in Agriculture—Plant Science Option

Programs of study:
Agricultural Engineering Technology
Crop Science (Agronomy/Vegetable Crops)
Fruit Science (Horticulture/Viticulture)
Mechanized Agriculture
Ornamental Horticulture
Plant Science (Science Emphasis)
Plant Science—Ag Business
Plant Protection
Soil Science/Irrigation

The Department of Plant Science and Mechanized Agriculture offers programs in crop sciences, fruit sciences, mechanized agriculture, ornamental horticulture, plant protection and soil science/irrigation. Courses in these areas integrate physiology, soils and nutrition, cultural modification and adaptation, protection against plant pests, marketing, storage and handling practices and mechanization to provide the student with a well-balanced background for positions in plant/soil sciences, crop production, and mechanized agriculture. In addition, courses in areas such as micropropagation, plant improvement, and seed technology provide the student with a background for further studies in plant biotechnology.

The curriculum integrates the basic sciences (e.g., biology, chemistry, mathematics, physics) and applied technologies and management skills to build a well-balanced foundation in crop production and related areas. Two of the instructional programs within the department have been nationally recognized recently for their excellence:

The **irrigation program** received the 1984 Western Region Award for Excellence in Agricultural Technology Instruction.

The **viticulture program,** which is unique in the California State University System, received the Western Region and National Awards for Excellence in Agricultural Technology Instruction in 1986. These prestigious awards are sponsored by the National Association of State Departments of Agriculture and the R. J. Reynolds Industries, Inc.

For information on facilities, see *School of Agriculture and Home Economics,* pages 117–118.



Career Opportunities

The courses offered within each of the disciplinary areas in the department provide the required background and experience to qualify graduates of these programs for the following career specialties/positions:

Agronomy—Vegetable Crops

Corporate Farm Manager
Field Crop Growing and Sales
Seed Production and Sales
Seed Technology
Agricultural Chemical Sales
Rangeland Management
Field Representative
Processing and Packaging
Marketing and Sales
Quality Control
Consulting Service

Horticulture/Viticulture

Orchard Management
Field Representative for Canneries
Packinghouse Management
Marketing of Fruit and Grapes
Chemical Company Representative
Vineyard/Orchard Appraiser
Marketing Representative
Vineyard Management
Raisin Production and Processing
Marketing and Sales of Fruit
Grower Relations
Field Representative

Mechanized Agriculture

Farm Equipment Development
Farm Building Construction
Agricultural Electrification
Sales/Service of Machinery
Machinery Management
Equipment and Plant Maintenance

Ornamental Horticulture

Landscape Design
Landscape Contractor
Landscape Maintenance
Flower Production
Floral Design and Sales
Greenhouse Manager
Turf Management
Park Management
Grounds Supervisor
Plant Propagation
Tissue Culture Technician

Plant Protection

Pest Control Adviser (Insects, Diseases, Weeds, Nematodes)
Pest Management Consultant
Urban Pest Control
Pesticide Evaluation and Registration
Sales and Grower Service
Chemical Application Supervisor
Inspection Services

Soils/Irrigation

Farm and Soil Management
Soil and Tissue Testing
Fertilizer Sales and Service
Soil Conservation Service
Soil Reclamation
Self-Farming
Banks (Land Appraisal)
Water Use Management
Systems Design
Systems Operation and Maintenance
Sales and Service of Irrigation Products
Water Quality Inspector
Irrigation Drainage Specialist
Irrigation Districts Specialist

Plant Science Option (M.S.)

Agricultural Consultant
Chemical Testing and Evaluation
Extension Farm Adviser
Field/Laboratory Technician
Plant Breeder
Rangeland Scientist
Crop Protection Specialist
Crop Physiologist
Seed Technologist
Horticulturist
Viticulturist
Research and Development Technician

Laboratory Units

See *School of Agriculture and Home Economics,* pages 117–118 .

Supervised Projects

See *School of Agriculture and Home Economics,* page 116.

Faculty

Department Chair: Allan A. Hewitt

Graduate Coordinator: Mark A. Mayse

Sayed A. Badr
Mahendra S. Bhangoo
Wayne E. Biehler
Earl H. Bowerman
James R. Brownell
O. J. Burger
Bendt A. From
Allan A. Hewitt
Mahlon M. S. Hile
Harry P. Karle
Joo I. Kim
Gary M. Koch
Charles F. Krauter
Howard J. Martin
Mark A. Mayse
Arthur J. Olney
Vincent E. Petrucci
Gary L. Ritenour
Jeffrey J. Steiner
Marinus Van Elswyk, Jr.
John H. Weiler
Julian W. Whaley

The faculty hold advanced degrees in their respective fields of specialization from the leading agricultural institutions and universities in the United States. They are well qualified teachers who, through extensive research and interaction with major agricultural industries, bring a wealth of basic and practical information into the classroom. A faculty adviser is assigned to work with each student to plan and design an individualized program of study to meet the student's educational and career objectives.

Most of the faculty are involved in one or more of the California Agricultural Technology Institute Centers (i.e., Crop Production and Protection Center, Center for Irrigation Technology and the Viticulture and Enology Research Center). The Centers offer excellent opportunities for undergraduate and graduate students to gain hands-on experience and to be involved in problem-solving research projects aimed to support California's agricultural industry.

Bachelor of Science Degree Requirements

Agricultural Science—Option I
Production Emphasis (Plant Science)

Units

General Education (including 9 upper-division units) 54
- Core
  - Category 3: Plant 100 (recommended, if one year of high school Algebra II completed)
- Breadth
  - Division 1: Chem 2A and 2B (required)
  - Division 2: Bot 10, Biol 10 or Zool 10 (required)
  - Division 8: Ag Ec 1 (recommended)
  - Division 10: CFS 38 or FScN 53 (recommended)
    - *Note:* Soil and Irrigation emphasis requires one course from Geol 2, Geog 5, or Geog 7
    - Plant Protection emphasis requires Zool 10.
- Capstone
  - Agriculture and Government Policy: Ag Ec 150 and Pl Si 150; OR
  - Energy and Society: I T 106 and P Sci 168 or Geog 134 or Econ 117
  - Either cluster recommended.

Major (including 20 upper-division units) 45
- Agricultural science foundation ..... (12)
  - Elect one course from four of these six disciplines:
    - Ag Ec
    - A Sci

FScN
Me Ag
Plant Science (Plant, Cr Sc, FS, OH, Pl Pr)
Soils Science (S I)

Plant Science core (required) ..... (13)
S I 100, 100L, 110; Pl Pr 105, 106

Career Specialty ..... (20)
Approved courses from one of the following areas (minimum 12 units); plus selected courses from other areas in consultation with adviser:
Agronomy (Crop Science): Cr Sc 101, 102, 103, 104, 120
Horticulture (Fruit Science): FS 111, 112, 113, 120, Plant 101
Irrigation: S I 111, 112, 113, 114
Ornamental Horticulture: OH 104, 105, 108, and either 101 and 102; or 106 and 107
Plant Protection: Pl Pr 101, 102, 104, 107, 108, 109
Soils: S I 101, 102, 103, 104, 134
Vegetable Crops (Crop Science): Cr Sc 111, 112, 113, 120, Plant 101
Viticulture (Fruit Science): FS 101, 102, 103, 104, 120, Plant 101
Ag Business: Ag Ec 110N, 117, 120, 130, 161

Additional Requirements 14–19
Upper Division Writing Skill (by examination or Plant 110W)
Bot 104; Chem 8; Pl Pr 103 (Ent 106), Plant 150 or Biol 120; (Ag Ec 30 for Plant Science—Ag Business Specialty only)

Electives 10–15
Courses supplementary to the major are strongly recommended.
Plant 2, 100, 102, 112, 137, SI 104, Me Ag 104, Ag Ec 28, 30, 110N, or other related disciplines

Total Requirements (including 40 upper-division units) 128

Advising Notes:

See *Advising Notes, Agricultural Science—Option II: Science Emphasis* (Agricultural Engineering Technology), page 178.

Agricultural Science—Option II
Science Emphasis (Plant Science)

Units

General Education 54
Core
Category 3: Plant 100 (recommended, if one year of high school Algebra II completed)
Breadth
Division 1: Chem 1A and 1B (required)
Division 2: Bot 1, Biol 10 or Zool 10 (required)
Division 8: Ag Ec 1 (recommended)
Division 10: CFS 38 or FScN 53 (recommended)
Note: Soil and Irrigation emphasis requires one course from Geol 2, Geog 5, or Geog 7. Plant Protection emphasis requires Zool 10.
Capstone
Agriculture and Government Policy: Ag Ec 150 and Pl Si 150; or
Energy and Society: IT 106 and P Sci 168 or Geog 134 or Econ 117
Either cluster recommended.

Major (including 20 upper-division units) 60
Agricultural science foundation ..... (12)
Elect one course from four of these six disciplines:
Ag Ec
A Sci
FScN
Me Ag
Plant Science (Cr Sc, FS, OH, Pl Pr)
Soils (S I)

Plant Science core (required) ..... (12)
S I 100, 110, Pl Pr 105, 106

Science Courses ..... (36)
Chem 8, 101 or 150, 105, 109; Bot 104; Biol 120; Zool 1; Physics 2A, 2B; and Pl Pr 103 (Ent 106)

Additional Requirements 1–3
Upper Division Writing Skill (by exam or Plant 110W)

Electives 11–13
Courses supplementary to the major are strongly recommended.
Plant 2, 100, 102, 112, 137; SI 104; Me Ag 104; Ag Ec 30, 110N; Pl Pr 109; or other related disciplines

Total Requirements (including 40 upper-division units) 128

Advising Notes:

See *Advising Notes,* Agricultural Science—Option II: Science Emphasis (Agricultural Engineering Technology), page 178.

Agricultural Science—Option I
Production Emphasis (Mechanized Agriculture)

Units

General Education (including 9 upper-division units) 54
Core
Category 3: IS 50 (if intermediate algebra and trigonometry completed)
Breadth
Division 1: Chem 2A, Physics 2A (required)
Division 2: Biol 10 or Bot 10 or Zool 10 (required)
Division 8: Ag Ec 1 (recommended)
Division 10: CFS 38 or FScN 53 (recommended)
Capstone
Energy and Society (recommended): I T 106 and P Sci 168 or Geog 134 or Econ 117

Major (including 20 upper-division units) 45
Agricultural Science foundation ..... (12)
Elect one course from four of these six disciplines:
Ag Ec
A Sci
FScN
Me Ag
Plant Science (Plant, Cr Sc, FS, OH, Pl Pr)
Soils (S I)

Mechanized Agriculture ..... (33)
Me Ag 100, 101, 103, 104, 111, 112, and other upper-division courses in consultation with adviser

Additional Requirements 13–15
Upper Division Writing Skill (by examination or Plant 110W)
I Ed 74; Ag Ec 30; S I 100, 110

Electives 14–16

Total Requirements (including 40 upper-division units) 128

Advising Notes:

See *Advising Notes,* Agricultural Science—Option II: Science Emphasis (Agricultural Engineering Technology) below.

Agricultural Science—Option II
Science Emphasis (Agricultural Engineering Technology)

Units

General Education (including 9 upper-division units) 54
- Core
  - Category 3: IS 50 (if intermediate algebra and trigonometry completed)
- Breadth
  - Division 1: Chem 1A, Physics 5A (required)
  - Division 2: Biol 10 or Bot 10 or Zool 10 (required)
  - Division 8: Ag Ec 1 (recommended)
  - Division 10: CFS 38 or FScN 53 (recommended)
- Capstone
  - Energy and Society (recommended): I T 106 and P Sci 168 or Geog 134 or Econ 117

Major (including 20 upper-division units) 60
- Agricultural science foundation..... (12)
  - Elect one course from four of these six disciplines:
    - Ag Ec
    - A Sci
    - FScN
    - Me Ag
    - Plant Science (Cr Sc, FS, OH, Pl Pr)
    - Soils (SI)
- Mechanized Agriculture.....(24)
  - Select a minimum of 24 units from courses listed below:
    - Me Ag 100, 101, 102, 103, 104, 105, 106, 109, 111, 112, 113, 115; I T 177
- Engineering.....(24)
  - Select a minimum of 24 units from courses listed below:
    - M E 26, 31, 112, 131, 134, 154; E E 70; C E 20, 121; I E 160

Additional Requirements.....13–15
- Upper Division Writing Skill (by examination or Plant 110W)*
- Math 75, 76, 77

* Students are encouraged to complete the Upper Division Writing Skills Requirement by taking the examination so as not to exceed 128 units total.

Electives.....0–1

Total Requirements (including 40 upper-division units).....128

Advising Notes:

1. Request advisee check sheet from department and make an appointment with an assigned academic adviser prior to registration each semester.
2. File an official *Program of Study* one semester prior to graduation (see *Undergraduate Degree Requirements* under the *School of Agriculture and Home Economics,* p. 116).
3. *CR/NC* grading is not permitted for courses included in the major.
4. Upper-division courses (i.e., 100 level courses) may not be applied toward the 40 upper-division unit degree requirement until 45 lower-division units toward the degree have been completed.
5. The Upper Division Writing Skills requirement can be met by passing the university examination or by taking an approved upper-division writing skills course. One unit of credit (i.e., English 100W) may be earned for passing the examination; three to four units of credit will be earned by obtaining a letter grade of *C* or higher in an approved course (e.g., Plant 110W).

Minor

A minor in agriculture consists of 21 units of which 9 must be upper division. At least 12 units must be taken in a particular department and/or discipline. The minor program is planned with an adviser and must be certified by the appropriate department chair and the school dean. The certified minor program will be filed with the Office of Evaluations.

Other Major Programs

Individualized programs of study combining plant science production and agricultural business coursework may be developed under the Agricultural Business major in consultation with an appropriate departmental adviser. A general agriculture program of study may be developed under the Agricultural Education major. An agricultural communications program of study, including courses in writing skills, agriculture, journalism, television, radio, and public relations may be developed under the Agricultural Science major.

Request advisee check sheet from department and make an appointment with an assigned academic adviser; file an official Program of Study (see *Undergraduate Degree Requirements* under the *School of Agriculture and Home Economics,* p. 116).

Master of Science Degree Requirements

The master of science degree in agriculture with authorized options in plant science and agricultural chemistry is designed to extend professional competence in agricultural research, agricultural production, agricultural teaching, and to provide the first graduate degree for students anticipating advanced graduate study in the agricultural sciences. Courses available under the plant science option are crop science (plant physiology, nutrition, plant breeding), soils and irrigation, and plant protection (pathology, nematology, entomology).

For general information, see *Graduate Programs of Study* under the *School of Agriculture and Home Economics,* page 117.

Admission Requirements

The master of science degree in agriculture with an option in plant science assumes preparation equivalent to a CSU, Fresno, undergraduate major in plant science. A major in one of the life or physical sciences is also acceptable when supplemented by plant science core courses or their equivalencies: Chem 2A–2B, 8; Zool 10; Bot 10, 104; Biol 120; Pl Pr 103, 105, 106; Plant 100 or Math 101; SI 100, 100L, and 110.

Applicants to the master's program are required to have the G.R.E. on file in the university Test Office at the time of application. A minimum G.R.E. score of 450 Verbal and 430 Quantitative, or a total of 880 must be achieved. Applicants must also have a minimum G.P.A. of 2.75 on the last 60 units.

Prerequisite Courses

Students having undergraduate majors in fields other than plant science may be admitted to the program but will be assigned additional prerequisites to clear deficiencies in their academic background. Such prerequisite course work will be assigned in addition to the minimum 30-unit master's degree course work.

Program Requirements

Under the direction of a graduate adviser each student prepares

and submits a coherent program individually designed within the following framework:

Specific Requirements—Plant Science Option, Thesis Plan

	Units
Agriculture Core: Agri 200, 201, 220	9
Required Courses: Agri 256, 257, 270	8
Approved Electives Appropriate to individually designed program (six units maximum of approved 100-level courses may be used)	9
Culminating Experience: Agri 299 (thesis)	4
Total Requirements	30

Specific Requirements—Plant Science Option, Comprehensive Exam Plan

	Units
Agriculture Core: Agri 200, 201, 220	9
Required Courses: Agri 251, 256, 257, 270	11
Approved Electives Appropriate to individually designed program (minimum of 9 units 200-level)	10
Culminating Experience: Comprehensive Exam	0
Total Requirements	30

Specific Requirements—Agricultural Chemistry Option

	Units
Agriculture Core: Agri 200, 201, 220	9
Approved Agricultural Science Electives (200-level)	6
Approved Electives, 200-level or approved 100-level courses in agricultural sciences, chemistry, or related areas	9
Seminar: Agricultural Chemistry (Chem 280) or Plant Science (Agri 270)	1–1
Culminating Experience: Agri 299 (thesis) (or Chem 299, 4 units)	4
Total Requirements	30

Students shall meet the university writing requirement by earning a minimum of 450 Verbal on the G.R.E. If this is not achieved, students shall meet the requirement by either earning a score of 80 or higher on the university writing competency examination or by earning an *A* or *B* in a designated *W* course to be specified by the graduate committee, School of Agriculture and Home Economics.

Prospective students should request the graduate student handbook from the department office. Upon admission, students should see the departmental graduate coordinator for aid in program planning and selection of a major professor.

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 University Farm.

Note: Cost to the student of extended field trips will vary each semester depending upon itinerary. Student should ask the course instructor.

Plant Science (Plant)

1. Plant and Man (3). Principles of plant structure, heredity, physiology and climate in relation to growth, adaptation and management of crops. Emphasis is placed on food and fiber crops. (Former Plant 10)

2. Plant Propagation (3). Principles and practices of propagating plants, sexual and asexual. Seeds, cuttings, layering, grafting, and budding. Propagation media and rooting aids. (2 lecture, 3 lab hours) (Former Plant 20)

80. Undergraduate Research (1–4; max total 4). Open to freshmen and sophomores with permission of instructor. Exploratory work on a suitable agricultural problem in plant science.

96. Crop Projects (1; max total 4). Prerequisite: Me Ag 3 or equivalent; Cr Sc 1, FS 1, or OH 1; and permission of instructor; concurrent participation in project program required. Theory and field application of management principles in cotton, field crops, vegetable crops, vineyard, orchard, and other appropriate plant science crop projects.

100. Applied Agricultural Statistics (3). Prerequisite: Entry Level Math Exam (E.L.M.). Introduction to experimental methods and statistical procedures used in agricultural research. Self-paced laboratories are used to become familiar with the input, editing, and analysis of data with the computer. Standard design and analysis techniques are emphasized. (1 lecture, 6 lab hours) (Former Agri 100)

101. Post-harvest Handling of Perishable Plant Crops (3). Prerequisite: Bot 10, Chem 8. Principles of handling fresh produce, floral and nursery stocks. Harvesting, packaging, storage and transportation. (3 day field trip) (Field trip fee: $50–75) (Former Plant 166)

102. Micropropagation (3). Prerequisite: college botany and chemistry. Principles of plant propagation by aseptic cell and organ culture as a means of rapid cloning, elimination of systemic plant diseases, production of somatic hybrids, ploidy change and other genetic variants for use in plant breeding. (2 lecture, 3 lab hours) (Former Plant 170)

103. Plant Hormones (3). Prerequisite: Bot 10, Chem 2A. The effects of plant hormones and other growth regulating chemicals on the physiology, growth, and development of horticultural plants. (Former Plant 155)

104. Tropical Food and Fiber (3). Prerequisite: Plant 1. Production techniques for the major agronomic, vegetable and fruit crops under tropical conditions; adaptation, culture, insect pests and diseases; storage/handling.

110W. Dimensions in Agriculture (3). Prerequisite: Engl 1. Current agricultural problems and developments; nature of agricultural industries in a changing world and interrelationships among agriculture, government, labor, and the public. Meets the Upper Division Writing Skills Requirement for graduation. (Former Agri 110W)

112. Microcomputers in Plant Science (3). Prerequisite: Math 4. An introduction to plant science problems and exercises involving the microcomputer. Crop production, soils, irrigation, and pest management data will be handled with spreadsheet and word processing programs. (2 lecture, 3 lab hours) (Former Plant 170T section)

130. Water and Man (3). The unique properties of water and the hydrologic cycle. The role of water in municipal, industrial and agricultural environments and the problems of water quantity and quality. (Former Plant 40)

134. Agricultural Climatology (3) (Same as Geog 114). Prerequisite: Geog 5 or 111. Study of micrometeorologic influences in local climates. Climatic factors influencing agriculture with specific reference to the San Joaquin Valley. Course designed for anyone interested in the relations between climate and agriculture, regardless of major. (Former Plant 170T section)

137. Apiculture (3). Prerequisite: Bot 10 or Zool 10. Biology and behavior of honeybees; hive manipulation; diseases and enemies; foraging activities in pollination; production and marketing of honey and beeswax; laws and regulations. (2 lecture, 3 lab hours) (Former Plant 91)

150. Crop Improvement (3). Prerequisite: Bot 10. Application of genetic, cytological and environmental principles to improvement of plants; heredity and variation in plants, effects of environmental factors on plant improvements, effects of self and cross fertilization, principles and results of selection and hybridization in plant improvement. (2 Saturday field trips) (Former Plant 140)

170T. Topics in Plant Science. (1–4; max total 6 per discipline if no topic repeated). Prerequisite: junior standing. Plant science, agronomy, horticulture, and other associated areas. Topics may require lab hours.

180. Undergraduate Research (1–4; max total 4). Open to juniors and seniors. Exploratory work on a suitable agricultural problem in plant science.

182. Computerized Crop Management (3). Prerequisite: Plant 112. The recording and analysis of production data such as plant nutrition, irrigation scheduling, insect population or damage and plant growth factors with a microcomputer (2 lecture, 3 lab hours)

184. Plant Science Lectures (1; max total 2). Various viewpoints on current trends in Plant Science presented by distinguished guest lecturers each class meeting. (Former Plant 170T section).

190. Independent Study (1–3; max see reference). See *Academic Placement—Independent Study,* pages 96–97.

194. Agricultural Internship (1–8; max total 8). Prerequisite: junior or senior standing and approval of internship committee. Emphasis on development of decision-making ability through industrial experience integrated with basic principles acquired in the classroom. (Former Agri 173 section)

196. Crop Projects (1; max total 4). Prerequisite: Me Ag 3 or equivalent; CS 1, FS 1, or OH 1; and permission of instructor; concurrent participation in project program required. Theory and field application of management principles in cotton, field crops, vegetable crops, vineyard, orchard, and other appropriate plant science crop projects. (Former Agri 106 section)

Crop Science—Agronomy and Vegetable Crops (Cr Sc)

1. Introduction to Agronomy and Vegetable Crops (3). (Not open to students with credit in Plant 13, Plant 14.) Principles of production for cereal, row, forage and vegetable crops. Culture, insect and disease control, harvesting, storage and marketing. (Cr Sc 1A or 1B required for majors) (Former Plant 13, Plant 14)

1A. Introduction to Agronomy Laboratory (1). (Not open to students with credit in Plant 13.) Prerequisite: Cr Sc 1 or concurrently. Land preparation, planting, cultural practices and harvesting will be conducted on selected agronomic crops grown in the San Joaquin Valley. (3 lab hours) (Former Plant 13)

1B. Introduction to Vegetable Crops Laboratory (1). (Not open to students with credit in Plant 14.) Prerequisite: Cr Sc 1 or concurrently. Culture, harvesting, storage and marketing will be done with selected vegetable crops grown in the San Joaquin Valley. (3 lab hours) (Former Plant 14)

101. Row Crops (3). (Not open to students with credit in Plant 33, Plant 123.) Prerequisite: Bot 10, Cr Sc 1. The culture of beans, cotton, sugar beets, and other fiber and oil crops; varieties, nutrition, insect, disease and weed control; harvest, storage, uses and marketing. (2 lecture, 3 lab hours) (Former Plant 33 and 123)

102. Cereal Crops (3) (Not open to students with credit in Plant 43, Plant 123.) Prerequisite: Bot 10, Cr Sc 1. The culture of barley, corn, grain sorghum, oats, rice, rye and wheat; varieties, nutrition, insect disease and weed control; harvest, storage, uses and marketing. (2 lecture, 3 lab hours; 2 Saturday field trips) (Former Plant 43 and 123)

103. Forage Corps (3). Prerequisite: Bot 10, Cr Sc 1. The culture of alfalfa, silage, irrigated pasture and range related to livestock feed enterprises; varieties, nutrition, insect, diseases and weed control; harvesting, uses and marketing. (2 lecture, 3 lab hours) (Former Plant 133)

104. Seed Production and Technology (3). (Not open to students with credit in Plant 113, Plant 143.) Prerequisite: Bot 10, Cr Sc 1. The principles of specialized agronomic seed production; harvesting, mechanical conditioning, storage, treatment and viability testing. (2 lecture, 3 lab hours; 2 Saturday field trips) (Former Plant 113, Plant 143)

105. Range Improvement (3). Prerequisite: Bot 10, Cr Sc 1. Identification of range plants; carrying capacity; methods of range improvement, grazing management, water development, rodents, fertilization, reseeding, brush removal; mountain range resources. (2 lecture, 3 lab hours; 1 Saturday field trip) (Former Plant 173)

111. Vegetable Field Crops I (3). Prerequisite: Bot 10, Cr Sc 1, Cr Sc 1B. Cultural practices, harvesting, processing, and marketing of warm season vegetables of economic importance to California and the San Joaquin Valley. (Field trip fee, $35 to $65) (2 lecture, 3 lab hours; 3-day field trip) (Former Plant 114)

112. Vegetable Field Crops II (3). Prerequisite: Bot 10, Cr Sc 1, Cr Sc 1B. Cultural practices, harvesting, processing, and marketing of cool season vegetables of economic importance to California and the San Joaquin Valley. (Field trip fee, $35 to $65) (2 lecture, 3 lab hours; 3-day field trip) (Former Plant 124)

113. Intensive Vegetable and Small Fruit Production (3). Prerequisite: Bot 10, Cr Sc 1. Intensive production of vegetables and small fruits for the small-scale grower and home gardener. Application of organic and synthetic methods of growing food. Principles of composting, mulching, crop rotation, interplanting, natural and synthetic fertilizers, biological and chemical control of insects and diseases. (2 lecture, 3 lab hours) (Former Plant 154)

120. Advanced Crop Science (3). (Not open to students with credit in Plant 183, Plant 174.) Prerequisite: Bot 104, six units Crop Science. Interrelationships between varietal development; pest resistance, modification of crop physiology in agronomic and vegetable crops; the resultant changes in production techniques; their impact on industry and the environment. (Former Plant 183, Plant 174)

Fruit Science—Viticulture and Horticulture (F S)

1. Introduction to Grape and Tree Crops (3). (Not open to students with credit in Plant 16, Plant 17.) Origin and history of the grape and the tree fruit industries, as well as their culture in California; current trends in fresh, dried and processed segments of the industry. (Former Plant 16, Plant 17)

101. Grape Production I (3). Prerequisite: Bot 10, FS 1. Current status and future of the grape industry; commercial classes of grapes; climatic and soil requirements for grape growing. Principles and practices of vineyard fertilization, cultivation, and pruning. (2 lecture, 3 lab hours) (Former Plant 107)

102. Grape Production II (3). Prerequisite: Bot 10, FS 1. Planning of new vineyards. Principles and practices of propagation, planting, and training grapes. Morphology and physiology of the grapevine and response of the vine to growth regulators and other means of improving grape quality. (2 lecture, 3 lab hours) (Former Plant 117)

103. Raisin Production and Processing (3). Prerequisite: Bot 10, FS 1. Principles and practices of raisin production; sun drying, mechanical dehydration, on-the-vine drying; new raisin processes to produce new products. (2 lecture, 3 lab hours) (Former Plant 27)

104. Grape Varieties (3). Prerequisite: Bot 10 or FS 1. Grape varieties common to California; rootstocks and species; identification, adaptability, use and acreage; taste testing fresh grapes. (Former Plant 127)

110. Fruit Species of California (3). Prerequisite: Bot 10 or FS 1. Fruit and nut species common to California, their adaptation and uses. (Former Plant 106)

111. Fruit Production I (3). Prerequisite: Bot 10 or FS 1. Adaptation of fruits to their environment; training, pruning; propagation; varieties and rootstocks; fundamentals of fall cultural practices. (2 lecture, 3 lab hours) (Former Plant 116)

112. Fruit Production II (3). Prerequisite: Bot 10 or FS 1. Fruit and vegetative development; pollination; nutrition; product utilization; fundamentals of spring cultural practices. (2 lecture, 3 lab hours) (Former Plant 126)

113. Tropical Fruit Production (3). Prerequisite: Bot 10 or FS 1. The production of fruits in tropical climates. Citrus, pineapple, papaya, mango and banana will be emphasized. (2 lecture, 3 lab hours) (Former Plant 136)

120. Orchard-Vineyard Management (3). (Not open to students with credit in Plant 186, Plant 187.) Prerequisite: Six units Fruit Science courses. Relating the various cultural techniques to the physiology of trees and vines, survey of scientific literature, new development analysis, and management of orchards and vineyards. (Field trip fee, $35 to $65) (2 lecture, 3 lab hours; 3-day field trip) (Lab A for vineyard; Lab B for orchard) (Former Plant 186, Plant 187)

Ornamental Horticulture (OH)

1. Introduction to Ornamental Horticulture (3). Planting and maintenance of the home landscape; selection, planting, fertilization, and pruning of plants; lawn planting and care. (2 lecture, 3 lab hours) (Former Plant 15)

2. Introduction to Landscape Design (3). History and development of landscape design. A study of the need for landscaping in modern man's environment. Consideration of landscaping practices for the modern home and their effect on the home microenvironment. (Former Plant 55)

3. Plant Identification (3). Identification, growth habits, culture and landscape use of shrubs, vines, ground covers, herbaceous perennials and annual bedding plants. Use of identification keys. (2 lecture, 3 lab hours) (Former Plant 25)

101. Floriculture I (3). Prerequisite: Bot 10, OH 1. The construction, operation and management of greenhouses; cultural and environmental techniques used in the production of summer and fall florist crops. (2 lecture, 3 lab hours; 1-day field trip) (Former Plant 145)

> "The Country Store is the place to go when you're in a rush between classes and need some coffee or food that's on the natural side, such as fruit, nuts, or juice. The lines aren't long, and they move quickly."
>
> *— Senior, Journalism*

102. Floriculture II (3). Prerequisite: Bot 10, OH 1. Cultural and environmental techniques used in the production of winter and spring floral crops. (2 lecture, 3 lab hours; field trip) (Former Plant 195)

103. Floral Design (3). (Not open to students with credit in Plant 65, Plant 135.) Principles and rules of design and color using plants as a media; European and Japanese influences; emphasis on American line-mass design; practices of managing a retail flower shop. An assortment of arrangements are made in lab. (Course fee: $25) (2 lecture, 3 lab hours) (Former Plant 65 and 135)

104. Nursery Management I (3). (Not open to students with credit in Plant 35, Plant 175.) Prerequisite: Bot 10, Plant 2, OH 1. Design, construction and utilization of nursery structures; production of annual and perennial nursery stock with emphasis on summer and fall nursery practices. (2 lecture, 3 lab hours) (Former Plant 35 and 175)

105. Nursery Management II (3). Prerequisite: Bot 10, Plant 2, OH 1. Production of annual and perennial nursery stock with emphasis on winter and spring nursery practices; business organization and sales. (2 lecture, 3 lab hours; field trips) (Former Plant 175)

106. Landscape Graphics (3). Prerequisite: OH 2. Lettering and graphic techniques used in developing landscape plans, including symbols and rendering techniques. Site plan, elevation and section drawing. (1 lecture, 6 lab hours) (Former Plant 115)

107. Advanced Landscape Design (4). Prerequisite: OH 3, OH 106; recommend OH 108. The analysis and solution of design problems as they relate to the site development of residential and commercial structures. (2 lecture, 6 lab hours) (Former Plant 185)

108. Ornamental Trees (3). Prerequisite: Bot 10, OH 1. Trees grown in California for landscaping, shade and ornamentation; identification, habits of growth, cultural requirements, landscape use. (2 lecture, 3 lab hours; 1-day field trip) (Former Plant 125)

109. Arboretum and Botanical Gardens (2). Prerequisite: Bot 10, OH 1. Origin and development of botanical gardens. Emphasis on U.S. and California gardens, their design and influence on city and regional park systems. (1 lecture, 3 lab hours; field trips) (Former Plant 105)

110. Turfgrass Production and Management (3). Prerequisite: Bot 10, OH 1. Production and maintenance of grass for lawns, public parks, public institutions, playgrounds, playing fields, golf courses, bowling greens; identification of turfgrasses and turfgrass seed. (2 lecture, 3 lab hours) (Former Plant 165)

Plant Protection (Pl Pr)

1. Introduction to Plant Protection (3). Origin, history and evaluation of protective measures (chemical, biological and cultural) for control of insects, diseases, weeds, and rodents in the field and around the home. (Former Plant 21)

101. Agricultural Chemical Applications (3). Prerequisite: Math 4. Application techniques of agricultural chemicals: fertilizers, insecticides, herbicides, fungicides, nematocides, fumigants. Emphasis on effective and safe use of chemicals and on equipment calibration to ensure proper rate of application. (2 lecture, 3 lab hours) (Former Plant 132)

102. Properties of Pesticides (3). Prerequisite: Chem 8. Typical uses, modes of action, mechanisms of selectivity, environmental interactions, and user safety of insecticides, herbicides, fungicides, nematocides, rodenticides and plant growth regulators. (Former Plant 151)

103. Economic Entomology (3). (See Ent 106) (Former Plant 121)

104. Plant Nematology (3). Prerequisite: Zool 10, Pl Pr 1. Morphology, life history, parasitic activity, and control of economically important nematodes with emphasis on plant-parasitic forms. (2 lecture, 3 lab hours) (Former Plant 161)

105. Weeds (3). Prerequisite: Bot 10, Chem 2A. Weed control in California. Identification of common weeds. Fundamentals of preventive, cultural, biological, physical and chemical weed control methods. (2 lecture, 3 lab hours) (Former Plant 131)

106. Plant Pathology (3). Prerequisite: Bot 10. Study of the causal agents, disease cycles, and control of plant diseases. (Former Plant 171) (2 lecture, 3 lab hours)

107. Biological Control (3). Prerequisite: Pl Pr 103. A study of the action of parasites, predators, and pathogens on the population dynamics of their host/prey organisms, with special emphasis on insects and mites. (2 lecture, 3 lab hours) (Former Plant 170T section)

108. Integrated Pest Management (3). Prerequisite: Pl Pr 103. Concepts and principles of integrated pest management. Insect and mite pest problems; sampling techniques; biology and ecology of major agricultural crop pests; integration of control measures for management of economic pests. (2 lecture, 3 lab hours) (Former Plant 191)

109. Diagnosis of Plant Diseases (3). Prerequisite: Pl Pr 106 or concurrently. Techniques on the diagnosis of specific diseases in field, greenhouse, and laboratory settings. Students will practice diagnostic techniques for the major plant diseases occurring in California. (2 lecture, 3 lab hours) (Former Pl Pr 106A, 106B, 106C; Plant 171A, 171B, 171C)

Soils/Irrigation (S I)

1. Introduction to Irrigated Soils (3). An introduction to soil science with emphasis on irrigated agriculture. General topics include basic soil properties, soil-water, plant nutrition and water management. (2 lecture, 2 lab hours)

100. Soils (3). Prerequisite: Chem 2A, Math 4. Physical, chemical and biologic properties of soils as a medium for plant growth and as a natural body, factors that influence soil formation; food and fiber production; fertilizer and soil amendment use and environmental impact; soil's role in the biosphere. (One Saturday field trip) (Former Plant 108)

100L. Soils Lab (1). Prerequisite: SI 100 (or concurrently). Physical, chemical and biological analysis. Interpretation of field and laboratory data. (3 lab hours) (Former Plant 108L)

101. Soil Fertility and Fertilizers (4) (Not open to students with credit in Plant 138, Plant 148). Prerequisite: SI 100. Evaluation of nutrient elements in soils; application of fertilizers and organic waste to meet nutrient requirements; soil and plant tissue analysis and interpretation; fertilizer recommendations for different crops. (3 lecture, 3 lab hours) (Former Plant 138, Plant 148)

102. Soil Classification and Survey (3). Prerequisite: SI 100. Influence of environmental factors on soil development; description and identification of soil profiles; mapping, and interpretation of soil maps. (2 lecture, 3 lab hours) (Former Plant 118)

103. Soil Conservation (3). Prerequisite: SI 100. Fundamental considerations of soil conservation; prediction and controlling of soil erosion; universal soil loss equation and its applications; conservation practices; irrigation and drainage; farm and watershed planning. (Former Plant 168)

104. Soil Management (3). Prerequisite: SI 100. Factors affecting soil fertility, management of soils, attaining continuous optimum productivity. Physical, chemical, and field tests for soil productivity; implications for crop management. (2 lecture, 3 lab hours; 1 Saturday field trip). (Former Plant 128)

105. Soil Chemistry (3). Prerequisite: Chem 8; SI 100. The chemistry of soils, agricultural chemical use, and waste disposal impacts. Student research project and report required. (2 lecture, 3 lab hours) (Former Plant 158)



110. Principles of Irrigation (3). Prerequisite: Math 4. Water requirements for the various crops grown in the San Joaquin Valley; irrigation scheduling and application methods. (2 lecture, 3 lab hours) (Former Plant 59)

111. Irrigation Design I (3). Prerequisite: SI 110. Design, installation and operation of irrigation systems for field, vine, and tree crops. (2 lecture, 3 lab hours) (Former Plant 129)

112. Irrigation Design II (3). Prerequisite: SI 110. Design, installation, and operation of irrigation systems used for ornamental plants, turf areas, nurseries, and greenhouse operations. (2 lecture, 3 lab hours) (Former Plant 119)

113. Water Management (3). Prerequisite: SI 110. Management and planning of irrigation systems with regard to crop water requirements, scheduling, evaluation of irrigation efficiency and salinity problems. (Former Plant 170T section)

114. Pumps and Motors (See Me Ag 115) (3).

Mechanized Agriculture (Me Ag)

Note: Suitable eye protection is required in many Mechanized Agriculture laboratory classes.

1. Introduction to Agricultural Mechanics (3). Selection, care and use of common farm tools, projects of wood and metal; mechanical skills in the field of Agriculture. (2 lecture, 3 lab hours; field trips) (Course fee variable; not less than $7.50) (Former Ag Me 15)

2. Introduction to Farm Machinery (3). The study of basic functions and applications of farm machinery and equipment. Farm machines common to the San Joaquin Valley will be observed and evaluated for effective performance in their intended purpose.

3. Farm Tractors (3). Operation and maintenance of farm tractors; operation of farm tractors under field conditions; service, maintenance and minor repair of engines of wheel and crawler type. (2 lecture, 2 lab hours; 5 hours field operation) (Former Ag Me 17)

80. Undergraduate Research (1–4; max total 4). Open to freshmen and sophomores with permission of instructor. Exploratory work on a suitable agricultural problem in mechanized agriculture. (Former Ag Me 80)

100. Agricultural Welding (3) (Not open for students with credit in Ag Me 18, Ag Me 121). Prerequisite: Me Ag 1, Math 4. Basic metallurgy, arc and gas welding processes in the construction and repair of farm machinery, welding tests, and the design of welded structures. (2 lecture, 3 lab hours) (Former Ag Me 18, Ag Me 121)

101. Farm Surveying (3). Prerequisite: Math 4. Use of level, transit, compass and laser; land leveling, laying out fields, irrigation ditches, pipelines and drains. (2 lecture, 3 lab hours) (Former Ag Me 91)

102. Farm and Landscape Structures (3) (Not open to students with credit in Ag Me 81, Ag Me 125). Prerequisite: Me Ag 1, Math 4. Site development, construction and repair of farm and landscape structures. Properties and uses of masonry, wood, concrete, and metal. (2 lecture, 3 lab hours) (Former Ag Me 81 and Ag Me 125)

103. Hydraulic Systems (3). Prerequisite: Math 4. Theory and practice in the operation, service, adjustment, and function of the component parts of fluid power systems. Design application of systems to farm machines. (2 lecture, 3 lab hours) (Former Ag Me 131)

104. Farm Machinery I (3). Prerequisite: Me Ag 1, Math 4. Theory, operation and economics of tillage tools, interaction of the soil and tool; cotton, grain, and specialized harvesting machinery and equipment. (2 lecture, 3 lab hours) (Former Ag Me 115)

105. Farm Machinery II (3). Prerequisite: Me Ag 1, Math 4. Theory, operation, and economics of orchard and field spraying equipment, field and row crop planters, cultivating tools, and haying machinery. (2 lecture, 3 lab hours) (Former Ag Me 116)

106. Agricultural Machinery Management (3). Prerequisite: Math 4. Optimization of the equipment phases of agricultural production. Theoretical and practical considerations in efficient selection, operation, cost factors, and replacement of machinery. (2 lecture, 3 lab hours)

107. Agricultural Engineering Technology (3). Prerequisite: Math 4. Elements of engineering in agriculture. Power application, equipment efficiency, cost analysis, geometry of land use, and heat transfer. Applications of modern technology in agriculture.

108. Agricultural Waste Management (3). Prerequisite: Chem 8. Study of properties of waste material, collection, transportation and mechanical handling, mechanical processing, thermal processing, composting, energy recovery and economics. (2 lecture, 3 lab hours; field trips)

109. Agricultural Processing Technology I (3). Prerequisite: Math 4. Principles of plant operations in the food and fiber industries. Basic theory of heat transfer, fluid mechanics, refrigeration, dehydration, cleaning and sorting, cost analysis and plant layout. (2 lecture, 3 lab hours) (Former Ag Me 147)

110. Agricultural Processing Technology II (3). Prerequisite: Math 4. Processing techniques including heat exchange equipment, distillation, process condition, pumps in food industry, and fluid flow measurement. (2 lecture, 3 lab hours) (Former Ag Me 148)

111. Agricultural Electrification (3) (Not open to students with credit in Ag Me 111, Ag Me 111L). Prerequisite: Math 4. Fundamentals of circuits, direct and alternating current, accepted wiring methods, lighting methods, selection, application and control of motors and other induction devices. (2 lecture, 3 lab hours) (Former Ag Me 111 and Ag Me 111L)

112. Farm Power (3). Prerequisite: Me Ag 3, Math 4. Principles of the internal combustion engine; overhauling, repairing, and adjusting of gasoline, diesel, and L.P.G. farm engines. (2 lecture, 3 lab hours) (Former Ag Me 151)

113. Diesel Engines and Power Transmissions (3). Prerequisite: Me Ag 3, Math 4. Theory and operation of diesel injection systems and turbochargers; clutches; transmissions; brakes; and tractive devices. (2 lecture, 3 lab hours) (Former Ag Me 152)

114. Small Engines (3). Prerequisite: Me Ag 1. Not open to students with credit in Me Ag 112. Theory of operation, maintenance and repair of small gasoline internal combustion engines, both 2-cycle and 4-cycle. (2 lecture, 3 lab hours) (Former Ag Me 153)

115. Pumps and Motors (3) (Same as SI 114). Prerequisite: Math 4. 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) (Former Ag Me 159)

160T. Topics in Mechanized Agriculture (1–4; max total 6 per discipline if no topic repeated). Prerequisite: junior standing, permission of instructor. Mechanized Agriculture. Topics may require lab hours. (Former Ag Me 160T)

180. Undergraduate Research (1–4; max total 4). Open to juniors or seniors with permission of instructor. Exploratory work on a suitable agricultural problem in mechanized agriculture. (Former Ag Me 180)

190. Independent Study (1–3; max see reference). *See Academic Placement—Independent Study,* pages 96–97. (Former Ag Me 190)

194. Agricultural Internship (1–8; max total 8). Prerequisite: junior or senior standing and approval of internship committee. Emphasis on development of decision-making ability through industrial experience integrated with basic principles acquired in the classroom. (Former Ag Me 194)

GRADUATE COURSES

(See Course Numbering System, p. 113.)

Agriculture (Agri)

200. Biometrics in Agriculture (3). Prerequisite: Math 101 or Plant 100 or concurrently; permission of instructor. Advanced concepts in the design of agricultural experiments. Emphasis is placed on the selection of appropriate designs to meet the objectives of well-planned experiments. Relative merits of various designs and topics in analysis, interpretation, and regression are covered.

201. Agricultural Laboratory Techniques (3). Prerequisite: One of the following courses: Bot 104, Chem 105, 109, 151, Enol 115, FScN 130, or an equivalent course from another institution; and classified standing. Agricultural problem solving through the application of advances in laboratory technology to soils, plant and animal nutrition, water quality and crop management. Theory and practice operation of scientific instruments and techniques will be taught. Student defined project and report required. (2 lecture, 3 lab hours) (Former Agri 250T section)

220. Research Communications in Agriculture (3). Prerequisite: completion of university writing requirement. Individually directed readings in a field of special concern to the student's graduate program; appropriate research writing and evaluation required.

250T. Topics in Plant Science (3; max total 12). Prerequisite: upper-division plant science appropriate to study topic, permission of instructor. Advanced studies in a given area: crop physiology, plant breeding, plant pathology, plant nutrition, or economics. Topics may require lab hours.

251. Pesticides (3). Prerequisite: Bot 10, Chem 8. Modes of action of pesticides. Absorption and translocation of pesticides. Mechanisms of pesticide specificity. Interaction with soil and soil microbes. Methods of pesticide investigations (biological assay, instrumental detection, chemical assay, chemical and microbial degradation). (2 lecture, 3 lab hours)

252. Plant Nutrition (3). Prerequisite: Bot 104. Mineral requirements of plants; the acquisition and translocation of nutrients by higher plants and the role of nutrient elements in plant development. (2 lecture, 3 lab hours)

253. Irrigation Water Quality (3). Prerequisite: permission of instructor. Effect of irrigation water quality on soil properties and plant growth. Management alternatives for salinity and toxicity problems. Suitability of using waste waters for irrigation. (2 lecture, 3 lab hours) (Former Agri 250T section)

254. Plant Hormones and Regulators (3). Prerequisite: Bot 104, Chem 8. History of discovery, chemical nature, extraction, and identification of naturally occurring hormones. Physiological and biochemical effects of plant growth substances and hormones. Mechanism of action of auxins, gibberellins, cytokinins, inhibitors (A.B.A.), ethylene, and other hormones. Agricultural impacts of growth regulators. (2 lecture, 3 lab hours)

255. Advanced Plant Breeding (3). Prerequisite: Plant 150. Principles and techniques of plant improvement, breeding methods, combining ability, sterility systems, quantitative genetic analysis, heritability estimates, experimental designs for plant breeding.

256. Plant-Water Relationships (3). Prerequisite: Bot 104. Physicochemical properties of water and solutions; movement of water, solutes, and growth regulators in plants; study of moisture-sensitive periods of various crops; factors affecting water absorption and retention.

257. Physiology of Cultivated Crops (3). Prerequisite: Bot 104. Plant cell structure and function. Response of cultivated plants to the environment. Physiology and hormonal control of flower induction, fruit set, and development. Review of pertinent current publications.

258. Plant Disease Control (3). Prerequisite: Pl Pr 106. Principles of plant disease control; agricultural chemicals used in plant disease control. Methods and theory used in application of chemicals, biological control, and breeding for resistance. Insight into industrial research and development of control measures. (2 lecture, 3 lab hours)

259. Physical Properties of Soil (3). Prerequisite: Math 4 and SI 100. Study of physical properties of soil and water as they relate to plant growth—nature and behavior of clays. Energy relationships of soil-water and its movement in soil. Soil structure, air, soil temperature and soil color as they relate to soil productivity. (2 lecture, 3 lab hours) (Former Agri 250T section)

261. Advanced Pest Management (3). Prerequisites: Pl Pr 108 or equivalent. Comprehensive study of insect, disease, and weed pest problems in important California cropping systems. Examination of complex relationships among pests, crops, and other components of these agroecosystems leads to design of economically viable and ecologically sound management programs. (2 lecture, 3 lab hours). (Former 250T section)

270. Seminar in Plant Science (1; max total 4). Prerequisite: permission of instructor. Reviews of published and/or original research in the areas of crop development, soils and irrigation, and crop protection.

290. Independent Study (1–3; max see reference). See *Academic Placement—Independent Study,* pages 96–97.

299. Thesis (2–4; max total 4). Prerequisite: Prior advancement to candidacy in Agriculture. See *Criteria for Thesis and Project,* pages 467–468. Preparation, completion, and submission of an acceptable thesis for the master's degree. Oral defense of thesis required.

IN-SERVICE COURSES *(Agri)*

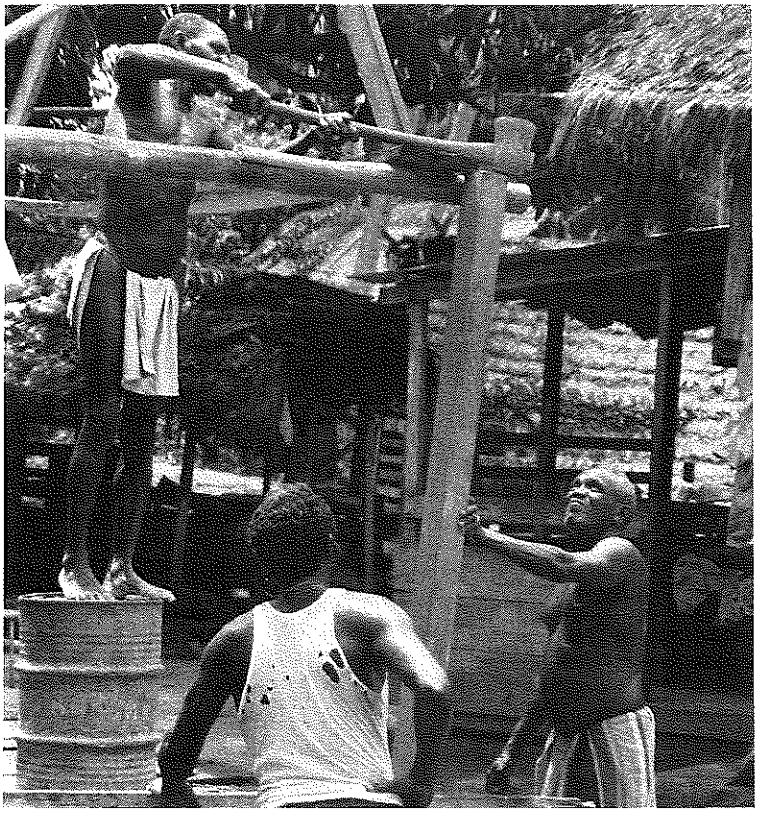
(See *Course Numbering System,* p. 133.)

300. Topics in Agriculture (1–3). Topics may require lab hours.

Anthropology

School of Social Sciences
Department of Anthropology
Dirk H. van der Elst, Chair
Social Science Bldg., Room 227
(209) 294-3002

B.A. in Anthropology
Minor in Anthropology



Anthropology is concerned with everything that is human, in all parts of the world, both present and past. It is unique among the social sciences in the breadth of its scope. Most disciplines focus only on modern civilization or concentrate on single aspects of life, such as government or the economy. Anthropology is interested in *all* human societies and views life as a complexly integrated whole that is more than the sum of its parts. It is the human experience as a whole that anthropology seeks to understand.

The breadth of anthropology is reflected in its four subfields. **Physical anthropology** studies biological evolution and how heredity conditions the ways we conduct life. **Cultural anthropology,** by studying the enormous diversity of lifeways in contemporary cultures throughout the world, attempts to explain both differences and similarities in the way different peoples carry out the process of living. **Archaeology** explores the human past far beyond the range of written records, using specialized techniques to probe human prehistory. **Linguistic anthropology** investigates the nature of language and the critical role it has played in developing our unique intellectual capabilities and behavior. The central concept in anthropology is "culture," and it is this vital idea which binds the subfields into an integrated discipline.

The Anthropology Program has three goals:

- To provide students with a clear conception of human variability and its implications, enabling them to understand and deal with lifestyles other than those of Mainstream America.
- To provide students with the broad intellectual skills that are essential to the widest range of professional careers.
- To provide students who wish to pursue a professional career in anthropology with a thorough preparation for graduate work in major doctoral programs.

Both the anthropology major and minor offer a varied but well-structured exposure to all four subfields of the discipline. The major consists of two parts. The **core curriculum** introduces both data and theory in a logical sequence of courses from basic to advanced, and includes an introduction to anthropological field work. The **elective curriculum** offers a wide selection of courses ranging from traditional topics to current issues in anthropology and the contemporary world. The minor is a briefer but balanced survey of the discipline, designed to complement any major whose graduates need to understand and deal with people from differing cultural backgrounds.

The faculty is committed to working closely with students to encourage their intellectual growth and development of skills that are both personally satisfying and in demand by employers in many career settings. Anthropology courses, especially at the advanced level, teach students to read critically, write fluently, organize information cogently, and interrelate ideas logically and creatively. For those who may consider becoming professional anthropologists, we point with considerable pride to the fact that virtually all of our graduates who have chosen this path have been accepted into a graduate program of their choice.

Career Opportunities

Career opportunities for anthropology graduates are increasingly numerous and varied because cultural pluralism and international communication are on the increase. There is a growing need for people with cross-cultural sophistication and an ability to mediate between value systems. Graduates of our department have established successful careers in such fields as personnel work, mental health, social research, education, law enforcement, business, and government.

Students who contemplate graduate study, whether in anthropology or another field, will find that our program is both rigorous and thorough. In fact, anthropological training at the undergraduate level is widely recognized as excellent preparation for advanced degrees in many professional fields. Graduates of this department have completed graduate programs in medicine, law, social work, international business, and international relations, to name a few.

Professional careers in anthropology itself usually require the Ph.D. At present, traditional academic posts are scarce. However, enterprising anthropologists throughout the nation have been remarkably successful in securing high-level positions in both government and business, usually under

titles other than "anthropologist." These successes indicate that employers at the highest levels are beginning to appreciate the unique training and capabilities of professional anthropologists. While such positions are not yet common, imaginative anthropologists who can communicate their special abilities should be able to establish rewarding careers in a variety of settings.

Faculty

Dirk H. van der Elst, *Chair*

Thomas G. Bowen
Shien-min Jen
Roger M. LaJeunesse
Mary A. Ludwig
Franklin C. L. Ng
Sydney R. Story

Bachelor of Arts Degree Requirements

	Units
I. Major Requirements [1, 2]	39–41
A. *Core Curriculum*	(21–23)
Anth 1	(3)
Anth 2 or Anth 15 [3]	(3–5)
Anth 3	(3)
Anth 50	(3)
Anth 101	(3)
Anth 102	(3)
Anth 106 or Anth 108	(3)
B. *Elective Curriculum*	(18)
One course from category III or IV	(3)
One course each from categories V–VIII	(12)
One additional course from any category II–VIII	(3)
II. General Education Requirement	54
III. Electives and Remaining Degree Requirements (See *Degree Requirements*, pp. 98–101.); may be used toward a dual major or minor.	29–31 [4] *
Total	124

* This figure takes into consideration the fact that the Department of Anthropology will allow a maximum of 8 units of General Education BREADTH courses to be applied to the Anthropology major requirements. (See *General Education*, pp. 104–111.) The applicable courses include Anth 1 and 2, or 15. Consult the anthropology department chair or faculty adviser for fur ther information.

Anthropology Minor

	Units
I. Minimum Minor Requirements [1]	21–23
A. *Core Curriculum*	(9–11)
Anth 1	(3)
Anth 2 or Anth 15	(3–5)
Anth 3	(3)
B. *Elective Curriculum*	(12)
Four 3-unit courses from categories II-VIII, but not from the same category	(12)
II. Additional University and Major units	101–103
Total	124

Notes:

1. *CR-NC* grading is not permitted in the anthropology major or minor.
2. Students majoring in anthropology must plan their program so that they take at least one course from each full-time member of the department faculty.
3. Anth 15 is a special 5-unit course that is part of the cluster-course "Man and the Natural Environment," a 17-unit program integrating anthropology, biology, and geology, and involving extended field trips in the Western States. It requires concurrent enrollment in Biol 15, Geol 15, and N Sci 15.
4. Units in this category as well as in General Education may also be applied toward a dual major or minor as appropriate (See *Dual Major,* p. 98, or departmental minor.)

Asian-American Studies

Asian-American courses familiarize students with the historical, socioeconomic, and cultural adaptions that peoples from Asia made to life in the United States. The curriculum is designed to enable professional men and women to understand and to interact with people from ethnic subcultures in our pluralistic society. The Asian-American Studies minor therefore complements any major concerned with human behavior. For more information, see *Asian-American Studies,* page 194.

COURSES

Anthropology (Anth)

A. THE CORE CURRICULUM

I. BASICS.

Anth 1, 2, and 3 are taught each semester. Anth 15, 50 and 101 are taught once each year.

1. Introduction to Physical Anthropology (3). This course examines the biological basis of being human. It compares us with our primate relatives, traces the evolution of our species from 4 million-year-old australopithecines, and accounts for the great anatomical and biochemical diversity among modern human populations.

2. Introduction to Cultural Anthropology (3). Not open to students with credit in Anth 15. This course examines the nature of culture, humanity's unique mechanism for adapting to the changing environment. It explores the varieties of human life and explains how culture has made possible the range of different and successful societies, from hunters and gatherers to industrial civilization.

3. Introduction to Prehistory (3). An exploration of human prehistory as revealed by the archaeological record. This course traces the evolution of culture, from its earliest expression in crude stone tools more than 2 million years old, through the emergence of agriculture and the first civilizations.

15. Man's Place in the Natural Environment (5). A special introduction, involving extended field trips, which integrates introductory cultural anthropology and archaeology to explain how past and present peoples have adapted to and altered biological and geological processes and features. Offered only in the fall as part of the 17-unit "Man and the Natural Environment" program which requires concurrent enrollment in Biol 15, Geol 15, and N Sci 15. (Field trip fees: $150)

50. Anthropology, Science, and Society (3). Prerequisite: Anth 2 and either Anth 1 or 3; or permission. This course explores the scientific concepts which underlie all four subfields of anthropology. It discusses the basic methodology employed

in anthropological research, and analyzes the cultural factors which influence the way in which scientific inquiry and interpretation are conducted.

101. Field Work in Anthropology (3). Prerequisite: Anth 106 or 108. An introduction to the role, the theory, and the rudimentary techniques of fieldwork in archaeology, and ethnology. Requires some field trips, including weekends. (Former Anth 119)

II. METHOD AND THEORY.

These courses are offered once each year.

102. Introduction to Linguistic Anthropology (3). Not open to students with credit in Anth 4. Prerequisite: Anth 1 or 2 or 50. A compendium of current thinking on language from a variety of interdisciplinary perspectives. Discusses brain functions and language process in human and non-human communication systems, and the roles of language in human evolution, behavior, and thought.

104. History and Theory of Anthropology (3). Prerequisite: Anth 2 and 50, or 50 taken concurrently. A history of the growth of anthropological thought through an analysis of the informational and explanatory powers of five major theoretical schools: Nineteenth-century Evolutionists, British Functionalists, Boasian Historical Particularists, Neo-Evolutionists/Marxists, and Cognitivists.

106. Contemporary Archaeology (3). Not open to students with credit in Anth 110. Prerequisite: Anth 2, 3, and 50, or permission. An overview of the nature of archaeological data and their use in reconstructing the lifeways of prehistoric peoples. Special emphasis is given the development of modern archaeological theory, the current state of the profession, and its present trends and limits. (Former Anth 110)

108. Urban Anthropology (3). Prerequisite: Anth 2, 3, and 50, or permission. The uneven distribution and explosive growth of humanity during this century evolved a lifestyle whose implications are poorly understood: urban existence. The course reviews cross-cultural and interdisciplinary evidence and explanations for urbanization, with a focus on American life. (Former Anth 117)

B. THE ELECTIVE CURRICULUM

These courses are generally taught once every two years. Topics courses are offered irregularly.

III. AREA SURVEYS

121. Peoples and Cultures of South America (3). Prerequisite: Anth 2. A survey of South American Indian tribes and civilizations since prehistoric times, based on archaeological and ethnographic data. The course explores the interplay between environment and local cultural adaptations, and examines the effect of historical contact with European peoples.

123. Peoples and Cultures of Southeast Asia (3). Prerequisite: Anth 2. An introductory survey of the cultural and historical adaptations of societies in Burma, Thailand, Laos, Cambodia, and Vietnam; and of Insular societies in Indonesia, Malaysia, and the Philippines. Examines the major effects of culture contact between East and West.

124. Peoples and Cultures of East Asia (3). Prerequisite: Anth 2. Examines cultural pluralism. Considers cultural adaptations and change among minorities such as Moslems, Tibetans, and Mongolians in China, and ethnic groups of Japan and Korea. Outlines kinship, religion, organization and technological factors in the Asiatic culture complex.

127. Peoples and Cultures of the Southwest (3). Prerequisite: Anth 2. A survey of Native American cultures of the Southwestern US and Northwestern Mexico from their prehistoric origins to the present. Emphasis placed on cultural continuity and change during the past 400 years of contact with western culture. (Former Anth 129T section)

129T. Topics in Area Surveys (1–3). Prerequisite: Anth 2. Special surveys of peoples and cultures in regions not covered in the regular curriculum, such as Africa, the Caribbean, or the Middle East.

IV. ARCHAEOLOGY

131. Prehistory of North America (3). Prerequisite: Anth 3. Traces the development of Native American cultures from the Arctic to Mesoamerica, from the peopling of the continent to early historic times. Examines the archaeological evidence for the antiquity, spread, and variation of cultural adaptations to changing ecological conditions.

132. Prehistoric Europe (3). Prerequisite: Anth 3. Outlines the peopling of the European continent, and the origin and spread of its cultures from Neanderthal times through the Middle Ages. The contributions of the Etruscans, Scythians, Slavs, Germanics, Celts, Vikings, Brits and others to the birth of history. (Former Anth 139T section)

135. Origins of Civilization (3). Prerequisite: Anth 3. The emergence of agriculture between 10,000 and 5,000 years ago led to the evolution of state organization and urban society, which completely transformed human existence. This course examines the archaeological evidence and theories that seek to explain these crucial developments.

139T. Topics in Archaeology (1–3). Prerequisite: Varies with title. Special studies in archaeological methods, techniques, history and theory, or of prehistoric culture areas not covered in the regular curriculum.

V. SOCIAL ORGANIZATION

140. Organization and Inequality (3). Prerequisite: Anth 2. Examines cooperation, competition, dominance and predation in the division of labor and its rewards. Achievement and ascription of roles and statuses on the basis of sex, age, and perceived value in bands, tribes, feudal states, caste and class systems. (Former Anth 152)

142. Anthropology of War (3). Prerequisite: Anth 2. An interdisciplinary analysis of the evolution of violence and aggression. The course examines theoretical explanations for warfare from biological determinism to elite predation, and indicates its costs and benefits to individual and group welfare at different stages of cultural complexity.

144. The Design of Cultures (3). Prerequisite: Normally open only to students who have completed the core curriculum. Analyzes culture change and its management from the perspective that any culture represents only one of many possible sets of responses to evolutionary challenges. Stresses decision-making in cultural evolution. Students collectively design a culture to fit specific hypothetical conditions. (Former Anth 109)

146. Law and Culture (3). A comparative, holistic perspective on the evolution of law. Examines its natures and origins, the basic assumptions behind legal systems, their cross-cultural expression and effects, and the directionality of legal evolution.

149T. Topics in Social Organization (1–3). Prerequisite: Varies with title. Special studies in the theory and practice of organized cooperation and conflict in nature and culture.

VI. WORLD VIEW

150W. Anthropology of Religion (3). Prerequisite: Engl 1, Anth 2. Examines the patterned belief systems of the world's tribal, peasant, and sectarian societies. Stresses the role of religion in individual and group perception, cognition, ritual, and social organization. Topics include myth, magic, shamanism, mysticism, witchcraft, trance, hallucinogens, and cultism. Meets upper division writing skills requirement for graduation. (Former Anth 145W)

153. Anthropological Psychology (3). Prerequisite: Anth 2. Outlines the psychocultural evolution of human learning, cognition, motives, values, and decision-making. Indicates axiomatic assumptions in cultures, and the effects of their acquisition and loss. Explains identity and personality as dynamic adaptations to impermanence in physiology and environment.

155. Folk Medicine (3). Prerequisite: Anth 2. A cross-cultural examination of health practices and of the cultural assumptions and attitudes on which they are based. Reviews ethnomedicine, ethnopsychiatry, and epidemiology in the health care systems of non-Westerners and of ethnic communities in pluralistic America.

159T. Topics in Ideology (1–3). Prerequisite: Varies with title. Special studies on the form and function of ideology or of specific ideological systems, constructs, or practices.

VII. PHYSICAL ANTHROPOLOGY

161. Fossil Man (3). Prerequisite: Anth 1. A critical examination of the fossil evidence for hominid forms and behaviors in the Pliocene and Pleistocene epochs. The course focuses on the specific evolutionary factors which led to the emergence of modern humanity.

162. Primates (3). Prerequisite: Anth 1. An introduction to the study of primate biological and behavioral evolution. Explores sociobiological theory in order to explain the unity and diversity of social behavior in prosimians, monkeys, and apes.

163. Human Variation (3). Prerequisite: Anth 1. A cross-cultural examination of variations in human morphology, physiology, and biochemistry. Establishes the correlation between variations in human biology and variations in climate, culture, nutrition, and disease.

164. Human Osteology (3). Prerequisite: Anth 1. Introduces a range of analytic techniques for extracting information from human skeletal remains: sexing and aging, osteometry, odontometry, the examination and diagnosis of epigenetic traits and pathological lesion, and the statistical interpretation of skeletal data.

169T. Topics in Physical Anthropology (1–3). Prerequisite: Anth 1. Special studies of the discovery and interpretation of information in physical anthropology, and of the application of this subdiscipline in legal, medical, and scientific research.

VIII. SUBCULTURAL VARIATION

170. Women: Culture and Biology (Same as W S 170) (3). Prerequisite: Anth 1 or 2. A cross-cultural and interdisciplinary analysis of the determinants of female statuses and circumstances. Examines theories, including biological and cultural determinism, which explain variations in the expression of sexuality, maturation, reproduction, and the life cycle. (Former Anth 143)

172. Ethnic Relations and Cultures (3). Prerequisite: Anth 2 or permission. The cultural and social origins of ethnicity, and its opportunities and problems for contemporary mass societies. The course offers a critical review of major theories on ethnic politics, economics, and ideology in the light of cross-cultural evidence. (Former Anth 148)

179T. Topics in Subcultural Variation (1–3). Prerequisite: Varies with title. Special studies on the origin, evolution, manifestation and implication of subcultural differences in the modern world. Selected topics may include criminal, sexual, physically impaired, or institutional subcultures.

C. THE SPECIAL CURRICULUM

Courses in this division cover topics outside of the standard curriculum, including student research projects. Credit earned in these courses applies to the 124-unit university graduation requirement, but ordinarily may not be applied to the requirements for the anthropology major or minor.

IX. POPULAR ANTHROPOLOGY

181. Cultures and Foods of East Asia (Same as AsAm 151) (3). Treats cuisine as a systematic product of the interaction between culture and ecology. Focuses on socio-cultural rather than bio-nutritional factors in the preparation and ritual implications of food in Mainland and Insular Asia. (Students learn to prepare and serve a variety of Oriental dishes.) (Former Anth 129T section, Anth 151)

182. The Cowboy in American Culture (3). This course examines the myths and realities of the American Cowboy and life on the open range. American views of individualism, community, government, and society will be investigated through the cowboy as a symbol for Everyman in the United States. (Former Anth 189T section)

186. Tradition and Change in China and Japan (3). (Same as HUM 140) This course examines the current aspirations and problems of the Chinese and Japanese in terms of their traditional cultures, and explains how their histories, values, worldviews, and intellectual traditions affect their lifestyles and their international relations today.

189T. Topics in Popular Anthropology (1–3). Anthropological approaches to topics of public interest, presented in a fashion which does not require the student to have previous experience in anthropology.

X. ADVANCED STUDY IN ANTHROPOLOGY

The following courses are normally open only to students who have completed the core curriculum.

190. Independent Study (1–3; max see reference). See *Academic Placement—Independent Study,* pages 96–97.

192. Directed Readings (1–3). Prerequisite: Normally open only to students who have completed the core curriculum. Supervised reading on a student-selected topic outside the regular curriculum, conducted under regular consultation with a faculty sponsor.

199. Honors Thesis (1–3). Prerequisite: Normally open only to those who have completed the core curriculum and who maintain a G.P.A. in Anthropology of at least 3.5. Development of a student report or paper into a manuscript of professional and publishable quality. Requires approval by an Honors Committee of three faculty members.

Art

School of Arts and Humanities
Department of Art
S. Michael Opper, Chair
Conley Art Bldg., Room 105
(209) 294-2516

B.A. in Art
Minor in Art
M.A. in Art
Single Subject Credential

The Department of Art courses lead to a bachelor's degree with a major in art, a minor in art, a secondary single-subject waiver credential in art, and a master's degree with an emphasis in studio or art history.

The Art Department offers a program of study derived from an educational conviction that a foundation in the craft or art is an essential prerequisite to the production of works exhibiting sophistication both conceptually and visually.

Courses offered in history of art examine, identify, and appreciate the visual arts from prehistory to the present. This is implemented in a manner that reflects the department's commitment to a humanities perspective based on a belief in the fundamental unity of the arts and the ideas that give them form.

The studio classes offer a variety of contemporary and traditional areas of exploration. These areas of concentrated study lead toward skilled applications and projects that demonstrate proficiency in graphic experimentation and expression.

The variety of offerings in studio art, art education, and the history of art encourage individualized strategies for formulating coherent programs. This results in a unique opportunity for occupational preparation in a variety of careers in the visual arts.

Faculty and Facilities

The faculty of the department offers a diverse, skilled, and professional approach to art education. The methods of teaching reflect distinctive yet complimentary ways and means of introducing their disciplines while guiding the students through the program with a sense of dedication and commitment to the education of artists and scholars.

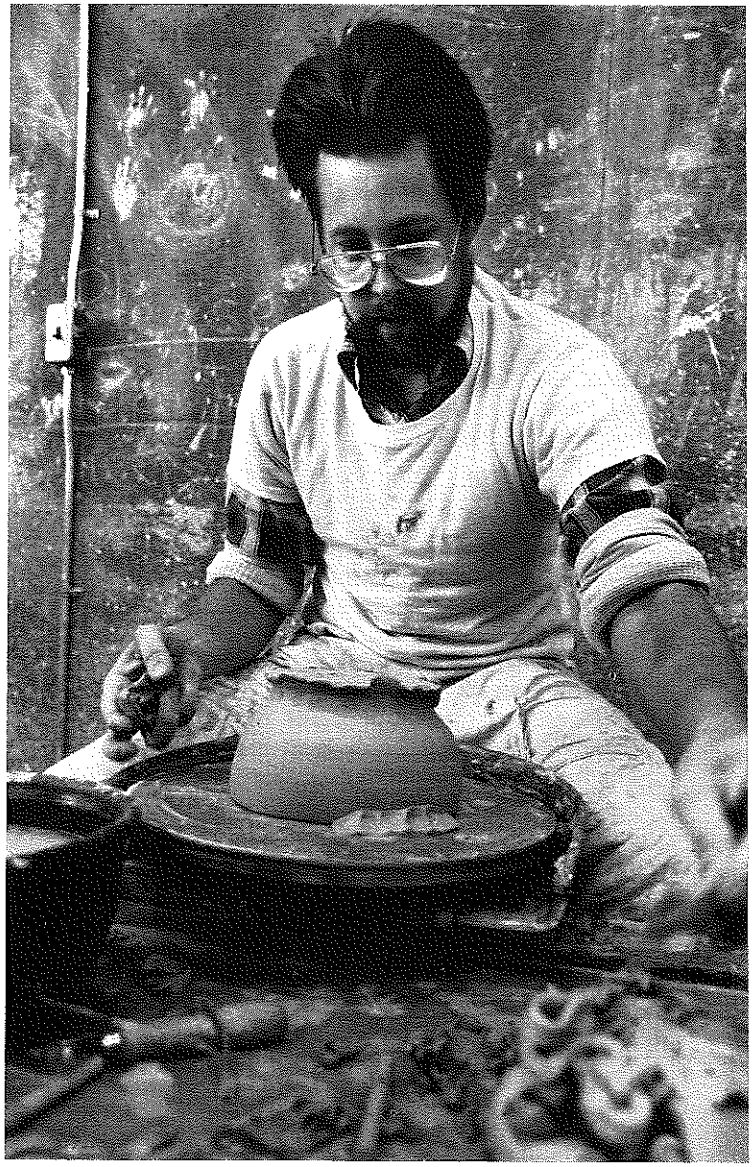
The facilities of the department not only include the requisite studios, labs, and support facilities, but include an art gallery with satellite exhibiting centers on the campus, as well as a modern auditorium in a contemporary art building complex.

Career Opportunities

Completion of the art major will enable graduates to pursue in career fields reflecting their art major emphasis in areas such as:

- Fine Artist
- Art Education in history and studio
- Applied Design
- Craft Design and Fabrication
- Applied Photography
- Ceramic and Sculptural Fabrication
- Rendering and Graphics

Prospective students should contact advisers in their area of interest to further explore specific career opportunities.



Faculty

S. Michael Opper, *Chair*

Joyce B. Aiken
Lawrence L. Anderson
Richard W. Delaney
Ara H. Dolarian
Charles F. Gaines
Frank B. Laury
Norman H. Lockwood
Edward O. Lund
Mary L. Maughelli
Thomas McDougall
William E. Minschew, Jr.
Ernest Palomino
Raphael X. Reichert
R. Gayle Smalley
Gina Strumwasser

Credential Program

The Single Subject Waiver Program in art consists of the Core: Art H 10, 11, Art 13, 21, 40, 50, 60, 70, 120, 140, Art H 130, and Art 150 or 160; Breadth: Art H 136, select three units from Art 24, 25, 26, 27, 30, or 80; select three units from Art 125, 127, 130, or 180A; select three units from Art 113, 170, 171, 174, or 175; select three units from Art H 134 or 170. Consult the departmental coordinator for teacher education.

Bachelor of Arts Degree Requirements

	Units
1. **Major requirements** (See Note 1):	42
a) Lower-division requirements:	18
Art H 10 and 11	6
Art 13	3
Art 20 or 40	3
Art Studio electives	6
b) Upper-division requirements:	24
Art H 136 and 3 additional Art H units	6
Art H or Studio electives	9
Art 102	3
Art Studio electives (one area)	6
2. **General Education requirement:**	54
3. **Electives and remaining degree requirements** (see *Degree Requirements,* pp.98–101); may be used toward a dual major or minor:	16–22 *
Total	124

* This figure takes into consideration that a maximum of two General Education-BREADTH courses may also be applied to satisfy art major requirements (see *General Education,* pp. 104–111). These can be selected from Art H 10, 11, Art 1, 13, 20, 30, 40, 50, 60, and 70. Consult the art department chair or faculty for additional details.

Notes:

1. Students with a demonstrated interest in art history may, with the approval of the chair, take up to 24 upper-division units of art history toward the major. The remaining units must include Art 102 and additional courses taken from the department's studio offerings.
2. No course used to satisfy General Education CAPSTONE requirements may be used to satisfy art major requirements.
3. *CR/NC* grading is not permitted in the art major.
4. General Education and elective units may be used toward a dual major or minor (see *Dual Major,* p. 98 or departmental minor. Consult the appropriate department chair, program coordinator, or faculty adviser for further information.

Art Minor

The art minor consists of a minimum of 21 units of which 9 must be upper division.

	Units
Art H 10 and 11	6
Art 13 and 20	6
Art H elective (upper division)	3
Art electives	6
	21

Graduate Program

The graduate program for the Master of Arts degree in art is based upon the equivalent of the undergraduate major in art at CSU, Fresno. The program provides specifically for certain nonvocational areas of interest; photography, crafts, design, drawing, painting, ceramics, sculpture, art history, and theory. With prior approval, programs with multiple concentrations may be arranged. For specific requirements consult the departmental graduate program director; for general requirements, see *Division of Graduate Studies and Research,* pages 462–471.

The Master of Arts degree program in art assumes preparation equivalent to the undergraduate major in art at CSU, Fresno. Applicants must first complete university requirements for admission to the Division of Graduate Studies and Research, including the Graduate Record Examination Aptitude Test. Applicants must also pass the Department of Art Classified Standing Screening Review.

(See also *Admission to Graduate Standing, Advancement to Candidacy, Program Requirements, and Criteria for Thesis and Project,* pp. 464–468.)

Graduate courses in art are open to holders of the B.A. degree in art who have been conditionally classified by the Department of Art.

Second-semester seniors in the undergraduate art program may also enroll in 200 series coursework in art subject to the approval of the instructor.

Master of Arts Degree Requirements

Under the direction of a graduate adviser, each student prepares and submits a coherent program individually designed within the following framework:

	Units
Approved courses in art in the 200 series (See *specific requirements*)	18–30
Approved courses in art or related fields in the 100- or 200-series	0–12
Total	30

Specific Requirements: Art 230 or 260 (3 units) and Art 298 or 299 (2–6 units). Before being allowed to exhibit, candidates expecting to participate in Art 298 will be required to have completed Art 112 or the equivalent approved by the gallery director.

For studio areas, additional units (3–9) in Art 240 or 220T are specifically recommended.

For art history areas, Art 230 and additional units (3–9) in Art 260 are specifically recommended.

Classified Standing: Concurrent with the departmental review and evaluation for classified standing, the student will submit a

tentative program outline for approval by the screening committee.

Advancement to Candidacy: Prior to the completion of 20 units of the proposed program, the student will review the program of courses with an adviser from the selected area of concentration.

COURSES

Art History (Art H)

ART HISTORY SURVEYS

10. The Ancient and Primitive World (3). An introductory survey to the arts of the prehistoric and primitive realms, including Western traditions (Egyptian, Greek, Roman, Medieval) through the mid-fourteenth century.

11. The Modern World (3). An introductory survey of Western art from the Renaissance through the twentieth century, including Mannerism, Baroque, Rococo, and Neoclassicism from the mid-fourteenth century to the beginning of the nineteenth century. (Former Art H 20)

109T. Topics in Art History (1–3; max 3 per area). Specific areas in art history not normally covered in the regular course offering. Possible topical areas include African, Pre-Columbian, Primitive, Early Migrations, American Indians, Buddhism, Chinese Painting, Happenings, History of Modern Art through Film, Museums and Monuments of Europe, Fountains of Baroque Rome, Popes and Patrons of Renaissance Europe, 17th century Holland and the Rise of the Secular in Art.

WESTERN ART SURVEYS *

120. Italian Renaissance (3). Artistic revival of classical antiquity in Italy between 1300–1550.

122. Northern Renaissance (3). Painting and sculpture from the Netherlands, France and Germany between 1300–1550.

124. Italian Baroque (3). Baroque art from its conception in Rome to its dispersal throughout Italy from 1600–1750.

126. Northern Baroque (3). Diffusion of Italian Baroque art to the Netherlands, France, Spain, Germany, and Austria between 1600–1750.

130. Modern Painting: 19th–20th Century (3). Evolution of painting and sculpture in the nineteenth and twentieth centuries. (Former Art H 130W)

131. Nineteenth Century Modern Art (3). Not open to students in Art H 130. A comprehensive survey of the revolutionary art movements in a social context, including the contribution of major masters as exemplified by artists such as Toulouse-Lautrec, Vincent van Gogh, and Picasso.

132. Twentieth Century Modern Art (3). A comprehensive survey of the revolutionary art movements in a social context including contributions of major masters: Picasso, Matisse, Dali, Jackson Pollack, Andy Warhol, and artists of today, such as Christos.

134. America (3). Art from colonial times to 1945.

136. Contemporary Art Since 1945 (3). The moving forces in the changing modes of art today.

ASIAN ART SURVEYS *

142. A Survey of Asian Art (3). A study of Asian art in a social religious context from prehistoric to present with emphasis on stylistic analysis of India, China, and Japan.

PRIMITIVE ART SURVEYS *

160. Africa (3). Sculpture, painting, architecture, festivals and personal adornment of sub-Saharan Africa. Field trips may be required.

ART OF THE AMERICAS SURVEYS *

170. North American Indian and Eskimo (3). Arts of the indigenous North American cultures from the Arctic to the American Southwest. Field trips may be required.

173. Pre-Columbian Mexico (3). Art of the Olmec through the Aztec cultures. Field trips may be required.

175. Pre-Columbian Andes (3). Art of the Chavin through the Inca cultures. Field trips may be required.

190. Independent Study (1–3; max see reference). See *Academic Placement—Independent Study,* pages 96–97.

Studio (Art)

1. Art Forms (3). Slide lecture-discussion. An introduction to art/seeing and appreciating the visual world around us.

13. Design (3). Exploration of basic art concepts through two- and three-dimensional design problems. (6 lecture-lab hours) (Former Art 93)

20. Drawing (3). Introductory course in drawing concepts, materials and techniques. (6 lecture-lab hours)

21. Figure Drawing (3). Introductory course in the basic concepts of figure drawing problems and techniques. (6 lecture-lab hours)

24. Printmaking (3). Introduction to the printmaking processes of intaglio, lithography, and woodblock printing. (Course fee, $10) (6 lecture-lab hours)

25. Lithography (3). Studio class offering in printing of drawings created on stone, and metal plates in the planographic process. Printing in black ink as well as color will be covered. (Course fee, $10) (6 lecture-lab hours)

26. Intaglio Processes (3). Studio class offering in printing in the intaglio process using such techniques as etching, drypoint, aquatint, and softground on metal plates. Printing in black ink as well as color will be covered. (Course fee, $10) (6 lecture-lab hours)

27. Screenprinting (3). Investigation into techniques of printing with a screen. Paper, film, tusche, and glue techniques for creating printing stencils will be covered. (Course fee, $15) (6 lecture-lab hours)

30. Photography (3). Introductory course in black and white photography. Basic theoretical and practical aspects of the

* See *art department course description* available at the art department.

photographic process relevant to the medium as an art form. (2 lecture, 3 lab hours)

40. Painting (3). Introduction to painting processes through studio problems and critiques. (6 lecture-lab hours)

45. Watercolor (3). Introduction to techniques in watercolor painting with emphasis on transparencies. (6 lecture-lab hours)

50. Sculpture (3). Introductory course in materials and concepts. (6 lecture-lab hours)

60. Beginning Ceramics (3). A survey of ceramic materials and their functions in the arts. Basic studio practices in the handbuilding processes, glazing, and throwing on the potter's wheel. (Course fee, $15) (6 lecture-lab hours)

70. Crafts (3). Fundamental exploration of several media (fiber, wood, leather) with emphasis on understanding the potential of the various materials. (6 lecture-lab hours)

80. Photographics: Introduction to the 35mm Camera (3). The theoretical, practical and creative aspects of 35mm black and white photography in the fine arts. Emphasis in 35mm single lens reflex camera work as well as black and white printing techniques. (Course fee, $15) (2 lecture, 3 lab hours)

100T. Topics in Art (1–3; max total 3 per area). Specific lecture area not normally covered in regular course offerings or in art history. Topics may include but are not limited to: Black art, Chicano art, cinema art, urban aesthetics, formalism in art, economics of art, careers in art, portfolio preparation. (Former Art 119T section)

101. Content and Form (3). The concept of form in art and its effects upon content, style, materials, and techniques through studio problems and critiques. (6 lecture-lab hours)

102. Philosophies of the Visual Arts (3). Visual representation of past and present art movements.

103. Guest Artists (3; max total 9). Seminar with experienced guest artists. (6 lecture-lab hours) (Former Art 111)

104. Feminist Art (3; max total 6) (Same as W S 124). Prerequisite: permission of instructor. Multimedia art in varied forms creating images based on women's unique experiences and feelings. Exposure to art and lives of women artists; development of awareness of female heritage in arts. (6 lecture-lab hours) (Former Art 114)

106. Art Tours (3; max total see below). Prerequisite: permission of instructor. May be repeated for credit; no more than 6 units may be applied on the art major. Directed trips to galleries, museums and other places of interest to the student of art; half of the semester devoted to studio projects, half to out-of-town tours; assigned papers, studio projects, discussion. (Course fee for chartered travel costs, $124) (6 lecture-lab hours) (Former Art 110)

109T. Topics in Studio Art (1–3; max total 3 per area). Prerequisite: permission of instructor. Specific advanced studio processes not normally covered in regular course offerings. Areas offered may be drawing, painting, ceramics, sculpture, photography, printmaking, design, crafts, motion-picture, art education. (6 lecture-lab hours)

112. Gallery Techniques (3; max total 9). Introduction to museum practices related to exhibition selection, design, and installation techniques. Field trips, lectures, projects, and critiques. (6 lecture-lab hours)

113. Design (3; max total 9). Prerequisite: Art 13. Continuation of the exploration of two- and three-dimensional design problems. (6 lecture-lab hours) (Former Art 193)

115. Calligraphy (3; max total 9). The art of written forms with emphasis upon the cursive and calligraphic modes of formal italic handwriting associated with contemporary Western cultures. Introduction to the use, care and construction of calligraphic tools. Development of composition, color and aesthetic interpretation. (6 lecture-lab hours)

116. Interaction of Color (3). Interaction of color as developed by Joseph Albers; basic design principles in connection with color work. (6 lecture-lab hours) (Former Art 105)

120. Drawing (3; max total 9). Prerequisite: Art 20. Investigation of advanced concepts through the techniques of the drawing medium. (6 lecture-lab hours)

121. Figure Drawing (3; max total 9). Prerequisite: Art 21. The human figure and its relevancy to advanced drawing concepts and techniques, emphasis on individual exploration in studio problems. (6 lecture-lab hours)

125. Lithography (3; max total 9). Prerequisite: Art 24 or 25. Studio class designed for advanced work in stone and metal plate printing in both black as well as color inks. Emphasis placed on imagery development. (Course fee, $10) (6 lecture-lab hours)

126. Intaglio Processes (3; max total 9). Prerequisite: Art 24 or 26. Studio class designed to offer advanced work in intaglio printing processes such as etching, engraving, drypoint, aquatint, mezzotint, color, photoengraving, inkless intaglio, viscosity printing. Emphasis placed on imagery development. (Course fee, $10) (6 lecture-lab hours)

127. Screenprinting (3; max total 9). Prerequisite: Art 27. Investigation into techniques of screenprinting. Paper, film, tusche, glue, and photo techniques for creating printing stencils will be covered. Emphasis placed on imagery development. (Course fee, $15) (6 lecture-lab hours)

130. Photography (3; max total 9). Prerequisite: Art 30. Advanced photography. Possible emphasis: black and white, color, history and appreciation, and individual production. (6 lecture-lab hours)

133. Alternative Imagery in Photography (3; max total 9). Prerequisite: Art 30. Approaches to non-traditional photography. Emphasis on producing personal imagery. (6 lecture-lab hours)

140. Intermediate Painting (3). Prerequisite: Art 40. Individual investigation of advanced aesthetic concepts; continued search into personal direction. (6 lecture-lab hours)

141. Advanced Painting (3; max total 9). Prerequisite: Art 140. Designed primarily for students with two or more semesters of experience in painting. Emphasis on individual involvement in the painting process aiming toward advanced formal and technical expression. (6 lecture-lab hours)

142. Mixed Media (3; max total 9). Prerequisite: permission of instructor. Collage, transfer, assemblage, experimental techniques. (6 lecture-lab hours)

145. Watercolor (3; max total 9). Prerequisite: Art 45. Painting with emphasis on transparencies. (6 lecture-lab hours)

150. Sculpture (3; max total 9). Prerequisite: Art 50. Individual investigation in use of materials (such as clay, plaster, metal

and wood) and techniques as applied to aesthetic concepts. (6 lecture-lab hours)

151. Sculpture: Metal Casting (3; max total 9). Prerequisite: Art 50. Continued investigation of concepts in sculpture with an emphasis on casting. (Course fee, $25) (6 lecture-lab hours)

160. Intermediate Ceramics (3; max total 9). Prerequisite: Art 60. Emphasis will be on promoting a greater awareness of form as developed on the potter's wheel. A concentrated study of surface treatments and their integration with clay forms. (Course fee, $15) (6 lecture-lab hours)

161. Advanced Ceramics (3; max total 9). Prequisite: Art 160. Advanced study in ceramic art. Individual projects in selected ceramic areas with emphasis on showing and portfolio presentation of work. (Course fee, $15) (6 lecture-lab hours)

165. Ceramic Glazes (3; max total 9). Prerequisite: Art 160, permission of instructor. Concentrated study in glazes through the empirical methods with some discussion on historical and technical integration of glazes with clay forms. (Course fee, $25) (6 lecture-lab hours)

170. Crafts (3; max total 9). Prerequisite: Art 70. Advanced design in a variety of materials. Study of contemporary designer craftsmen. (6 lecture-lab hours)

171. Textile Design: Dyeing and Printing (3; max total 9). Design relating to fabrics, tie dye, batik, and silk screen. (6 lecture-lab hours) (Former Art 137)

175. Metal Design: Object and Adornment (3; max total 12). Exploration of basic techniques (forging and fabrication) of working with copper and brass (silver optional) to create small objects and/or articles of adornment. Design and craftsmanship will be emphasized. Tool kits and most materials are provided. (6 lecture-lab hours)

176. Glass Blowing Studio (3; max total 9). A basic course in studio glass blowing techniques with technical information on glass compositions, furnace design and construction. (Course fee, $25) (6 lecture-lab hours) (Former Art 166)

179. Development of Artistic Expression (3; max total 9). Art materials and techniques, as they apply to the elementary school curriculum; introduction to current philosophies in art education, theories of the development phases of artistic expression in children. (6 lecture-lab hours) (Former Art 117)

180A. Photographics: Advanced 35mm Technique (3; max total 6). Prerequisite: Art 80, permission of instructor. Advanced work with the 35mm SLR camera. Introduction to advanced film processing and projection printing techniques for small format photographic applications. Includes the production of a photographic folio. (Course fee, $15) (2 lecture, 3 lab hours)

182. Large Format Photography (3; max total 12). Prerequisite: permission of instructor. Introduction to the large format camera. Emphasis on the creative control and application of large format image management in fine art photography. Includes the production of a photographic folio derived from studio and field assignments. (Course fee, $15) (2 lecture, 3 lab hours)

183. Photographics: Applied Photography (3; max total 12). Prerequisite: Art 182, permission of instructor. Application of advanced photographic methods in contrasting environments of field and studio. Coordinated projects in applied photography that may include: architecture, art works, prehistoric and historic site photo-documentation and interpretation. (Course fee, $15) (2 lecture, 3 lab hours)

185. Photographics: Color Photography (3; max total 12). Prerequisite: permission of instructor. Includes a survey of the unique attributes of color in photography. Emphasis on field and studio color photography and color printing. Work includes the production of a color print folio. (Course fee, $15) (2 lecture, 3 lab hours)

190. Independent Study (1–3; max see reference). See *Academic Placement—Independent Study,* page 96–97.

198. Internship in Art (1–6; max total 6). Prerequisite: permission of instructor and sponsoring agency. Experience in art related professions with agency under art department supervision. Maximum credit toward an art major, 3 units. (minimum of 3 field hours per unit) (Former Art 188)

GRADUATE COURSES

(See *Course Numbering System,* p. 133.)

220T. Topics in Studio Processes (3; max total 9). Prerequisite: permission of instructor. Investigation of advanced studio topics selected by the department. Course work includes studio productions, their critiques and evaluations.

230. Seminar in Art Theory (3; max total 9). Prerequisite: permission of instructor. Theories of the visual arts as developed by artists, critics, and philosophers, and their application to art criticism in our time. Oral presentation and defense of critical papers required. Meets graduate writing skills requirement.

240. Seminar in Art Studio (3; max total 15, max 9 in one area). Prerequisite: permission of instructor. Work individually with selected staff in chosen area of concentration. Concurrent obligation to meet regularly scheduled seminars for group progress reports and critiques.

260. Seminar in Art History (3; max total 9). Prerequisite: six units of upper-division art history and permission of instructor. Research problems applicable to art history students or studio artists. Meets graduate writing skills requirement.

290. Independent Study (1–3; max see reference). See *Academic Placement—Independent Study,* pages 96–97.

298. Project (2–6; max total 6). Prerequisite: permission of art department graduate coordinator. (See *Criteria for Thesis and Project,* pages 467–468.) Preparation, production, design, and installation of original works produced while engaged in the graduate program. Exhibit committee must approve of the work, location, and quality of installation. Abstract required.

299. Thesis (2–6; max total 6). Prerequisite: permission of art department graduate coordinator; see *Criteria for Thesis and Project,* pages 467–468. Preparation, completion, and submission of an acceptable thesis for the master's degree.

IN-SERVICE COURSES

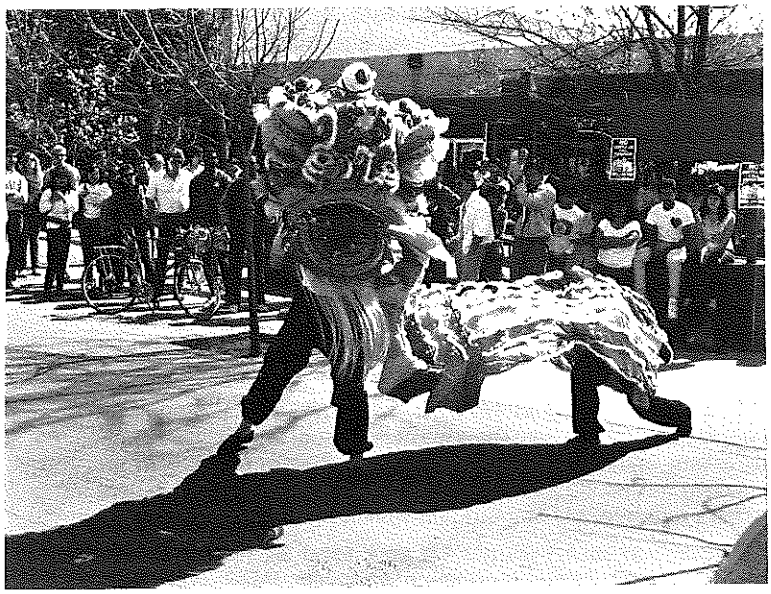
(See *Course Numbering Systems,* p. 133.)

343. Contemporary Approaches in Art (1–3; repeatable for credit).

Asian-American Studies

School of Social Sciences
Department of Anthropology
Franklin C. L. Ng, Coordinator
Social Science Bldg., Room 227
(209) 294-3002

Minor in Asian Studies



Asian-Americans constitute one of the fastest growing minority populations in California and the United States. A diverse group, Asian-Americans trace cultural heritages from nations as varied as China, Japan, Korea, the Philippines, India, and, most recently, Vietnam, Laos, and Cambodia. The Asian-American Studies Program provides students with an opportunity to learn about the cultural richness of the American past and the variety in its ethnic mosaic. The oldest theme in American history has been immigration, and knowledge of Asian-Americans promotes an awareness and appreciation for cultural pluralism and multiculturalism within the United States.

The Program

The Asian-American Studies Program offers classes that focus upon the history and contemporary experience of Asians in the United States. These courses explore themes in local and ethnic history, trans-Pacific contact, cultural change and adaptation, and inter-ethnic relations. Those who major in business, social science, international relations, and the human service professions will recognize their relevance.

The Asian-American Studies Program does not offer a major, but a minor is available for those who wish to develop a special expertise in this subject.

Asian-American Organizations

The Asian-American clubs on campus welcome new members. These organizations include the Pilipino Club, the Vietnamese Club, the Hmong Student Association, and the Amerasia Club which presents an annual campus program highlighting Asian-American communities and cultures in California.

For further information about the Asian-American Studies Program, please contact the coordinator at (209) 294-3002, or write to: Asian-American Studies Program, c/o Department of Anthropology, California State University, Fresno; Fresno, CA 93740.

Minor

The following minor requirements must include at least 9 upper-division units.

	Units
Elect from Anth 2, AsAm 110, Eth S 1	6
Elect from AsAm 15, 30, 56	6
Elect from AsAm 150, 180T, Anth 123, 124	9
Total	21

COURSES

Asian-American Studies (AsAm)

15. Introduction to Asian-American Status and Identity (3). Historical, social, and psychological factors in the changing status and identity of Americans from Asia. The course examines variables such as cultural heritage, family organization, intergenerational conflict, and the experience of racism in the changing world of Asian-Americans.

30. Japanese-Americans in the United States (3). A survey of social adaptations and cultural changes among Japanese Americans in different communities such as California and Hawaii. The course considers identity, marginality, acculturation, and cultural traditions in Japan and in American communities.

56. Chinese-Americans in the United States (3). A survey of social adaptations and cultural changes among Chinese Americans in such places as California, Hawaii, and New York. The course considers identity, marginality, acculturation, and cultural traditions in China and in American communities.

110. Asian-American Communities (3). A multidisciplinary study of Asian-American communities and their relations with the larger society. Analyzes values, life styles, processes of group identity and boundary maintenance, social organization, and cultural change. Examination of Chinese, Japanese, Pilipino, and other Asian-American subcultures.

150. Asian-American Expression (3). The study of Asian and Asian-American literature, art, music, and drama. Examines the role of creative expression as a way of understanding changing views of ethnicity and community identity.

151. Cultures and Foods of East Asia (3). (See Anth 181.)

180T. Topics in Asian-American Studies (3; max total 6). Prerequisite: AsAm 15, permission of instructor. Detailed consideration of a single topic concerning the past or present position of Asian-Americans in U.S. society.

190. Independent Study (1–3; max see reference). *See Academic Placement—Independent Study,* pages 96–97.

California State University, Fresno is a Division I–A member of the National Collegiate Athletic Association, Pacific Coast Athletic Association, Northern California Baseball Association, Pacific Soccer Conference North, and Northern Pacific Athletic Conference.

Participation in intercollegiate athletics in the sports of baseball, basketball, cross country, football, golf, soccer, swimming, tennis, track, water polo, and wrestling is offered for men, while basketball, cross country, softball, swimming/diving, tennis, track and field, and volleyball are offered for women. Participation offers opportunities for student athletes to pursue and improve athletic talent under a professional coaching staff, experience disciplined team membership, travel with team to away contests, and excel to the height of his/her ability.

Activities

Students majoring in physical education may count a maximum of 12 units of dance technique, physical education, and athletic activity courses toward the total units required for the bachelor's degree; other students may apply a maximum of 8 units to the total degree requirement.

Courses *(ATHL)*

001R. College Planning Skills (2). Seminar in skills, techniques and strategies needed in order to make a successful academic and personal adjustment to college life. *CR/NC* grading only; not applicable to baccalaureate degree requirements.

INTERCOLLEGIATE (Courses may be repeated)

*** 100. Conditioning of Athletes (1)**

176. Baseball (2). Men only.

177. Basketball (2). Men only.

178. Basketball (2). Women only.

180. Cross Country (2)

182. Football (2)

183. Golf (2)

186. Soccer (2)

187. Softball (2). Women only.

188. Swimming (2). Men only.

189. Swimming (2). Women only.

191. Tennis (2). Men only.

192. Tennis (2). Women only.

193. Track and Field (2)

196. Volleyball (2)

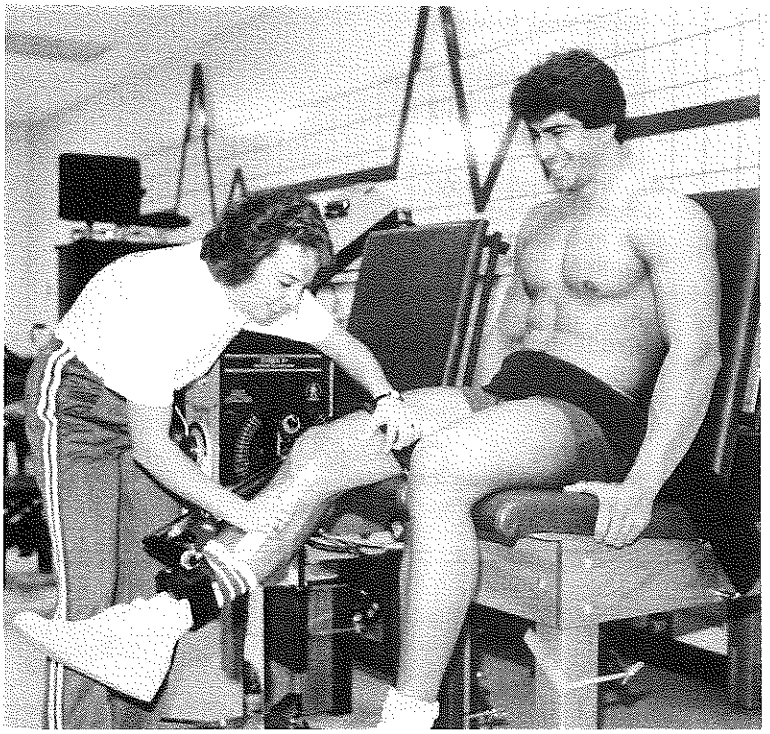
197. Water Polo (2)

199. Wrestling (2)

* Prerequisite for Athletics 100: Must be enrolled in a varsity team sport (Athletics 176–199)

Athletics

School of Health and Social Work
Department of Athletics
Gary A. Cunningham, Chair
North Gym, Room 146
(209) 294-2643



Faculty

Gary A. Cunningham, *Chair*

Ronald G. Adams
Bob G. Bennett
Robert L. Castagna
Dennis A. DeLiddo
Cynthia G. Doerner
William E. Dole
John W. Easterbrook
Jose A. Elgorriaga
Gene L. Estes
Edward L. Ferreira
Robert E. Fraley
Gregory K. Gibson
Lawrence P. Hill
Clifford W. Hysell
Robert G. Knudsen
Diane Milutinovich
Richard W. Olson
Leilani Overstreet
Thomas J. Pagani
Roberto Parker
Walter Perrin, Jr.
Billie L. Poston
William J. Robinson
Michael L. Rupcich
Paul M. Schechter
Robert L. Spencer
Bradley C. Stine
James J. Sweeney
L. Michael Watney
Michael D. Waufle
Marjorie A. Wright
Harold L. Zane

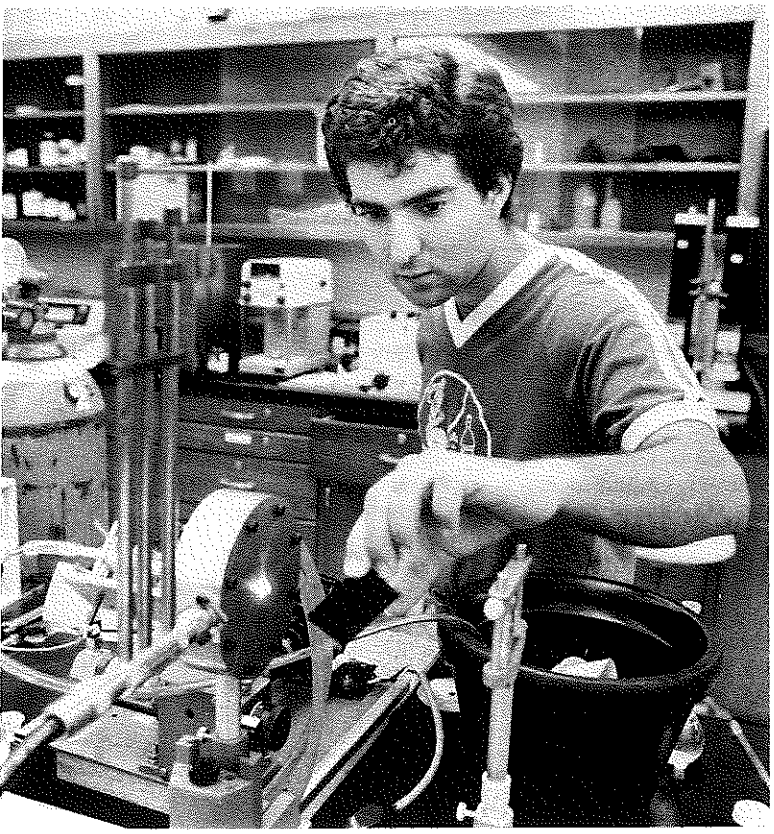
Biology

School of Natural Sciences
Department of Biology
William K. Collin, Chair
New Science Bldg., Room 106
(209) 294-2001

B.A. in Biology
Options in:
- **Biological Science**
- **Botany**
- **Environmental Biology**
- **Functional Biology**
- **Microbiology**
- **Zoology**

B.S. in Microbiology
Minor in Biology
M.A. in Biology
M.A. in Microbiology
M.S. in Marine Sciences
Single Subject Teaching
- **Credential in Life Science**

Pre-professional advising in:
- **Medicine**
- **Dentistry**
- **Pharmacy**
- **Veterinary Medicine**
- **Forestry**



The Department of Biology offers a diversified program of courses with two baccalaureate degree programs; a Bachelor of Arts in biology with six options and a Bachelor of Science in microbiology. The biology B.A. options provide for careers in teaching, agriculture-related disciplines and research, as well as preparation for advanced degrees. Biology students may also obtain preprofessional preparation for study in medicine, nursing, dentistry, veterinary medicine and other health science fields. The Microbiology B.S. degree, while especially appropriate for students wishing to enter the field of clinical laboratory technology, can also lead to careers in other areas of microbiology. In addition to courses offered at CSU, Fresno, courses and research experiences obtained at the Moss Landing Marine Laboratories on Monterey Bay may be applicable to Department of Biology degree programs.

Faculty advising plays a major role in helping students plan their academic programs. Consult with the department chair for adviser assignment. See your adviser at least once a semester for assistance in selecting a degree program and courses. Students intending to transfer from community colleges may also wish to consult an adviser. These students should complete most of their lower-division general education, major and additional requirements prior to transferring to CSU, Fresno.

Faculty and Facilities

The faculty of the Department of Biology obtained their doctorates in a wide range of biological disciplines. The laboratories accompanying most upper-division courses in the department are taught by faculty, allowing the students to work closely with their professors. Student participation in faculty research is encouraged.

The department is housed in a well-equipped, modern facility. Scientific equipment routinely used in undergraduate instruction includes two electron microscopes, ultracentrifuges, scintillation counters, spectrophotometers and computers. Greenhouse and animal-care facilities provide additional support to the instructional programs. Field courses take full advantage of Fresno's central location with trips to the Sierra Nevada and the Pacific coast.

Faculty

William K. Collin, *Chair*

Gina Arce	Howard L. Latimer
Donald J. Burdick	Thomas E. Mallory
David L. Chesemore	Jerrome Mangan
S. Fai Cheuk	J. Robert McClintic
Corinne Clay	Fred E. Schreiber
Stephen H. Ervin	Richard A. Spieler
Ronald L. Evans	Keith M. Standing
David E. Grubbs	Bert A. Tribbey
Richard Haas	Vivian A. Vidoli
Ethelynda E. Harding	Lorraine Wiley
Wallace M. Harmon	Keith H. Woodwick
Shirley A. Kovacs	Lenore Yousef

Graduate Coordinator: Keith M. Standing
Moss Landing Marine Laboratories' Coordinator: Keith H. Woodwick
Credential Adviser: Corinne Clay

Undergraduate advisers are assigned by the department chair.

Bachelor of Arts Degree (in Biology) Requirements

The biology major consists of 40–41 units, depending upon which of the six options is selected. A minimum of 24 units of major coursework must be upper division. To complete this major, students must complete the biology core, one of the options described below, and additional requirements in related fields as specified in each of the options.

BIOLOGY CORE (see Note 1, p. 199) — *Units*
Bot 1, Zool 1, Biol 130, 135, 140 ..... *15–17

* Biol 130 is not required in the microbiology option.

Options

Biological Science. This degree program is intended for the student who wishes to explore the breadth of biology. Within this option the students will take courses in microbiology, botany, physiology, entomology, and zoology, as well as courses in biology which do not emphasize any particular taxonomic group. This option is recommended for students planning entry into secondary school teaching and other careers requiring a broad coverage of biology. With the selection of appropriate elective courses, students may prepare themselves for entry into graduate and professional schools.

Students must include a minimum of 6 upper-division Botany and 6 upper-division Zool-Ent-Phy units.

Units
I. Option requirements: 40
- A. Biology Core (see Note 1, p. 199) ..... (17)
- B. Micro 20 or 104 ..... (4–5)
- C. Select a minimum of one course from each of the following categories:
  1. Biol 125, 133; Bot 107; Zool 138, 175; M Sci 103 ..... (3–4)
  2. Biol 160, 175; Bot 104, 137; Ent 110; Phy 140; Micro 161, 189; M Sci 123 ..... (3–4)
  3. Bot 106, 134, 135, 136; Ent 101; Zool 103, 108, 113, 114; M Sci 112, 113, 124, 131 ..... (3–4)
- D. Biological Science electives ..... (6–10)

II. Additional requirements: 17–19
- Chem 2A–B, 8 ..... (9)
- Math 70 or 71–72 or 75 ..... (4–6)
- Math 101 or Psych 142 ..... (4)

III. Remaining General Education unit requirements: ..... 39–42 *
IV. Electives and remaining degree requirements (see *Degree Requirements* pp. 98–101); may include a minor: 23–28

Total 124

* Of the 54 required General Education units, 15 units are satisfied by Chem 2A–B (Division 1), Bot 1, Zool 1 (Division 2) and Math 70 or 71–72 or 75 (Core) if intermediate algebra was completed in high school. If not, only 12 units are satisfied (see *General Education,* pp. 104–111). Consult the biology department chair or your faculty adviser for details.

Botany. This program is designed to serve the student who is interested in pursuing career or graduate education opportunities in the area of plant biology. Morphological, ecological, taxonomic and physiological aspects of plants are emphasized in this degree program. This preparation is consistent with the requisites of careers in environmental fields, both governmental and private, and in agriculture-related areas. The central location of Fresno, between the coast and the mountains, affords a unique opportunity for students to explore the diverse flora of California. The department has excellent facilities for both field and laboratory study in botany. The department greenhouse facility houses a unique collection of plants, both native and foreign to California.

Units
I. Option requirements: 40
- A. Biology Core (see Note 1, p. 199) ..... (17)
- B. Botany 104 ..... (4)
- C. Select a minimum of one course from each category:
  1. Bot 106, 107 ..... (3–4)
  2. Bot 134, 136, 137 ..... (3–4)
  3. Bot 135, 140, 142; M Sci 131 ..... (3–4)
- D. Upper-division electives selected from Biol, Micro, Zool-Ent-Phy courses ..... (6)
- E. Additional Botany electives ..... (1–4)

II. Additional requirements: 17–19
- Chem 2A–B, 8 ..... (9)
- Math 70 or 71–72 or 75 ..... (4–6)
- Math 101 or Psych 142 ..... (4)

III. Remaining General Education unit requirements: 39–42*
IV. Electives and remaining degree requirements (see *Degree Requirements,* pp. 98–101); may include a minor 23–28

Total 124

* Of the 54 required General Education units, 15 units are satisfied by Chem 2A–B (Division 1), Bot 1, Zool 1 (Division 2) and Math 70 or 71–72 or 75 (Core) if intermediate algebra was completed in high school. If not, only 12 units are satisfied (see General Education, pp. 104–111.). Consult biology department chair or your faculty adviser for details.

Environmental Biology. This major is intended for those students who are interested in a field program in the biological sciences. The integration of the courses in this program provide students in-depth instruction in theoretical and applied ecology, both plant and animal, in fisheries, wildlife management, aquatic and terrestrial ecology, and in conjunction with the Moss Landing Marine Laboratories, marine ecology. Sufficient morphologic and taxonomic background is provided in the areas of entomology, invertebrate zoology, vertebrate zoology, and botany. Students completing this option are well prepared for entry into careers in governmental field research (local, state,

and federal agencies), in agriculture-related areas, environmental law, and into advanced study programs leading to graduate degrees. With selection of appropriate optional courses, students may secure an emphasis in marine sciences.

	Units
I. Option requirements:	40
A. Biology Core (see Note 1, p. 199)	(17)
B. Select a minimum of one course from two of the following categories:	(7–8)
1. Bot 106, 142; M Sci 131	
2. Ent 101; Zool 114; M Sci 124	
3. Zool 103, 113; M Sci 112, 113	
C. Select a minimum of one course from two of the following categories:	(6–7)
1. Biol 133; Zool 136; M Sci 103, 144, 161	
2. Bot 107	
3. Zool 134, 138	
D. Select one course from: Bot 104; Phy 140; Micro 20, 104; M Sci 123	(4–5)
E. Additional Biological Science electives	(3–6)
II. Additional requirements:	20–23
Chem 2A–B, 8	(9)
Math 70 or 71–72 or 75	(4–6)
Math 101 or Psych 142	(4)
A minimum of one course from C Sci 20; Phys 2A; M Sci 142, 143; Geol 1, 105; SI 101	(3–4)
III. Remaining General Education unit requirements:	39–42 *
IV. Electives and remaining degree requirements (see *Degree Requirements,* pp. 98–101); may include a minor	19–25
Total	124

* Of the 54 required General Education units, 15 units are satisfied by Chem 2A–B (Division 1), Bot 1, Zool 1 (Division 2) and Math 70 or 71–72 or 75 (Core) if intermediate algebra was completed in high school. If not, only 12 units are satisfied (see General Education, pp. 104–111). Consult biology department chair or your faculty adviser for details.

Functional Biology. This degree option focuses on the areas of biology which interface closely with chemistry, including cell and molecular biology, genetics, and physiology. Students interested in pre-professional training in medicine often select this option. Students completing this degree program typically continue their education in professional or graduate schools in pursuit of advanced degrees.

	Units
I. Option requirements:	40
A. Biology Core (see Note 1, p. 199)	(17)
B. Select at least two courses from Biol 160, 175; Micro 104, 189	(7–9)
C. Select at least two courses from Bot 104; Ent 110; Phy 140; Micro 161; M Sci 123	(7–8)
D. Additional Biological Science electives	(6–9)
II. Additional requirements:	41–44
Chem 1A–B, 128A–B, 129A or 109, 105, 150 or 155	(25–26)
Phys 2A–B	(8)
Math 70 or 71–72 or 75	(4–6)
Math 101 or Psych 142	(4)
III. Remaining General Education unit requirements:	39–42 *
IV. Electives and remaining degree requirements (see *Degree Requirements,* pp. 98–101):	0–4
Total	124–126

* Of the 54 required General Education units, 15 units are satisfied by Chem 2A–B (Division 1), Bot 1, Zool 1 (Division 2) and Math 70 or 71–72 or 75 (Core) if intermediate algebra was completed in high school. If not, only 12 units are satisfied (see General Education, pp. 104–111). Consult biology department chair or your faculty adviser for details.

Microbiology. This option is intended as an alternative for students who have interests in areas of microbiology other than those included in the microbiology, B.S. degree program. In particular, medical microbiology is not emphasized as in the B.S. degree program, although students may elect courses in this area as elective choices. Core courses in biology, microbiology and chemistry provide a firm basis for advanced study in microbiology and molecular biology. Students may specialize in applied aspects of the field, including environmental and industrial microbiology and medical technology with selection of appropriate option elective courses. Students completing this option are prepared for careers in a variety of fields and for entry into graduate study in microbiology and molecular biology. Graduates in this option are eligible for certification by examination as registered microbiologists through the American Society for Microbiology.

	Units
I. Option requirements:	41
A. Biology Core (see Note 1, p. 199)	(15)
B. Micro 104, 125, 161, 189	(17)
C. Select two courses from Bot 140, 142; Ent 107; FScN 171; H S 109; Micro 117, 118, 130, 150, 185; Zool 107, 108, 115, 158	(6–10)
D. Select at least one upper-division Biology Department course other than those listed above.	(3–4)
II. Additional requirements:	39–41
Chem 1A–B, 8, 105, 109, 150 or 155	(23)
Phys 2A–B	(8)
Math 70 or 71–72 or 75	(4–6)
Math 101 or Psych 142	(4)
III. Remaining General Education unit requirements:	39–42 *
IV. Electives and remaining degree requirements (see *Degree Requirements,* pp. 98–101):	0–5
Total	124

* Of the 54 required General Education units, 15 units are satisfied by Chem 2A–B (Division 1), Bot 1, Zool 1 (Division 2) and Math 70 or 71–72 or 75 (Core) if intermediate algebra was completed in high school. If not, only 12 units are satisfied (see General Education, pp. 104–111). Consult biology department chair or your faculty adviser for details.

Zoology. This degree program is intended to serve the student who is interested in pursuing career or graduate education opportunities in the area of animal biology. Morphological, ecological, taxonomic, and physiological aspects of animals (vertebrates and invertebrates) are emphasized in the various courses comprising this option. The department has excellent teaching collections of preserved animals which are used effectively in the teaching program. Students interested in field studies have excellent opportunities within this program. With selection of appropriate optional courses, the student may obtain an emphasis in entomology in this degree option.

	Units
I. Option requirements:	40
A. Biology core (see Note 1, p. 199)	(17)
B. Select a minimum of one course from each of the following categories:	
1. Ent 110; Phy 140; M Sci 123	(3–4)
2. Ent 101; Zool 108, 114; M Sci 124	(3–4)
3. Zool 103, 113, 160	(4)
C. Upper-division electives selected from Biol, Micro, or Bot courses	(6)
D. Additional Zool-Ent-Phy electives	(5–7)

II. Additional requirements:.....17–19
Chem 2A–B, 8.....(9)
Math 70 or 71–72 or 75.....(4–6)
Math 101 or Psych 142.....(4)
III. Remaining General Education unit requirements:.....39–42 *
IV. Electives and remaining degree requirements:
(see *Degree Requirements,* pp. 98–101); may be used toward a minor.....23–28
Total.....124

* Of the 54 required General Education units, 15 units are satisfied by Chem 2A–B (Division 1), Bot 1, Zool 1 (Division 2) and Math 70 or 71–72 or 75 (Core) if intermediate algebra was completed in high school. If not, only 12 units are satisfied (see General Education, pp. 104–111). Consult the biology department chair or your faculty adviser for details.

Notes for all Bachelor of Arts in biology options:

1. B.A. Biology majors who have taken introductory sequences other than Bot 1 or Zool 1 must consult with the department chair or faculty adviser for equivalency evaluation prior to beginning their upper-division coursework. Biol 130 is not required in the Microbiology option.
2. Chem 1A–B may be taken as a substitute for Chem 2A–B and Chem 128A–B may substitute for Chem 8. The reverse substitutions are not permissible. Pre-medical students should take Chem 1A–B and 128A–B instead of Chem 2A–B and 8.
3. B.A. Biology majors selecting the Functional Biology and Microbiology options will complete a minor in Chemistry and should request the minor on their application for graduation. Consult the chemistry department chair for details (see *Chemistry Minor,* pp. 232–233).
4. No course used to satisfy General Education CAPSTONE requirements may be used to satisfy Biology major requirements.
5. *CR/NC* grading is not permitted in the Biology major.
6. General Education, additional and elective requirements may be used toward a dual major or minor (see *Dual Major,* p. 98 or departmental *minor*). Consult the appropriate department chair, program coordinator, or faculty adviser for additional information.

Suggested Sequence of Courses for Bachelor of Arts Degree Major

In addition to courses required for the major, general education requirements and electives should be included to bring total to 15–17 units per semester. A total of 124 units must be included for the Bachelor of Arts degree. Electives may include minor and credential requirements. (See *Degrees and Credentials,* pp. 98–101.)

During the first two years, students should attempt to complete most general education requirements; the constitution and government requirements; Zool 1 and Bot 1; and all additional lower-division requirements in the option they have selected. Biol 130, 135, 140, and Math 101 or Psych 142 should be completed as early as possible after becoming eligible to receive upper-division credit, preferably no later than the end of the third year. The remainder of the third and fourth years should be spent completing requirements for the selected option, and electives in biology and other fields.

Bachelor of Science Degree (in Microbiology) Requirements

The Bachelor of Science degree in microbiology is offered for students preparing for careers in microbiology and laboratory technology, especially clinical laboratory technology. This degree requires 128 units. With judicious selection of electives, this major may also serve as preparation for graduate study and public health or industrial microbiology careers. Such careers would include the fermentation industries, pollution control, food technology, biologics production, and others.

Units

I. Major requirements:.....39
Micro 104, 117, 118, 150, 185.....(22)
Phy 65.....(5)
Zool 1, 107, 158.....(12)
II. Additional requirements:.....32
Bot 10.....(3)
Chem 2A–B, 8, 105, 109, 150, 151, 153, 154.....(26)
Phys 125.....(3)
III. Remaining General Education unit requirements:.....40–42 *
IV. Electives and remaining degree requirements
(see *Degree Requirements,* pp. 98–101); maybe used toward a minor.....15–17 *
Total.....128

* Of the 54 required General Education units, 14 units are satisfied by Chem 2A–B (Division 1), Bot 10 (Division 2) and Zool 1 (Core) if intermediate algebra was completed in high school. If not, only 12 units are satisfied (see General Education, pp. 104–111). Consult biology department chair or your faculty adviser for details.

Notes for the Bachelor of Science in Microbiology major.

1. No course used to satisfy General Education CAPSTONE requirements may be used to satisfy Microbiology major requirements.
2. *CR/NC* grading is not permitted in the B.S. Microbiology major.
3. General Education, additional, and elective requirements may be used toward a dual major or minor (see *Dual Major,* p. 98 or departmental minor). Consult the appropriate department chair, program coordinator or faculty adviser for further information.
4. B.S. Microbiology majors will complete a minor in Chemistry and should request the minor on their application for graduation. Consult the chemistry department chair for details (see *Chemistry Minor,* pp. 232–233).

Suggested Sequence of Courses for Bachelor of Science Degree Major

1st year: Bot 10; Zool 1; Chem 2A–B
2nd year: Chem 8, 105, 109; Micro 104; Phy 65
3rd year: Micro 117; Phys 125; Zool 107, 158
4th year: Micro 118, 150, 185; Chem 150, 151, 153, 154

Biology Minor

The biology minor consists of a minimum of 20 units of which 12 must be upper division.

Units

Bot 10 and Zool 10 or equivalents.....6–10
An approved field course (see below).....3–4
Biol 130 or Micro 104; Biol 135, 140.....7–10
Biology electives (upper division).....0–4
20

Approved Field Courses: Biol 133; Bot 106, 107; Ent 101; Zool 113, 114, 134, 135, 137, 138, 140, 165.

Credential Program

The single subject waiver program for Life Science (Biology) consists of Bot 1; Zool 1; Biol 125, 130, 135, 140; Micro 20 or 104; Chem 2A–B, 8; Geol 1 or 2, 2L; Phys 2A–B; C Sci 20 and one course from each of the following: (1) Bot 106, 107; (2) Biol 133; Ent 101; Zool 113, 114; (3) Bot 104; Phy 65, 140.

For program planning in science, consult the biology departmental coordinator for teacher education each semester.

Master of Arts and Master of Science Degrees

The biology department offers Master of Arts degrees in biology and microbiology and a Master of Science degree in marine sciences.

Graduate Programs

The Master of Arts degree program in biology is designed to extend competence for biological research, biological field work, the teaching of biological science, and to provide a basis for advanced graduate study at a university offering the doctoral degree.

The Master of Arts degree in microbiology functions to provide advanced educational opportunities for certain in-service people (e.g., medical technologists) as well as those newly completing the baccalaureate degree. The curriculum is designed to meet the needs of a variety of such people, including those seeking the Master of Arts degree as a terminal graduate degree for professional advancement as well as those planning further education leading to the doctorate in bacteriology, microbiology, or molecular biology.

The Master of Science in marine sciences degree program will provide a practical and theoretical education for marine specialists, scientists and teachers planning to enter marine-related careers or fields of study. This program provides extensive field and laboratory work by taking full advantage of Moss Landing Marine Laboratories' unique location which allows immediate access to deep water over the Monterey Submarine Canyon, to Elkhorn Slough and to a wide range of ocean and coastal environments. Students will be exposed to interdepartmental work and a field facility for advanced study in the marine sciences which would be impossible to duplicate at the home campus of CSU, Fresno.

Admission to a graduate program in the biology department requires attainment of classified graduate standing by satisfaction of biology department classification procedures. Unclassified post-baccalaureate standing allows students to pursue coursework objectives but does not constitute admission to graduate curricula. Attainment of classified standing constitutes formal admission to the program. Classification procedures vary with each biology department program and are listed below.

(See also *Admission to Graduate Standing, Advancement to Candidacy, Program Requirements,* and *Criteria for Thesis and Project,* pp. 464—468.)

Master of Arts Degree (in Biology) Requirements

The Master of Arts degree program in biology assumes preparation equivalent to a CSU, Fresno undergraduate major in biology. Students having undergraduate majors in fields other than the biological sciences may enter the program, but may reasonably expect additional requirements to produce equivalent preparation. Academic breadth in the biological sciences is assumed to be part of the student's undergraduate preparation.

After obtaining a list of specific departmental requirements from the graduate coordinator of the biology department, the student, under the direction of a graduate adviser, prepares and submits a coherent program individually designed within the following framework:

	Units
Courses in 200-series (See *specific requirements*)	15
Electives	15
Total (at least 18 units in biological sciences)	**30**

Specific Requirements: Biol 299. Other courses will be specified upon examination of the student's record and in accordance with the recommendation of the advisory committee.

Admission to classified graduate standing must be recommended by the graduate committee of the biology department. The recommendation will be based upon a classification score which combines G.R.E. scores and undergraduate G.P.A. and is computed in the following manner.

Classification Score = (G.P.A. × 40)
+ (G.R.E. Biology %ile × 2)
+ G.R.E. Verbal %ile
+ G.R.E. Quantitative %ile

All percentiles will be based upon norms established by the Educational Testing Service and in effect at the time the test was taken. Prior to the 8th week of the semester, students should meet with the graduate coordinator to discuss the graduate committee's decision. Students will be assigned to one of the following three categories.

1. *Classified Graduate Standing:* Students having a classification score of 340 or better will automatically be recommended for classified graduate standing.
2. *Conditional Classified Standing:* Students having a classification score between 260 and 339 will be recommended for conditional classified standing. This does not constitute classification but indicates that additional specific requirements must be completed to achieve classified standing.
3. *Unclassified Post-baccalaureate Standing:* Students scoring below 260 are assigned unclassified status and should seek counseling from the department graduate coordinator.

Master of Arts Degree (in Microbiology) Requirements

The successful completion of courses judged to be equivalent to the chemistry and physics requirements in the microbiology major for the B.A. degree and to Microbiology 104 and 161, as given at CSU, Fresno, is the basis for determining the acceptability of background preparation for the curriculum for the Master of Arts degree in microbiology. Students whose backgrounds are judged deficient will be required to clear the deficiency as an added prerequisite for advancement to candidacy.

(See also *Admission to Graduate Standing, Advancement to Candidacy, Program Requirements,* and *Criteria for Thesis and Project,* pp. 464—468.)

In consultation with the thesis committee the student prepares and submits a coherent program individually designed within the framework given below:

	Units
Required courses in microbiology, 200-series (See *specific requirements*)	11
Course in chemistry or mathematics, or physics	3
Electives	16
Total (at least 15 units in 200-series)	**30**

Specific Requirements: Micro 256, 260T, 281T (2 enrollments required), 299. It is the student's obligation to negotiate and arrange for his or her own thesis adviser and committee.

Admission to classified graduate standing must be recommended by the graduate committee of the biology department. The recommendation will be based upon a classification score which combines G.R.E. scores and undergraduate G.P.A., and is computed in the following manner.

Classification Score = (Undergraduate G.P.A. × 40)
+ (G.R.E. Aptitude Verbal %ile × 2)
+ (G.R.E. Aptitude Quantitative %ile × 2)

All percentiles will be based upon norms established by the Educational Testing Service and in effect at the time the test was taken. Prior to the 8th week of the semester, students should meet with the graduate coordinator to discuss the graduate committee's decision. Students will be assigned to one of three categories, as described in the *Master of Arts Degree in Biology* earlier.

Master of Science Degree (in Marine Sciences) Requirements

This degree program, to be offered as an interdepartmental degree (Biology, Geology, or other appropriate department) in cooperation with Moss Landing Marine Laboratories (M.L.M.L.) provides the opportunity for students to acquire a practical and theoretical education in the marine sciences to prepare them for careers as marine specialists, scientists and teachers. The program at Moss Landing provides extensive field and laboratory work for advanced study in the marine sciences, which is not duplicated on individual California State University consortium campuses.

Admission to the Program

The Master of Science degree in marine sciences program is administered through M.L.M.L. and a consortium campus Biology, Geology, or other department, depending on the choice of the student. The prospective student must meet the entrance requirements for the department and will be accepted into unclassified or conditionally classified graduate status by normal procedures at that campus. The student will become classified upon completion of M.L.M.L.'s requirements.

Classification (M.L.M.L.) in the Program

A conditionally classified student may become fully classified in the marine science program as set forth in the following steps:

I. Obtain an adviser at M.L.M.L. (may or may not be the final thesis adviser) and one from the science department at the home campus.
2. Make up any course work deficiencies in the home campus department and/or M.L.M.L.
3. M Sci 104 Quantitative Marine Science, and three of the following five core courses are prerequisites for classified graduate standing: M Sci 103 Marine Ecology, M Sci 141 Geological Oceanography, M Sci 142 Physical Oceanography, M Sci 143 Chemical Oceanography, and M Sci 144 Biological Oceanography. These courses may be waived by the graduate committee upon certification that equivalent courses have been satisfactorily completed. M Sci 104 Quantitative Marine Science will not be counted towards the 30-unit degree requirement.
4. A written qualifying examination is required of all students for classification except those who have taken the core courses at M.L.M.L. and passed with *B* or better grades.

Advancement to Candidacy

In order to be advanced to candidacy, the student must have:

1. Attained classified standing.
2. Completed writing skills requirement (according to home campus requirements).
3. Selected a thesis problem and a thesis advisory committee. The thesis committee will be composed of at least three members, including one faculty member from M.L.M.L. (who is ordinarily the thesis adviser) and, at the discretion of the home campus, a representative from that campus. The other member or members of the thesis committee may be from M.L.M.L., the home campus, or elsewhere, with the approval of the thesis adviser.

Degree Requirements Including Course Work

A student becomes eligible for the master's degree in marine science after the following requirements have been satisfied:

	Units
Courses in 100-series (requires any three of the following five courses: MSci 103, MSci 141, MSci 142, MSci 143, MSci 144	12
Courses in 200-series (including 2 units of MSci 285T, 286T or 287T, and 4 units of MSci 299)	15
Electives (course(s) in the 100 and/or 200-series) approved by thesis committee	3
Total	**30**

Prerequisite requirement for classified graduate status:
MSci 104 (no credit on contract)

1. The student must have submitted a thesis approved by the thesis advisory committee. The thesis must conform to the rules set forth by the home campus graduate office.
2. The student must successfully give an oral thesis defense in the form of a seminar open to the general public. The thesis advisory committee must be present, may require further oral questioning after the seminar, and will evaluate the success of the presentation.

COURSES

Biology (Biol)

10. Life Science (3). Not open to students with credit in Bot 1 or Zool 1. Principles of biology related to the cell, maintenance, and relation of living organisms, heredity and elementary pro-

cesses of evolution, and basic principles of ecology. (2 lecture, 2 lab hours)

15. An Ecological Approach to Life Science (5). Concurrent Enrollment in Anth 15, Geol 15, N Sci 15 required. Portion of *Man and the Natural Environment* Cluster. An introduction to biological concepts and investigational methods in the natural environment. Lecture, lab, and field work. (Field trip fee, $150) (See *Man and the Natural Environment,* p. 128)

20. Biology and Society (3). Not open to biology majors or to students with credit in Biol 105. Impact of recent biological discoveries upon society, now and for the future; man's animal inheritance, human genetics, genetic engineering, organ transplants, and population problems.

101. Nature Study (3). Not allowable for credit for biological or physical science majors or minors. Prerequisite: lower-division biology, botany, or zoology. Evaluation of natural science programs at the elementary level; optional opportunities in developing K-9 environmental study material or designing environmental awareness topics for adult groups; emphasis on life science programs dealing with the interaction of man and the biosphere. (2 lecture, 3 lab hours)

102W. The Scientific Paper (3). Prerequisite: Engl 1. An introduction to the preparation, structure, use and writing of the scientific research article; the meaning, logic and structure of the abstract, introduction (historical review), methods, results, discussion, conclusion, and bibliographic citation. Meets the Upper Division Writing Skills requirement for graduation.

105. Human Ecology (3). Not open to students with credit in Biol 20. The study of the relationships between humans and their environment, both natural and man-made; emphasis on scientific understanding of root causes of current environmental problems.

107. Heredity and Society (3). Prerequisite: college biology, zoology, or botany. Principles of genetics and evolution as they apply to human society, thought, experience, and affairs. Ethical, social, political, and medical problems in relation to genetic engineering and other techniques.

116. Microtechnique (3). Prerequisite: college biology, botany or zoology. Methods of preparing biological materials for light microscopic examination, including fixing, embedding, sectioning and staining. (1 lecture, 6 lab hours)

120. Introduction to Genetics (3). Not open to biology majors and students with credit in Biol 135. Prerequisite: college zoology or botany. Principles of biological inheritance, including gene structure, gene function, statistical methods, problem solving, and human genetics.

122. Fundamentals of Human Genetics (3). Prerequisite: college biology, zoology, or botany. Intended primarily for students in the health fields or biology. Meiosis, mitosis, chromosomes and genes. Mutations and familial diseases. Pedigrees, inbreeding, multiple genes, sex determination, blood group alleles, linkage and mapping, twins, cytogenetic and other diseases, genetic counseling.

125. Evolution (3). Biol 120 or 135 recommended. Evolutionary processes and patterns. (2 lecture, 1 discussion hour)

130. Introduction to Cell Biology (2). Prerequisite: Bot 1, Zool 1 and organic chemistry. Principles of cell biology at the molecular, cell organelle, and whole cell level. Includes material related to both procaryotic and eucaryotic cells.

133. Aquatic Ecology (4). Prerequisite: Biol 140. Physical-chemical features of inland waters as related to their biology; community structure and function, ecological interactions, adaptations, and identification of aquatic organisms. (2 lecture, 6 lab or field hours, including weekend field trips*)

135. Genetics (3). Not open to students with credit in Biol 120. Required of all biology majors. Prerequisite: Biol 130 or Micro 104. The mechanisms of inheritance. Modes of transmission of genetic material, linkage and recombination, sex determination, chromosome aberrations, immunogenetics, developmental genetics and population genetics.

* Late afternoon, Saturday and/or overnight field trips may be required.



140. Introduction to Ecology (2). Prerequisite: Bot 1 and Zool 1. Major concepts related to structure, function, organization, and regulation at the population, community, and ecosystem levels.

150. Electron Microscopy (4). Prerequisite: permission of instructor. Preparation and examination of biological specimens. Basics of electron microscopy and interpretation of electronmicrograms. (1 lecture, 9 lab hours)

155. Marine Biology (3). Prerequisite: college biology, botany, or zoology. Introduction to the marine environment with emphasis on the biological aspects; systematics, ecology, and morphological and physiological adaptations of marine organisms, especially intertidal and shallow water forms; pollution; utilization of marine resources. (One field trip required)

157. Conservation of Natural Resources (3) (Same as T 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, wildlife, and recreational areas; local, state, and national plans and organizations for conservation; educational implications and techniques.

160. Developmental Biology (3). Prerequisite: Biol 135. Investigations concerning the variety of mechanisms acting during the several stages of development of the living organism, from gamete formation to morphological and biochemical differentiation of organ systems; emphasis on differential genetic control.

162. Biological Methods and Techniques (3). Open to credential candidates in the life science or physical science waiver program; course meets the professional education requirement of 30 units for the clear credential. Collection and preparation of biological materials and specimens for instruction. Designing and conducting laboratory investigations. Planning and directing field trips. (1 lecture, 6 lab hours)

175. Advanced Cell Biology (4). Prerequisite: Biol 135 and organic chemistry. Advanced topics in cell biology, including cellular and molecular aspects of the following: muscle and non-muscle motility, membranes and cell surfaces, excitable cells and abnormal cells. Laboratory will emphasize molecular biological techniques. (3 lecture, 3 lab hours)

185T. Topics in Biology (1–4; max total 6). Prerequisite: permission of instructor. Investigation of selected areas in the field of biology. (Lecture and/or Laboratory)

190. Independent Study (1–3; max see reference). See *Academic Placement—Independent Study,* pages 96–97.

GRADUATE COURSES *(Biol)*

(See *Course Numbering System,* p. 133.)

200. Principles and Great Experiments in Biology (2). Development and influence of current biological thought.

204. Biology of Speciation (2). Prerequisite: Biol 135 and an evolution course. Evolution of the species as a unit of biological organization.

206. Biological Systematics (2). Prerequisite: at least one upper-division or graduate course having a phylogenetic component. Classification, nomenclature and taxonomic theory as applied to living organisms, their evolution and phylogeny.

208. Biological Field Studies (1–6; max total 6). Prerequisite: permission of instructor. Integrated studies or specialized topics, including botanical, environmental, microbiological or zoological field studies.*

210. Parasitic Protozoa (3). Prerequisite: Zool 108. A systematic survey of parasitic protozoa. (2 lecture, 3 lab hours)

212. Helminthology (3). Prerequisite: Zool 108. A systematic survey of parasitic helminths. (2 lecture, 3 lab hours)

220. Insect Toxicology (3). Prerequisite: Ent 101, Chem 8. General principles of toxicology; factors that affect lethality of poisons in insects and mammals; insecticide classification, mode of action and metabolism; environmental movement, degradation and biohazards; laboratory exercises on bioassay, data analysis and residue analysis. (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)

240. Systems Ecology (3). Prerequisite: Biol 140, Math 70. Quantitative approach to the analysis of whole ecosystems including data acquisition and statistical treatment, conceptual and mathematical ecosystem modeling, and computer simulations in FORTRAN or BASIC. No programming experience needed. (2 lecture, 3 lab hours)

241A–B. Molecular Biology I–II (3–3) (Same as Chem 241A–B). Prerequisite: Biol 135, Chem 150 or 155, and permission of instructor. Seminar covering current topics in molecular biology. Topics include: protein and nucleic acid structure, DNA replication, transcription, translation, bacterial and animal viruses, prokaryotic and eukaryotic regulation, mechanisms of exchange of genetic material, and recombinant DNA technology. Biol/Chem 241A is prerequisite for Biol/Chem 241B.

250. Scientific Research Reporting (2). Prerequisite: permission of instructor. Techniques of scientific drawing and writing, illustrating emphasized. (1 lecture, 3 lab hours)

255T. Topics in Botany (1–3; max total 8). Prerequisite: permission of instructor. Investigation of new fields, areas not in current courses, or advanced studies in a given area. (Lecture and/or Laboratory)

260T. Topics in Biology (1–3; max total 8). Prerequisite: permission of instructor. Investigation of new fields, areas not in current courses, or advanced studies in a given area. (Lecture and/or Laboratory)

265T. Topics in Physiology (1–3; max total 8). Prerequisite: permission of instructor. Investigation of new fields, areas not in current courses, or advanced studies in a given area. (Lecture and/or Laboratory)

270T. Topics in Zoology (1–3; max total 8). Prerequisite: permission of instructor. Investigation of new fields, areas not in current courses, or advanced studies in a given area. (Lecture and/or Laboratory)

272. Physiological Ecology of Vertebrates (2). Prerequisite: Biol 140, Phy 140. An analysis of problems in and adaptations to arctic, alpine, marine, desert, tropical and disturbed ecosystems; matters of energy and water economy, respiratory, circulatory and sensory neuromuscular adaptations, and such topics as biological timing, migration and navigation. (Lecture/seminar: paper(s) required)

274. Biometry (3). Prerequisite: one statistics class, preferably Math 101. Application of statistical techniques to biological problems with emphasis on sampling, analysis of variance, experimental design, and regression techniques. Emphasis on analysis of real biological data and interpretation of results.

275. Zoogeography (3). Prerequisite: Zool 113 or permission of instructor. Seminar in descriptive and ecological geography of animal groups.

280. Practicum in Life Science Education (2; max total 4). Concurrent enrollment in T Ed 155B required. Application of life science teaching methodology, principles, and practices in middle and secondary school teaching; classroom/lab/field organization and management; measurement and evaluation instruments; inventory/requisition systems. Course meets the professional education requirement of 30 units for the clear credential.

281T. Seminar in Biological Science (1–2). Prerequisite: permission of instructor. Reviews and reports on current literature in the various phases of biology.

282. Biology Colloquium (1; max total 2). Experience in evaluation and critique of research presentations of students, faculty, and other scientists. Student must attend a minimum of ten approved research-oriented colloquia and participate in discussions and/or submit written reports.

290. Independent Study (1–3; max see reference). See *Academic Placement—Independent Study,* pages 96–97.

295. Research (2–6; max total 6). Prerequisite: permission of the instructor. Independent research by the advanced graduate student.

299. Thesis (2–4; max total 4). Prerequisite: see *Criteria for Thesis and Project,* pages 467–468. Preparation, completion, and submission of an acceptable thesis for the master's degree.

IN-SERVICE COURSES

(See *Course Numbering System,* p. 133.)

302T. Topics in Biology (3; max total 6)

Botany (Bot)

1. General Botany (5). No credit if taken after a course that has college botany as a prerequisite. Students with credit in Bot 10 will receive only 2 units of credit. Prerequisite to most upper-division botany courses. Fundamentals of structure and function in seed plants; survey of plant kingdom. (3 lecture, 6 lab hours)

10. Plant Biology (3). Not open to students with credit in Bot 1. Structure, function, and development of plants. (2 lecture, 2 lab hours)

35. Ethnobotany (3). The role of plants in past and present civilizations, using representative beneficial and injurious plants that have contributed to the development of human societies.

104. Plant Physiology (4). Prerequisite: college botany, Chem 1A or 2A–B; organic chemistry recommended. General metabolism and related processes. (2 lecture, 6 lab hours)

106. Plant Taxonomy (4). Prerequisite: college botany. Principles of plant classification; local flora. (1 lecture, 9 lab or field hours *)

107. Plant Ecology (3). Prerequisite: college botany. Interrelations of plants and environment. (2 lecture, 3 lab or field hours *)

134. Plant Anatomy (3). Prerequisite: college botany. Structure and development of flowering plants at the cellular and tissue levels. (2 lecture, 3 lab hours)

135. Nonvascular Plants (3). Prerequisite: college botany. Comparative structure and phylogeny of the fungi, algae, mosses, and liverworts. (2 lecture, 3 lab hours)

136. Vascular Plants (4). Prerequisite: college botany. Morphology, reproduction, and evolution of the major groups of vascular plants (both living and extinct). Emphasis placed upon the seed plants. (2 lecture, 6 lab hours)

137. Plant Growth and Development (3). Prerequisite: college botany. Processes involved in plant growth with emphasis on the development of form in higher plants and the experimental approach. (2 lecture, 3 lab hours)

140. General Mycology (4). Prerequisite: college botany. Classification, structure, and development of representative fungi. (3 lecture, 3 lab hours)

142. Algology (4). Prerequisite: college botany. Morphology, cytology, ecology, physiology, economic importance and cultivation of the algae. (2 lecture, 6 lab or field hours*)

145. Plant Tissue Culture (4). Prerequisite: college botany. Aseptic culture for plant cell suspensions, callus and organs; problems of regeneration to obtain new plants; ploidy manipulation; applications for pathology, plant breeding, propagation, genetic engineering. (2 lecture, 6 lab hours)

190. Independent Study (1–3; max see reference). See *Academic Placement—Independent Study,* pages 96–97.

200. Series. Graduate courses are listed under *Biology.*

Entomology (Ent)

101. General Entomology (3). Prerequisite: college zoology or one year of biology. Anatomy, physiology, life history, and classification of insects and other arthropods. (2 lecture, 3 lab or field hours*)

106. Economic Entomology (3) (Same as Pl Pr 103). Prerequisite: Bot 10 or Zool 10. General and economic entomology; taxonomy of the principal orders of insects; life histories, habits, recognition, and control of the principal agriculture insect pests of the San Joaquin Valley. (2 lecture, 3 lab hours)

107. Medical Entomology (4). Arthropod-borne diseases of man and animals and arthropod vectors of the diseases. (3 lecture, 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 (4). Prerequisite: Ent 101. Comparative study of the form and structure of insects; external and internal anatomy. (2 lecture, 6 lab hours)

190. Independent Study (1–3; max see reference). See *Academic Placement—Independent Study,* pages 96–97.

200 Series. Graduate courses are listed under *Biology.*

* Late afternoon, Saturday and/or overnight field trips may be required.

Microbiology (Micro)

20. Introductory Microbiology (4). Not open to students with credit in Micro 104. Prerequisite: Chem 2A–B or 2A–C, plus a college course in the biological sciences. Introduction to microbiology; principles and selected applications. (3 lecture, 3 lab hours)

104. Microbiology (5). Prerequisite: organic chemistry; Bot 1 or 10. Emphasis on prokaryotes (bacteria); microbial physiology, genetics, ecology, classification and identification; applications of microbiology. Prerequisite to other upper-division microbiology courses. (3 lecture, 6 lab hours)

117. Immunology (4). Prerequisite: Micro 104. Innate and specific immune response involved in cell mediated and humoral phenomena; illustration of principles and technique development in the laboratory. (2 lecture, 6 lab hours)

118. Bacteriology of Human Disease (5). Prerequisite: Micro 104; Micro 117 recommended. Bacterial, etiological agents of human disease. (3 lecture, 6 lab hours)

125. Microbial Ecology (4). Prerequisite: Biol 140 and Micro 104. Physiological ecology of microorganisms; interactions of microorganisms with abiotic and biotic factors in the environment; microbial habitats including soil, water, and organisms; techniques of microbial ecology (field and laboratory). (3 lecture, 3 lab hours*)

130. Industrial Microbiology (3). Prerequisite: Micro 20. A study of the useful activities of microorganisms with special emphasis on fermentative processes, production of biologics, waste disposal, food processing, and single cell food sources. (2 lecture, 3 lab hours*)

150. Medical Mycology (4). Prerequisite: Micro 104; Micro 117 recommended. Morphology, physiology, and principles of pathogenicity of selected fungal agents of human and animal disease. (2 lecture, 6 lab hours).

160T. Topics in Microbiology (1–4; max total 4). Prerequisite: permission of instructor. Investigation of selected areas in microbiology. (Lecture and/or Laboratory)

161. Microbial Physiology (4). Prerequisite: Micro 104. Structure, function, energy metabolism, growth and regulatory mechanisms of microorganisms. (2 lecture, 6 lab hours)

185. Virology (4). Prerequisite: Micro 104; Micro 117 recommended. Inquiries into the unique nature of viruses; methods of analysis, structure, and replication. Virus-host interactions are described from bacterial, plant, and animal virus groups. Considerable emphasis is placed on diagnosis of viruses infecting humans including epidemiology and viropathology. (2 lecture, 6 lab hours)

189. Microbial Genetics (4). Prerequisite: an introductory microbiology laboratory course, and Biol 135. The nature of genetic information, its mutation, transfer, and recombination in microbial cells. (2 lecture hours, 6 lab hours)

190. Independent Study (1–3; max see reference). See *Academic Placement—Independent Study,* pages 96–97.

GRADUATE COURSES *(Micro)*

(See *Course Numbering Systems,* p. 133.)

256. Bacterial Diversity (3). Prerequisite: Micro 161. Physiology, ecology, isolation and culture of metabolically and morphologically diverse bacteria. Term paper and research project required. (2 lecture, 3 lab hours)

258. Experimental Virology (3). Prerequisite: permission of instructor; Micro 185, 189 recommended. Theory and application of experimental procedures used in bacteriophage, animal and plant virus research. Propagation and analysis of virus and viral components by modern technology; collection, interpretation and presentation of data. (1 lecture, 6 lab hours)

260T. Topics in Microbiology (1–3; max total 8). Prerequisite: permission of instructor. Investigation of new fields, areas not in current courses, or advanced studies in a given area. (Lecture and/or Laboratory)

281T. Seminar in Microbiology (1–2). Prerequisite: permission of instructor. Reviews and reports on current literature in the various phases of microbiology.

290. Independent Study (1–3; max total see reference). See *Academic Placement—Independent Study,* pages 96–97.

295. Research (2–6; max total 6). Prerequisite: permission of the instructor. Independent research by the advanced graduate student.

299. Thesis (2–4; max total 4). Prerequisite: See *Criteria for Thesis and Project,* pages 467–468. Preparation, completion, and submission of an acceptable thesis for the master's degree.

Physiology (Phy)

33. Human Anatomy and Physiology (5). Not open to students with credit in either a human anatomy or human physiology course. An integrated study of the structure and function of the human body. (4 lecture, 3 lab hours)

64. Functional Human Anatomy (3). Not open to students with credit in Phy 33. Primarily for students in the health related and biological professions. The life continuum from conception to death. A systems approach to the gross and microscopic structures of the human body. (2 lecture, 3 lab hours)

65. Human Physiology (5). Not open to students with credit in Phy 33. College chemistry and human anatomy recommended. Homeostasis in the human body; how organ systems function to maintain life; dynamic and adaptive systems at the molecular, cellular and organ level. (4 lecture, 3 lab hours.)

140. Comparative Animal Physiology (4). Prerequisite: Biol 130 and organic chemistry. Evolution of physiological systems; functional adaptations to different environments; physiological principles as applied to animals. (3 lecture, 3 lab hours)

155. Neuroanatomy (4). Prerequisite: Anatomy and Physiology. Macroscopic and microscopic study of the structure and functional relationships of the mammalian nervous system. (3 lecture, 3 lab hours)

160. Neurophysiology (3). Prerequisite: Phy 155. Function of the nervous and muscular systems with emphasis on molecular mechanisms.

190. Independent Study (1–3; max see reference). See *Academic Placement—Independent Study,* pages 96–97.

200 Series. Graduate courses are listed under *Biology.*

Zoology (Zool)

1. General Zoology (5). No credit if taken after a course that has college zoology as a prerequisite. Students with credit in Zool 10 will receive only 2 units of credit. Prerequisite to most

upper-division courses in zoology. Systematics, general ecology, and phylogeny of major animal groups, including comparative studies of vertebrates and a general integration of biological principles. (3 lecture, 6 lab hours)

10. Animal Biology (3). Not open to students with credit in Zool 1. Structural and functional comparison of animals; principles and human implications of inheritance, evolution, and ecology; physiology as applied to man. (2 lecture, 2 lab hours)

103. Comparative Vertebrate Anatomy (4). Prerequisite: college zoology. Comparative structure of vertebrate organ systems; laboratory study of representative vertebrates. (2 lecture, 6 lab hours)

107. Medical Parasitology (3). Prerequisite: college zoology. Epidemiology, pathogenesis and identification of the parasites of man. (2 lecture, 3 lab hours)

108. Parasitology (4). Prerequisite: college zoology, Chem 1A or 2A–B. A study of the general biology of symbiotic animals: their systematics, life histories, physiology, host relationships and evolution. Laboratory exercises include both the microscopic examination of prepared materials and the performance of experiments illustrating the lectures. (2 lecture, 6 lab hours)

113. Natural History of Vertebrates (4). Prerequisite: Biol 140. Systematics, distribution, morphology, behavior and ecology of fish, amphibians, reptiles, birds and mammals. Field work includes capture and sampling techniques, species identification and habitat analysis, and may require weekend field trips to coastal, desert and mountain environments. (3 lecture, 3 lab or field hours *)

114. Invertebrate Zoology (3). Prerequisite: college zoology. Systematics, general ecology, and phylogeny of free living invertebrates (excluding insects), and including field studies of marine intertidal habitats. (2 lecture, 3 lab or field hours *)

115. Protozoology (3). Prerequisite: Biol 130, 140. The biology of protozoan organisms. (2 lecture, 3 lab hours)

130. Animal Behavior (3). Prerequisite: Biol 140; recommended, one course in ecology or natural history. Principles of ethology with emphasis on mechanisms of behavior. (2 lecture, 3 lab hours *)

134. Wildlife Management (4). Prerequisite: Biol 140. Ecological theory and its use in the management of wildlife resources. Field and laboratory exercises designed for the application of techniques used in research and in making management decisions. (2 lecture, 6 lab or field hours *)

135. Mammalogy (3). Prerequisite: Biol 140. Ecology, evolution and diversity of the mammals of the world. (2 lecture, 3 lab or field hours *)

136. Fisheries Biology and Management (3). Prerequisite: Biol 140; statistics strongly recommended. Ecology and management of fishes; techniques for studying fish populations; quantitative methods for assessing fish stocks; environmental requirements and habitat improvement methods; acquisition and application of information to obtain maximum benefit from fishery resources. Inland fisheries emphasized. (2 lecture, 3 lab or field hours*)

137. Herpetology (3). Prerequisite: Biol 140. Ecology, evolution and diversity of the reptiles and amphibians of the world. (2 lecture, 3 lab or field hours*)

138. Animal Ecology (3). Prerequisite: Biol 140. Studies of the environmental, behavioral and evolutionary factors influencing the distribution and population dynamics of animals. Field and laboratory exercises designed for the quantitative and qualitative description of ecological communities. (2 lecture, 3 lab or field hours*)

140. Ichthyology (3). Prerequisite: Biol 140. Ecology, evolution and diversity of the fishes of the world with emphasis on California fishes, freshwater and marine. (2 lecture, 3 lab or field hours*)

157. Histology (4). Prerequisite: college zoology. Identification and study of vertebrate cells, tissues, and organs. (2 lecture, 6 lab hours)

158. Hematology (4). Prerequisite: Phy 65; Micro 117 recommended. Development, structure, identification, and quantification of cellular blood elements; qualitative and quantitative considerations of hemoglobin, coagulation, and immunohematology. Procedural proficiency emphasized in the laboratory. (2 lecture, 6 lab hours)

160. Vertebrate Embryology (4). Prerequisite: college zoology. Morphogenesis of vertebrates from gamete formation through organogenesis, including physiological and experimental aspects of development. Laboratory emphasis on frog, chick and pig. (2 lecture, 6 lab hours)

165. Ornithology (3). Prerequisite: Biol 140. Ecology, ethology, evolution and diversity of the birds of the world. (2 lecture, 3 lab or field hours*)

175. Vertebrate Evolution (3). Prerequisite: Biol 135; Zool 103 or 113. The course of evolution of the higher vertebrates including present concepts of speciation.

190. Independent Study (1–3; max see reference). See *Academic Placement—Independent Study,* page 96–97.

200 Series. Graduate courses are listed under *Biology.*

Moss Landing Marine Laboratories

The California State University began operation of the Moss Landing Marine Laboratories, Moss Landing, California, in the fall semester 1966. This facility functions as a seaside extension of the campuses of six cooperating state universities (Fresno, Hayward, Sacramento, San Francisco, San Jose, and Stanislaus). It offers full-time course work in marine biology, oceanography, and other marine sciences for majors in either the biological (botany, biology, zoology) or physical sciences whose objectives include further graduate study, teaching the sciences, or research in the marine sciences. Properly qualified upper-division and graduate students may enroll on the CSU, Fresno campus for a term of instruction at Moss Landing and earn resident credit for such course work. See *Geology Department,* pages 329–333, for on-campus course work in general oceanography and geology courses related to marine science.

Space reservation is required for attending Moss Landing Marine Laboratories. Forms for this purpose are available from the Biology Department or **Moss Landing Marine Laboratories, P.O. Box 223, Moss Landing, CA 95039.** Priority is determined based upon the date space reservation form is received at Moss Landing Marine Laboratories. Since enrollment is limited, interested students should make early application.

* Late afternoon, Saturday and/or overnight field trips may be required.

COURSES

Marine Sciences (M Sci)

Note: The following courses are offered at the Moss Landing Marine Laboratories. See M Sci 103 and 104 usually recommended for first semesters of full-time students.

The biology department will accept only the following Moss Landing Marine Laboratories courses for major credit as indicated. Botany: M Sci 131, 144. Zoology: M Sci 112, 113, 122, 123, 124, 125. Biology elective: M Sci 103, 104.

103. Marine Ecology (4). Prerequisite: ecology and statistics (or concurrent registration in M Sci 104) or permission of instructor. A field-oriented introduction to the interrelationships between marine and estuarine organisms and their environment with emphasis on quantitative data collection and analysis. (2 lecture, 6 lab or field hours)

104. Quantitative Marine Science (4). Prerequisite: college mathematics. The mathematical methods for analysis of biological, chemical and physical data from the marine environment; experimental design, parametric and non-parametric statistics. (3 lecture, 3 lab or field hours)

105. Marine Science Diving (3). Prerequisite: upper-division science major; thorough physical examination; ability to pass swimming test. Skin and SCUBA diving course; pool-training culminates in 10 ocean dives. Topics covered include diving physics, physiology, diving environments, night diving and research diving. Successful completion gives N.A.U.I. and M.L.M.L. certification. (1 lecture, 6 lab or field hours)

112. Marine Birds and Mammals (4). Prerequisite: upper-division vertebrate zoology; M Sci 103 recommended. Systematics, morphology, ecology and general biology of marine birds and mammals. (2 lecture, 6 lab or field hours)

113. Marine Ichthyology (4). Prerequisite: college zoology or equivalent. Taxonomy, morphology, and ecology of marine fishes. Both field and laboratory work concentrate on the structure, function and habits of marine fishes and the ecological interactions of these fishes with their biotic and abiotic surroundings. (2 lecture, 6 lab or field hours)

122. Marine Invertebrate Embryology (4). Prerequisite: M Sci 124, cell biology or biochemistry strongly recommended or permission of instructor. Survey of principles of developmental biology, concentrating on experimental evidence obtained using invertebrate material. Laboratory observations will cover the embryology of lower invertebrates, molluscs, crustacea, enchinoderms, and protochordates. (2 lecture, 6 lab or field hours)

123. Physiology of Marine Organisms (4). Prerequisite: General physiology or permission of instructor. Comparative physiology of marine organisms; laboratory problems on nutrition, respiration, osmotic regulation, coordination, and other physiological functions. General principles of physiology discussed using examples from the major taxa. (2 lecture, 6 lab hours)

124. Marine Invertebrate Zoology I (4). Prerequisite: college zoology or permission of instructor; M Sci 103 recommended. A field-oriented introduction to the structure, systematics, evolution and life histories of the major phyla. (2 lecture, 6 lab or field hours)

125. Marine Invertebrate Zoology II (3). Prerequisite: college zoology or permission of instructor; M Sci 103 and M Sci 124 recommended. A field-oriented introduction to the structure, systematics, evolution and life histories of the minor phyla. (1 lecture, 6 lab or field hours)

131. Marine Botany (4). Prerequisite: M Sci 103 recommended. Introduction to the plants of the sea, marshes and dunes, with emphasis on the morphology, taxonomy and natural history of seaweeds and vascular plants. (2 lecture, 6 lab or field hours)

141. Geological Oceanography (4). Prerequisite: M Sci 142 or 143 (concurrent enrollment satisfactory). Structures, physiography, and sediments of the sea bottom and shoreline. (2 lecture, 6 lab or field hours)

142. Physical Oceanography (4). Prerequisite: college algebra; college physics recommended. An introduction to the nature and causes of various oceanic motions including currents, waves, tides and mixing, and the physical properties of seawater including transmission of sound and light; does not require calculus. (3 lecture, 3 lab or field hours)

143. Chemical Oceanography (4). Prerequisite: one year of college chemistry. An introduction to the theoretical and practical aspects of the chemistry of the oceans, including major salts, dissolved gases, nutrient ions, carbonate system, transient tracers and shipboard sampling techniques. (2 lecture, 6 lab and field hours)

144. Biological Oceanography (4). Prerequisite: general biology and general chemistry. The ocean as an ecological system. Emphasis will be on the complexity of organismal-environmental interaction of the plankton, the transfer of organic matter between trophic levels and nutrient cycles. Laboratory will include methods in sampling, shipboard techniques, identification of plankton, and current analytical techniques. (2 lecture, 6 lab or field hours)

161. Marine Fisheries (4). Prerequisite: college mathematics, M Sci 104, or permission of instructor; M Sci 103 recommended. An introduction to fishery biology, including the concepts of stock, recruitment, and yield; emphasizing the parameters abundance, age, growth, and mortality; discussion of hydrography and fishery ecology, management problems, world fisheries and mariculture; and collection and analysis of fishery data. (2 lecture, 6 lab or field hours)

173T. Topics in Marine Biology (1–4). Prerequisite: permission of instructor. The study of a selected area in marine biology (morphology, physiology, ecology, etc.). Subjects will vary depending on student demand and availability of instructors. (Lecture and/or Laboratory)

174T. Topics in Oceanography (1–4). Prerequisite: permission of instructor. The study of selected areas in oceanography; subject will vary depending on student demand and availability of instructors. (Lecture and/or Laboratory)

175T. Topics in Marine Science (1–4). The study of a selected area in the marine sciences. The subjects will vary depending on student demand and availability of instructors. (Lecture and/or Laboratory)

177. Microscopic Techniques (3). Prerequisite: one semester college physics and permission of instructor. Principles and techniques of light and electron microscopy; consideration of brightfield, darkfield, phase contrast and interference contrast light microscopy; episcopic and diascopic illumination systems; photomicrography; preparation of materials for and operation of the scanning electron microscope. (2 lecture, 3 lab hours)

180. Independent Study (1–4). Prerequisite: permission of instructor. Faculty directed study of selected problems; open to

undergraduate students with adequate preparation. Offered every semester.

GRADUATE COURSES

(See *Course Numbering System,* p. 133.)

202. Marine Instrumental Analysis (4). Prerequisite: M Sci 142 and 143. Theory and use of advanced instrumentation; advanced field and laboratory techniques for the interpretation of data collected in marine science research. (2 lectures, 6 lab or field hours)

211. Behavior of Marine Animals (4). Prerequisite: M Sci 104 or statistics, or permission of instructor. The causation, development, and evolution of the behavior of marine animals. (3 lecture, 3 lab or field hours)

212T. Advanced Topics in Marine Vertebrates (1–4). Prerequisite: M Sci 112 or 113, and also permission of instructor. Advanced considerations of the ecology, physiology, and phylogeny of fishes, birds or mammals; emphasizing current literature and research. (Lecture and/or Laboratory)

221T. Advanced Topics in Marine Invertebrates (1–4). Prerequisite: M Sci 124 and permission of instructor. Advanced considerations of the ecology, physiology, and phylogeny of the various invertebrate phyla emphasizing current literature and research. (Lecture and/or Laboratory)

222. Biology of the Mollusca (4). Prerequisite: M Sci 124 and permission of instructor. Systematics, functional morphology, ecology, and physiology of mollusca with emphasis on marine forms. (2 lecture, 6 lab or field hours)

231. Biology of Seaweeds (4). Prerequisite: M Sci 131 or permission of instructor. Lectures-discussions on marine macroalgal biology with extensive reading of original literature. Ecologically oriented individual research projects involving laboratory culture and field experimentation. (2 lecture, 6 lab or field hours)

233T. Advanced Topics in Marine Ecology (1–4). Prerequisite: M Sci 103 and permission of instructor. Selected topics and current issues in marine ecology; subjects will vary depending on student demand and availability of instructors. (Lecture and/or Laboratory)

234. Advanced Biological Oceanography (4). Prerequisite: M Sci 144 or permission of instructor. A continuation of biological oceanographic studies; course will include lectures and discussion of special topics such as human impact on the marine environment and critical analyses of current literature; an individual research project involving the use of one or more available analytical tools required. (2 lecture, 6 lab or field hours)

242. Plate Tectonics (3). Prerequisite: M Sci 141 or permission of instructor. Historical background, modern theory and geophysical evidence of continental drift; sea-floor spreading and plate tectonics; examinations of the impact of the recent revolution in historical geology.

244. Paleoceanography (4). Prerequisite: M Sci 141 or permission of instructor. Interdisciplinary studies of the provenance, biologic and geologic composition of marine sediments and of the organisms contributing to their formation; sedimentary processes affecting these sediments. (2 lecture, 6 lab or field hours)

245. Deep Sea Sedimentation (4). Prerequisite: M Sci 141 or permission of instructor. Study of the types of marine sediment found in the deepest parts of all oceans; the sedimentary processes responsible for the deposition, preservation and re-deposition of these sediments. (2 lecture, 6 lab or field hours)

251. Marine Geochemistry (4). Prerequisite: quantitative analysis, year of calculus, or permission of instructor. Geochemical processes in the oceans; thermodynamics of low temperature aqueous reactions, weathering, oxidation-reduction and biologically mediated reactions, processes occuring at the sea floor and air-sea interface. (2 lecture, 6 lab or field hours)

261. Ocean Circulation and Mixing (4). Prerequisite: M Sci 142; college physics strongly recommended. Mathematical description of the distribution of properties (e.g. density, dissolved oxygen) in the oceans relating to physical and biochemical processes; theory of distribution of variables, geostrophic method. (3 lecture, 3 lab hours)

271. Population Biology (3). Prerequisite: M Sci 103 and 104 or permission of instructor. Principles of the interaction among marine organisms which result in the alternation of population structures; techniques for assessment and management of animal populations. (2 lecture, 3 lab or field hours)

272. Subtidal Ecology (4). Prerequisite: M.L.M.L. diver certification and marine ecology; knowledge of marine algae, invertebrates, and statistics recommended. The ecology of nearshore rocky subtidal populations and communities with emphasis on kelp forests; lectures and discussions of original literature; field work with SCUBA including group projects on underwater research techniques and community analysis, and individual research on ecological questions chosen by student. (2 lecture, 6 lab or field hours)

274T. Advanced Topics in Oceanography (1–4). Prerequisite: permission of instructor. The study of a selected area in oceanography. The subjects will vary depending on student demand and availability of instructors. (Lecture and/or Laboratory)

285T. Seminar in Marine Biology (2; max total 4). Prerequisite: permission of instructor. Seminar will be held on topics changing each semester; each student will be required to give at least one seminar.

286T. Seminar in Marine Geology (2; max total 4). Prerequisite: permission of instructor. Seminar will be held on topics changing each semester; each student will be required to give at least one seminar.

287T. Seminar in Oceanography (2; max total 4). Prerequisite: permission of instructor. Seminar will be held on topics changing each semester; each student will be required to give at least one seminar.

295. Research in the Marine Sciences (1–4). Prerequisite: permission of instructor. Independent investigations of an advanced character for the graduate student with adequate preparation. (3 conference, lab, and field hours per unit)

299. Thesis (1–4; max total 4). Prerequisite: See *Criteria for Thesis and Project,* pages 467–468. Preparation, completion, and submission of an acceptable thesis for the master's degree.

BUSINESS
Accountancy

School of Business and Administrative Sciences
Department of Accountancy
Elwyn L. Christensen, Chair
McKee Fisk Bldg., Room 125
(209) 294-2852

B.S. in Business Administration
Accountancy Option



Program

The Department of Accountancy offers an option in accounting within the Bachelor of Sciences in business administration degree program. This option is designed to be broad enough to provide preparation for a career in public, industrial, or governmental accounting. A lecture/lab format has been incorporated into several courses where hands-on-experience with microcomputers is provided. The accounting topics of tax, information systems, managerial, and financial accounting are also covered in sufficient depth to prepare the student for the exams for Certified Public Accountant, Certificate in Management Accounting, or Certificate in Internal Auditing.

Faculty and Facilities

The faculty of the Department of Accountancy is comprised of approximately 20 individuals of varied academic and business experience backgrounds. They are specialists in the areas of financial accounting, taxation, cost accounting, and auditing. Their accumulation of academic preparation and business experience qualifies them to teach both the theoretical and practical applications of accounting.

Career Opportunities

A wide variety of professional business opportunities are available to graduates of the Department of Accountancy. The accountancy option prepares students for challenging and rewarding careers in all areas of accounting. Alumni of the Department of Accountancy are found in leadership positions locally, in other areas of California, and throughout the United States. Many of our graduates are currently partners in public accounting firms, officers in corporations, and executives in governmental agencies. Joy Catalano, a 1982 graduate of the Department, received the second highest grade in the nation on the C.P.A. exam, and David Kalemkarian, a 1984 graduate of the department, received the second highest score in California on the C.P.A. exam. Many of our students pass the entire C.P.A. exam on the first sitting. In conjunction with the department, the Valley Business Center (located within the school) offers a C.P.A. Review Course twice a year. This course is designed to meet the needs of the serious C.P.A. candidate and covers thoroughly all exam areas: practice, theory, auditing, and business law.

To find out more about career opportunities, students should consult with the faculty in the department. In addition, students with career-related questions are encouraged to contact the *Office of Career Development and Employment Services*. Services include career counseling by career information specialists and professional assistance to students and graduates seeking full-time or part-time positions.

Internships

Many of our students also participate in internship programs, both in Fresno and other parts of California, in which they receive academic credit while being paid for their services. Students interested in internships in accounting should inquire in the Department Office or the Office of the Dean.

Faculty

Elwyn L. Christensen, *Chair*

Dennis M. Baker
Wayne R. Chapin
Rosita S. Chen
Gerald L. Johnston
W. Don McFerrin
Dell L. Mortimer
J. Byron Norton
Adel M. Novin
John P. Osborn
Sheng-Der Pan
Ali A. Peyvandi
Joan G. Schroeder
Benjamin Y. Tai
C. Torben Thomsen
Charles B. Titus
William C. Wayne

Bachelor of Science Degree Requirements

A 39-unit business core provides students with a general background commonly acknowledged as furnishing the basis for effective management of business enterprises. The following courses are required of all business majors.

	Units
Core Requirements	39
Acct 4A–4B; B A 18; DS 73, 173; Fin 130; IS 50; LOM 124; Mgt 110 or 104–106; Mgt 187, Mktg 100	
General Education Requirements	54
Choices must include Econ 1A and Econ 1B (or AgEc1) in Breadth, Division 8. Business students must also complete DS 71 or one semester of approved college mathematics beyond intermediate algebra.	
Electives	0
Accountancy Option	34
Acct 120A–B, 132, 144, 146, 162, and 145 or 167; B A 150, IS 105W	
Total for Business Administration degree	127

Note: The completion of 34 units as required by the option, the General Education requirements, special course requirements, and the electives, which may include a minor, total the 127 units required for the Bachelor of Science degree in business administration.

COURSES

Accountancy (Acct)

3. Essentials of Accounting (3). Not open to students majoring in accounting or business administration. Basic concepts in preparation of business financial statements; introduction to understanding, analyzing, and interpreting accounting data by investors, managers, and creditors for decision making, planning, and control. Only minor attention given to recordkeeping procedures.

4A–B. Financial and Managerial Accounting Principles and Systems (3–3). Not open to freshmen; meets requirements for Acct 1A–B. **(A)** Financial accounting; accounting statements, transaction analysis, and data accumulation; partnership and corporation accounting. **(B)** Prerequisite: Acct 4A. Balance sheet analysis and interpretation: managerial control and information systems; organization, planning, budgeting; cost accumulation and capital budgeting; measuring and reporting performance.

120A–B. Intermediate Accounting (4–4). Prerequisite: for 120A, Acct 1A or 4A; for 120B, Acct 120A (Note: 4B and 120B may be taken concurrently); Math 71 or DS 71 recommended. Preparation and analysis of balance sheet and income statements; proprietorship corporation accounts; basic accounting theory; theory of current and fixed assets, investments, liabilities, funds-flow, price-level changes, accounting ethics, authoritative pronouncements, and unsettled issues.

129. Accounting for Management and Taxation (3). Not open to students with credit in Acct 120A, 132, and 144; not open for credit toward major in accounting. Prerequisite: Acct 1A–B, or Acct 4A–B. Analysis and interpretation of financial statements. Use of accounting data by management for planning and control. Basic concepts of federal income taxes. Tax planning.

132. Cost Accounting (4). Prerequisite: Acct 1A–B or 4A–B. Math 71 or DS 71, and IS 50 recommended. Industrial cost accounting; general principles of product costing, standard costing, differential costing; master budgeting, flexible budgeting and capital budgeting; emphasis on the three functions of management—decision making, planning, and control. (3 lecture; 2 lab hours)

144. Tax Accounting and Planning (4). Prerequisite: Acct 4A. Federal income taxation, research and planning affecting individuals.

145. Tax Research and Tax Accounting for Corporations and Partnerships (4). Prerequisite: Acct 144. Methods of tax research using the sources of tax law. Applications of research to tax planning, litigation, administration of a tax practice, and professional responsibilities. Effect of income tax laws on partnerships, corporations, estates and trusts; estate and gift taxes.

146. Accounting Information Systems and Controls (4). Prerequisite: Acct 120A, 132, IS 50. Design of systems for the collection, organization, and reporting of accounting information. Theory and practice of flowcharting, evaluation of internal accounting controls in computer systems environments, and interrelationships of people, procedures, and equipment. (3 lecture; 2 lab hours)

162. Auditing (4). Prerequisite: Acct 120A–B, 146. Objectives and techniques in verification of business financial statements; duties, responsibilities, and professional ethics of the auditor; auditor's reports; analysis of internal controls; audits of computerized systems. (3 lecture; 2 lab hours)

167. Advanced Accounting Problems (4). Prerequisite: Acct 120B. Partnership, corporation, governmental and institutional accounting.

190. Independent Study (1–3; max see reference). See *Academic Placement—Independent Study,* pages 96–97.

193. Supervised Work Experience (1). Open only to business majors. Prerequisite: permission of instructor. Workstudy: Learning through on-the-job experience in a business. Written reports.

195. Internship (2–6; max total 6). Open only to business majors. Prerequisite: permission of instructor. Workstudy: Student holds responsible position in business or government agency and reports on firm's operations and suggested improvments.

200 Series. Graduate courses are listed under *Business—Graduate Program,* pages 226–229.

BUSINESS
Finance and Business Law

School of Business and Administrative Sciences
Department of Finance and Business Law
Paul M. Lange, Chair
McKee Fisk Bldg., Room 147
(209) 294-2341

B.S. in Business Administration
Options in:
Agribusiness
Finance
Financial Services
Legal Environment of Business
Real Estate & Urban Land Economics
Risk Management & Insurance

The Department of Finance and Business Law offers six options (areas of emphasis) within the Bachelor of Sciences in Business Administration Degree Program. These options are:

The *Agribusiness Option* offers students an opportunity to blend courses in business with courses in agriculture in order to gain a knowledge of agribusiness. Students who specialize in agribusiness will find career opportunities in banking, finance, real estate, marketing, selling, wholesaling, transportation, manufacturing, processing, insurance and many other industries of the San Joaquin Valley and other predominantly agricultural regions of the world.

The *Finance Option* is designed to provide students the basic skills required to plan, supervise, and control the financial activities of business organizations. These include (a) understanding the trade-off between risk and return, (b) the time value of money, and (c) the magnifying effect of leverage. Students specializing in finance gain the skills related to evaluating the financial needs of a business, obtaining the funds required by the firm, and using these funds in such a way that the company's goals are met.

The *Financial Services Option* offers students the opportunity to broaden their knowledge and understanding of the financial sciences so as to improve their ability to make effective decisions in financial planning and to facilitate career development in the general area of financial services. Since financial planning typically involves responsibility for coordinating work in more than one financial area, this option enables students to take the broad range of courses necessary to be knowledgeable in this rapidly expanding field.

The *Legal Environment of Business Option* provides an excellent background for business people who will spend a considerable amount of their time resolving business related legal problems. Many non-lawyers find a broad knowledge of law extremely helpful in their business careers. As a result, this option can be recommended for all business majors.

The *Real Estate and Urban Land Economics Option* provides the background for a wide range of career opportunities in addition to real estate brokerage. These areas include government, industry, education, consulting, banking, insurance, appraisal, construction, and investment. In addition, students who complete the real estate option will have taken all courses necessary to qualify for taking the California Brokers License Examination.

The *Risk Management and Insurance Option* prepares students for careers not only within the insurance industry but in business and government as well. More than half of all insurance employees hold professional, managerial, or technical jobs. Businesses seek insurance trained employees to manage employee benefit plans and oversee risk management programs. Government, likewise, offers positions in the areas of insurance regulation and administration of social insurance programs.



Faculty and Facilities

The faculty of the Department of Finance and Business Law is comprised of over thirty full time and part-time individuals who have outstanding reputations in both business and education. All full-time members of the department have earned an appropriate doctorate degree and many of them have gained national reputations for their scholarship. The faculty is extremely active in research and textbook writing as well as active in working with the business community. A wide range of approaches are used in teaching the many different courses offered by the department. These include computer simulations, team projects, community projects, laboratory research, group discussions, and case studies. The broad background of the faculty and their strong commitment to business education assures students of a challenging and rewarding course of study.

Faculty

Paul M. Lange, *Chair*

Wayne A. Brooks
Tom Doyel
John T. Emerson
Lynn M. Forsythe
Harold H. Haak
James M. Highsmith
F. Lee Hull
Amir A. Jassim
Nalini Jeyapalan
Blair J. Kolasa
Gerald D. Martin
J. David Reitzel
Manuchehr Shahrokhi
Elizabeth M. Shields
Charles R. Smith
Donald P. Stegall
Kuo-cheng Tseng
Alan Rufus Waters
Joseph W. Wilson

Bachelor of Science Degree Requirements

A 39-unit business core provides students with a general background commonly acknowledged as furnishing the basis for effective management of business enterprises. The following courses are required of all business majors.

	Units
Core Requirements	39
Acct 4A–4B; B A 18; DS 73, 173; Fin 130; IS 50; LOM 124; Mgt 110 or 104–106; Mgt 187, Mktg 100	
General Education Requirements	54
Choices must include Econ 1A and 1B or Ag Ec in Breadth, Division 8. Business students must also complete DS 71 or one semester of approved college mathematics beyond intermediate algebra.	
Electives	0–13
Option	18–32
Select one of the six options outlined below.	
Total for Business Administration degree	124–125

Options

The six options available to students are outlined below. The completion of 18–34 units as required by the options, the General Education requirements, special course requirements, and the electives, which may include a minor, total the 124–125 units required for the Bachelor of Science degree in business administration.

Agribusiness Option — *Units*

Fin 137, Ag Ec 130	6
Approved upper-division electives from the Schools of Business and Agriculture	12
	18

Finance Option

Acct 120A or 129	3–4
BA 100	3
Fin 134, 135, 136, 139	13
Elect 2 from: Fin 132, 137, 138, 143, 180; BA 150 or 151	6
	25–26

Financial Services Option

BA 100	3
Acct 129 or 144	3–4
Fin 132, 134, 143, 150, 180; BA 160	18
	24–25
Select any two of the following: Fin 135, 136, 138, 139, 144, 145, 183; BA 101, 154 or other approved electives	6–7
	30–32

Risk Management and Insurance Option

Fin 143, 144, 145, 146; BA 160	15
Elect from approved upper-division courses in Accounting, Business Administration, Finance, Human Resource Management, Management, Marketing, Decision Science, Information Systems, Information Management, Health Sciences	3
	18

Legal Environment of Business Option

Elect from BA 150, 151, 154, 155, 157, 158	12
Elect from approved upper-division courses in Accounting, Business Administration, Finance, Human Resource Management, Management, Marketing, Decision Science, Information Systems, Information Management	9
	21

Real Estate and Urban Land Economics Option

Fin 180, 181, 182, 183, BA 154	15
Fin 132 or 135	3
Elect from BA 100; Fin 136, 185, 186	3–4
	21–22

COURSES

Business Administration (BA)

18. Business and the Legal Environment (4). Prerequisite: sophomore standing. Introduction to legal system; sources of law; administrative, criminal, tort, and labor law; economic regulation, and legal aspects of international trade. More extensive study of the law of contracts and agency. Case studies; discussion and analysis.

50. Business Lectures (1; max total 2). Various viewpoints on current business problems and developments presented by a different guest business executive each class meeting.

100. Business Economics (3). Prerequisite: Econ 1A–B. Applications of economic principles in business management; measure of profit, analysis of demand, cost analysis; price, wage, and public policies; case studies.

101. Business Ethics (3). (A Eth 102A may be substituted for BA 101) Ethical practices and their relevance to the realm of business. Managerial treatment of contemporary business problems from an ethical perspective. Problem areas include: employee rights; discrimination in the workplace; environmental protection; multinational business transactions; and conflicts of interest.

108. Law and Society (3). An introduction to the American legal system. Examines the development, structure, premises, functions, operation, and limits of the legal system of the United States. Includes an overview of American substantive law—its sources, varieties, purposes, methods of growth, and relationships to morality and to non-law disciplines. (Former BA 8)

120. Business and Society (3). Contemporary American business from the business perspective. Examination of current governmental, public, and labor pressures affecting business. Consideration of philosophical critiques of business. The nature

of business and management of firms in a changing environment. (Former BA 10)

128. Business Environment of the Fine Arts (3). Proseminar for seniors. Integration of principles of business management with production in the fine arts; case studies; analysis.

150. Law and Business Activities (3). Prerequisite: BA 18. Nature of property and the relation of the legal environment to the ambiguities of economic capability through examination of the law of bailments, shipments, sales, commercial paper, and secured transactions; case studies; analysis. (Former BA 118)

151. Law of Business Organizations (3). Prerequisite: BA 18; Acct 4A recommended. Partnerships, corporations and trusts with reference to their advantages and limitations. Effect of form of operations on taxation, freedom from liability, and on social responsibilities. Includes bankruptcy and security transactions, such as mortgages and installment sales. (Former BA 119)

152. Health Legislation and Legal Controls (3). Legislation applicable to health care laws influencing the provision and administration of health services to individuals and communities. Patient rights, controls on practitioners and institutions, use of medical information. (Former BA 106)

154. Real Estate Law (3). Meets California statutory course requirement for real estate broker's license. Prerequisite: BA 18. Legal aspects of acquisition and ownership of real estate; conveyances, mortgages, evidences of title; planning and zoning. (Former BA 184)

155. Government Regulation and Control of Business (3). Prerequisite: BA 18; not recommended for those with BA 157. Government and social control of private enterprise, including examination of capitalism; private property; administrative law and process; antitrust law; and development of public policy through regulation and deregulation. (Former BA 115)

156. Labor Law (3). Prerequisite: Econ 1A–B; BA 18, Mgt 104, 106 recommended. Proseminar in the law of industrial relations; historical and current principles for legal settlement of labor-management disputes; statutes, court decisions, administrative rulings; case studies; individual presentations.

157. Administrative Law and Business (3). Prerequisite: BA 18; not recommended for those with BA 155. The administrative process and its effects on business. Examination of the interaction among regulatory agencies, legislature, judiciary and business. (Former BA 117)

158. Environmental Legislation and Controls (3). Review of environmental problems, search for root causes and objectives; identification and evaluation of past and present controls; examination of alternative legislative remedies for present and anticipated problems. (Former BA 116)

160. Estate Planning (3). The federal and state systems for regulating and taxing property transfers during lifetime and upon death including the policy and theory underlying the system and practical problems involved in applying estate and gift tax laws.

174. Introduction to International Business (3). Principles and practice of international business and finance; government policies; mechanisms of world trade; international commercial relations.

175. Management of Multinational Enterprises (3). Entering foreign markets; building an operational organization abroad to meet host country requirements; management strategies; problems of managing in foreign environments; trade barriers; comparative management styles of foreign businesses; case studies.

> "You can find a club for almost any hobby or interest you have. I have enjoyed attending various programs sponsored by the University Lecture Series and several university plays."
>
> *— Freshman, Business*

176. World Commerce and Development (3). History, growth and change in world trade; importance of foreign trade in national economies; relationship of social and cultural development to foreign trade; opportunities and constraints for expansion of international business.

178. International Finance (3). Foreign exchange markets and procedures; economic forces affecting exchange rates and payments balances; supranational financial institutions; financing of foreign transactions and investments; taxation of foreign income; currency translation problems and techniques for outside financial reporting and internal management uses.

189T. Topics in Business Administration (1–3; max total 9 if no topic repeated). Studies in business administration.

190. Independent Study (1–3; max see reference). *See Academic Placement—Independent Study,* pages 96–97.

193. Supervised Work Experience (1). Open only to business majors. Prerequisite: permission of instructor. Workstudy: Learning through on-the-job experience in a business. Written reports.

195. Internship (3; max total 6). Open only to business majors. Prerequisite: permission of instructor. Workstudy: Student holds responsible position in business or government agency and reports on firm's operations and suggested improvements.

200 Series. Graduate courses are listed under *Business—Graduate Program,* pages 226–229.

Finance (Fin)

30. Introduction to Investments (3). Alternative uses of savings; stocks, bonds, mortgages and other securities, mutual funds, credit unions, banks, savings and loans, real estate investment trusts, insurance; financial security; mathematics of finance. (Former Fin 34)

103. Financial Management in Health Care Institutions (3). Prerequisite: Fin 130. Administrative use of financial information for internal control, capitalization and budgeting, and credits and collections. Sources of financing, asset management, operational planning and control, and investments in health care facilities.

130. Principles of Finance (4). Prerequisite: Econ 1A–B; Acct 4A–B. Theory of financing the business firm under uncertainty. The supply of and demand for capital; asset management, simulation problems, capital structure analysis, cost of capital, capital budgeting decisions, mathematics of finance. (3 lecture; 2 lab hours) (Former Fin 133)

132. Financial Institutions (3). Prerequisite: Fin 130. Theory of the financial system; intermediation; gross and net money doctrines; financial institutions; money and capital markets; mathematical models, simulation, case problems.

134. Security Analysis (3). Prerequisite: Fin 130. Analysis of security markets; financial mathematics; stocks, bonds and mortgages; fundamental analysis; public and private regulation of security markets.

135. Monetary Theory and the Banking System (3). Not open to students with credit in Econ 135. Prerequisite: Fin 130. Monetary theory, commercial banking, central banking; the Federal Reserve system; the international monetary system; mathematical models of money flows.

136. Business Forecasting (4). Prerequisite: Fin 130; DS 173. Business activity analysis; methods of forecasting; general and specific forecasts; analysis of trends in product groups, sectors, regions, and other areas of the world economy; mathematical models and statistical decisions; analysis of case problems, computer lab. (3 lecture; 2 lab hours) (Former Fin 104)

137. Credit Management (3). Prerequisite: Fin 130. Mercantile and consumer credit; derivation of credit information from business data; credit agencies and credit bureaus; valuation; analysis of financial statements; technical and legal problems; collections.

138. Portfolio Management and Theory (3). Prerequisite: Fin 130; Fin 134. Methods of determining the most desirable group of securities to build in an investment portfolio; investment techniques of portfolio risk using; portfolio trading rules; CAPM; and portfolio beta's.

139. Financial Management (3). Prerequisite: senior standing, Fin 130. Integration of analysis and policy for financial organizations; decisions under uncertainty; mathematical models and simulation.

143. Risk and Insurance (3). Fundamentals of insurance and risk management. Covers the basic areas of property, liability, auto, life, health, and social insurance. Other areas including marketing, underwriting, claims, investments, and loss control.

144. Life Insurance (3). Nature and use, types and forms of life and health insurance and annuities. Covers organization, management and regulation; employee benefit plans, social security.

145. Property and Liability Insurance (3). Standard forms of property insurance including fire and allied lines, business interruption, and transportation insurance. Identification and treatment of personal, business, and professional liability situations. Analysis of major property and liability insurance contracts. Case studies.

146. Risk Management in the Business Enterprise (3). Identification, measurements, and treatment of property, liability, and personnel pure-loss exposures in the business environment. Strategies for developing and implementing risk management programs to effectively treat the costs of pure risk, including loss control and loss financing techniques.

150. Financial Counseling (3). Prerequisite: Permission of instructor. The concept of a total coordinated system of personal financial planning; evaluate existing programs, design improved plans and coordinate execution to achieve stated objectives. Includes data gathering, the psychology of financial counseling, and the counselor's fiduciary responsibilities. Case studies.

180. Real Estate Principles (3). Meets California statutory course requirement for real estate salesperson's and broker's license. Theory and practice of urban land use. Location and legal dimensions, planning and market processes; financial and investment decisions in real estate; computer analysis and case studies.

181. Real Estate Appraisal (3). Prerequisite: Fin 180. Meets California statutory course requirement for real estate broker's license. Theory and determinants of real property value. Methods used in urban and rural property appraisals. Statistical techniques and the appraisal process; special purpose appraisals. Field work required.

182. Real Estate Practices (3). Meets California statutory course requirement for real estate broker's license. Relationship between public and private organizations active in real estate; company formation; selling and marketing techniques; financing; advertising; aspects of taxation; escrow procedure; property insurance; computer analysis and case studies.

183. Real Estate Finance (3). Prerequisite: Fin 180. Meets California statutory course requirement for real estate broker's license. Characteristics and underwriting standards of institutions furnishing funds for real estate investment and development. Alternative financial instruments and their effect on property economics and value.

185. Housing Market Analysis (3). Prerequisite: Junior standing. Analysis of local and regional housing markets and submarkets; availability of market data; primary versus secondary data; design of data collecting instruments; interviewing techniques and interviewer bias; data analysis and presentation of findings; field studies required.

186. Issues in Urban Land Economics (3). Prerequisite: Fin 180. Impact of public and private institutions upon land use, periodic productivity, and value; zoning, subdivision regulations, building codes, private deed restrictions, rent control, regional authorities and growth management; pertinent case law, U.S. and California.

189T. Topics in Finance (1–3; max total 9 if no topic repeated). Studies in business including agricultural economics, business economics, legal environment of business, international business, finance, financial services, risk and insurance, and real estate.

190. Independent Study (1–3; max see reference). See *Academic Placement—Independent Study,* pages 96–97.

193. Supervised Work Experience (1). Open only to business majors. Prerequisite: permission of instructor. Workstudy: Learning through on-the-job experience in a business. Written reports.

195. Internship (3; max total 6). Open only to business majors. Prerequisite: permission of instructor. Workstudy: Student holds responsible position in business or government agency and reports on firm's operations and suggested improvements.

200. Series. Graduate courses are listed under *Business—Graduate Program,* pages 226–229.

BUSINESS
Information Systems and Decision Sciences

School of Business and Administrative Sciences
Department of Information Systems and Decision Sciences
Harry G. Costis, Chair
McKee Fisk Bldg., Room 147
(209) 294-2823

B.S. in Business Administration
Options in:
Computer Applications and Systems
Decision Science
Information Management

The Department of Information Systems and Decision Sciences is interested in the study of computer applications and systems, the quantitative analysis of business data, and the newly developed and growing area of management of information, and offers three options (areas of concentration) within the Bachelor of Science in business administration degree program, plus a certificate program.

The *Computer Applications and Systems Option* offers the student an introduction into the vast area of computer technology and provides the knowledge and the skill for students to identify, analyze, and understand managerial problems and design solutions to these problems utilizing the computer. Upon graduation, students possess the necessary skills for entry level positions as programmers and systems analysts. The total program in this option is 30 semester units and includes courses in advanced programming in BASIC and COBOL as well as systems analysis and design and data base systems. Students entering this program should have a good base in mathematics including calculus.

The *Decision Science Option* offers interested students the opportunity to study methods of quantitatively analyzing business data to support the decision making role of management. In this option areas studied include applied statistics, operations research, systems analysis, and generally applied mathematics. With the availability of extremely effective computer systems, the drudgery of computation of complex mathematical functions has been drastically minimized making the analysis of data a substantial and necessary tool at the upper level of management. A good background in applied mathematics, including calculus, is necessary for students to successfully complete this program which consists of 31 semester units.

The *Information Management Option* prepares the student for a career as an information manager who serves as a consultant throughout business, securing and analyzing the computer users' information needs, and assisting them to utilize information for decision making. The ubiquity of computer systems at various forms (maxi, mini, micro) makes the information derived from analyzing business data abundantly available at all levels of management and necessitates a systematic management of such information. In addition, students choosing this option will study new office automation systems as well as sophisticated word processing methods currently affecting the business world.

The *Certificate in Business Data Processing* is directed toward enhancing the knowledge of candidates for entry level data processing related positions. After the candidate has demonstrated that he/she has met prerequisites for the certificate program, the approval of the program coordinator or of the department chair must be obtained before the student may enter the program. Each student's individually designed program will consist of a five course sequence chosen with the approval of the certificate program coordinator.

Statistical and Computer Laboratories

In addition to the classroom instruction, guest speakers and field trips, students who study the above three options are exposed to the department's computer laboratories for the quantitative, computer, and business communication classes throughout the semester. The computer laboratories provide the student with the valuable opportunity of hands-on computer experience for such classes as computer programming and statistical analysis. Two laboratory rooms with 40 computer terminals, plus a third laboratory room with 30 microcomputers are the busiest rooms in the entire McKee Fisk Business Building.



Faculty and Facilities

The Department of Information Systems and Decision Sciences employs more than 30 full-time faculty with extensive expertise in systems analysis, systems design, computer language programming, statistics, operations research, quality control, word processing systems, office automation, business communication, and data base systems. These faculty come from all over the world and have Ph.D. degrees from major American and foreign universities. The modern computer and word processing laboratories offer the student a unique opportunity to become acquainted with the developments in the field of computer technology and applications.

Faculty

Harry G. Costis, *Chair*

Allen M. Agnew
Randy J. Anderson
Sarah G. Bedrosian
Donald L. Beringson
Priscilla M. Chaffe-Stengel
Kelly J. Black
Jack Coffey
Mostafa Elhag
Berle Haggblade
Charlotte J. Hiatt
Myron E. Hatcher
Richard C. Lacy
Dietfried G. Liesegang
Wallace C. Liu
William S. Mallios
Arlene A. Motz
Sasan Rahmatian
Narasinga B. Rao
Dwayne G. Schramm
Peter Simis
Carolena L. Smith
Gayle A. Sobolik
Rafael Solis
Donald N. Stengel
Uthai Tanlamai
Tomasz Wielicki

Bachelor of Science Degree Requirements

A 39-unit business core provides students with a general background commonly acknowledged as furnishing the basis for effective management of business enterprises. The following courses are required of all business majors.

	Units
Core Requirements	39
Acct 4A–4B; B A 18; DS 73, 173; Fin 130; IS 50; LOM 124; Mgt 110 or 104–106; Mgt 187, Mktg 100	
General Education Requirements	54
Choices must include Econ 1A and 1B or Ag Ec 1 in Breadth, Division 8. Business students must also complete DS 71 or one semester of approved college mathematics beyond intermediate algebra.	
Electives	0–4
Option	27–31
(Select one of the three options outlined below.)	
Total for Business Administration degree	124

Options

The three options available to students are outlined below. The completion of the 27–31 units as required by the option, the General Education requirements, special course requirements, and the electives, which may include a minor, total the 124 units required for the Bachelor of Science degree in business administration.

Computer Applications and Systems Option

It is recommended that students take IS 105W to satisfy the Upper Division Writing Skills Requirement.

ISDS Common Core	Units
DS 71 (or one semester of approved college mathematics beyond intermediate algebra)	3
IS 54 Programming Languages—COBOL	3
IS 161 Systems Analysis	3
Option	
DS 72 (or one semester of approved college calculus)	3
IS 151 or 152	3
IS 162, 165, DS 181	9
Elect from: Acct 132, DS 182, IS 109, 115, 116, 150A–B–C, 163, 164, 168, 189T, 190, Mgt 126 or any other approved upper-division IS elective	6
	30

Decision Sciences Option

It is recommended that students take IS 105W to satisfy the Upper Division Writing Skills Requirement.

ISDS Common Core	Units
DS 71 (or one semester of approved college mathematics beyond intermediate algebra)	3
IS 53 Programming Language—FORTRAN	3
IS 161 Systems Analysis	3
Option	
DS 72 (or one semester of approved college calculus)	3
DS 111, 178, 181, 185, 186, IS 163	16
Elect from: DS 175, 176, 182, 189T, 190	3
	31

Information Management Option

ISDS Common Core	Units
DS 71 (or one semester of approved college mathematics beyond intermediate algebra)	3
IS 54 Programming Language—COBOL	3
IS 161 Systems Analysis	3
Option	
IS 103, 105W, 115	9
Elect from: IS 104, 108, 109, 116, 117, 120, 121, 122	9
	27

Certificate in Business Data Processing Requirements

Before entering the program, students will need to demonstrate that they have completed at least six units of elementary accounting and are conversant in two computer languages (preferably BASIC and COBOL). Approval of the certificate program coordinator or the chair of the department is necessary. Students will also need to meet either one of the following criteria:

1. Bachelor's degree in any field from an accredited institution
2. Associate of Arts degree from a two-year accredited college and minimum of two years of business experience

Required Courses	Units
IS 161, 162, 165	9
Elective Courses (Select minimum of six units)	
IS 109, 151, 152, 164, 168, 190, 195	6

Note: Both IS 190 and IS 195 cannot be counted for credit toward certificate.

COURSES

Decision Sciences (DS)

70. Basic Quantitative Block (3) (3) (3). Meets School of Business and Administrative Sciences requirements for IS 50, DS 71, and 73. Not open to students with credit in IS 50 or DS 71 or 73 or equivalents from another college.

Prerequisite: intermediate algebra and one year high school geometry, application and permission of instructor. Integrative lower-division course meets 9 hours weekly, computer concepts, mathematical, and statistical analysis. Mathematical and statistical background for study of business and managerial econom-

ics, including computer programming of statistical and mathematical constructs.

71. Quantitative Analysis I (3). Prerequisite: E.L.M. Exam, intermediate algebra, one year high school geometry. Applications of finite mathematics in the quantitative formulation and solution of problems of modern management.

72. Quantitative Analysis II (3). Prerequisite: DS 71. Applications of selected tools of mathematical analysis in the quantitiative formulation and solution of problems of modern management.

73. Statistical Analysis I (3). Prerequisite: E.L.M. Exam, Math 51 or 71 or DS 71; Econ 1A–B recommended. Introduction to descriptive statistical tools as applied to management decision making. Central tendency and dispersion measures; index numbers (CPI, deflators); time series analysis (trends, seasonal variations); probability theory; probability and sampling distributions (normal, exponential, binomial, poisson); central limit theorem.

111. Decision Sciences Perspectives (1). The philosophy and history of the development of quantitative decision processes. Basic decision models under conditions of certainty, uncertainty, and risk. The development of utility function, payoff matrices, and definition of states of natures related to decision models and the overall decision process.

141. Quantitative Analysis in Health Care Systems (3). Prerequisite: DS 73. Survey of quantitative decision-making techniques and models and their applications in health care organizations.

173. Statistical Analysis II (3). Prerequisite: DS 73, IS 50. Statistical inference as applied to managerial problems and decision making. Emphasizes the inferential process; interval estimation, hypothesis testing, one and two-way analysis of variance, regression, and correlation and related inferential analysis, non-parametric methods, Bayesian decision theory. (2 lecture; 2 lab hours)

175. Sampling Methods and Applications (3). Prerequisite: DS 173. Sample designs, estimation using samples, including simple random, stratified, cluster, systematic, area, and multistage samples. Replicated sampling, acceptance sampling, industrial uses of sampling, and non-probability designs.

176. Bayesian Inference and Decision Theory (3). Prerequisite: DS 173. Revision of probability and subjective interpretation. Bayes' theorem, statistical estimation of various parameters and decision theory, prior analysis and prior probability distributions; posterior analysis and posterior probability distributions; utility problems, expected value of perfect information.

178. Regression Analysis (3). Prerequisite: DS 72, 173. Linear and non-linear regression models including analysis of



Principal groundbreakers for the $11 million Leon S. Peters Business Building (see architect's rendition above) and Valley Business Center include (in center foreground) Mrs. Alice Peters, president of the Leon S. Peters Foundation and Dr. Harold H. Haak, CSU, Fresno president. The new buildings are scheduled for opening in fall 1988.

variance/covariance and time series analysis. Examination of least squares assumption. Classical versus Bayesian inference in regression. Application of BMD/SPSS statistical packages. (2 lecture; 2 lab hours)

181. Principles of Operations Research I (3). Prerequisite: DS 173. Introduction to operations research and the systems approach: mathematical programming, network analysis, queuing theory, Markov chains, input-output analysis, simulation.

182. Principles of Operations Research II (3). Prerequisite: DS 181. Managerial applications of operations research: deterministic and Stochastic models; case studies.

185. Decision Science Case Studies (3). Prerequisite: DS 178. The art, science, and politics of problem solving with emphasis on quantitative methods. Applications illustrate phases of problem definition, model building, and model implementation in business economics and social areas. Modeling procedures utilize statistical and mathematical modeling techniques. Established computer packages are utilized in the modeling process. (Former DS 179)

186. Decision Science Applications Laboratory (3). Prerequisite: DS 185. Utilization of quantitative methods in solving problems arising from university sponsored projects and outside business. Consultations with problem sponsors. Appropriate reports required.

189T. Topics in Decision Sciences (1–3; max total 6 if no topic repeated). Prerequisite: 12 units in decision sciences. Theory or application of statistics or operations research applied to current developments.

190. Independent Study (1–3; max total see reference). See *Academic Placement—Independent Study,* pages 96–97.

193. Supervised Work Experience (1). Open only to business majors. Prerequisite: permission of instructor. Workstudy: Learning through on-the-job experience in a business. Written reports. (Former QM 198)

195. Internship (3; max total 6). Open only to business majors. Prerequisite: permission of instructor. Workstudy: Student holds responsible position in business or a government agency and reports on firm's operations and suggested improvements. (Former QM 199)

200. Series. Graduate courses are listed under *Business Graduate Program,* pages 226–229.

Information Systems (IS)

1. Keyboarding (2).* Recommended for students with less than one semester of keyboarding or typewriting instruction. Development of keyboarding techniques on microcomputers for personal and business usage. (4 lab hours)

2. Word Processing Applications (2).* Prerequisite: IS 1 or equivalent. Introduction to word processing applications on microcomputers. Refinement of keyboarding techniques for personal and business applications. (4 lab hours)

20. Shorthand I (4). Prerequisite: IS 1 or equivalent. Mastery of theory; proficiency in reading, writing, and transcribing shorthand. (2 lecture; 4 lab hours)

50. Computer Concepts (3). Prerequisite: E.L.M. Exam. Introduction to computer hardware and software systems and to several computer languages with emphasis on BASIC. Discussion of the social impact of computers; privacy and legal issues. (2 lecture; 2 lab hours)

53. Programming Languages—FORTRAN (3). Prerequisite: E.L.M. Exam, IS 50. Programming in FORTRAN, using batch and on-line systems. (2 lecture; 2 lab hours)

54. Programming Languages—COBOL (3). Prerequisite: E.L.M. Exam, IS 50. Programming in COBOL, using batch and on-line systems. (2 lecture; 2 lab hours)

103. Principles of Office Management (3). Office management in business and industry; organization and control of office services; selection, training, and supervision of personnel; utilization of the computer and peripheral equipment in the office; improvement of office efficiency; office planning and layout; equipment and supplies.

104. Office Production (3). Prerequisite: IS 2 or equivalent. For students working toward competency in office production. Practical case applications, involving reprographics, word processors, and machine transcription. Also meets the needs of students working toward a standard secondary teaching credential in business subjects. (2 lecture; 2 lab hours) (Former IS 4 and 130).

105W. Business Communication (3). Prerequisite: Engl 1, 3 units of English composition and junior standing. Business communication theory; analysis of communication alternatives; effective business writing and speaking; case studies. Meets the Upper Division Writing Skills Requirement for graduation.

108. Implementation of Information Systems (3). Prerequisite: A program language. Information flows as applied to all areas of management functions. Creation, modification, and implementation of information systems, and the problems encountered during implementation of an information system. Data base concepts as applicable to information flows.

109. Data Communications (3). Prerequisite: A program language. Resource sharing; computer traffic characterizations; multiplexing; network structure; packet switching and other switching techniques; computer network examples; routing and flow control; satellite and ground radio packet switching; transmission media and methods; line control procedures; line capacity assignment; communication processors.

115. Office Automation (3). Prerequisite: IS 1 or equivalent. Study of how automated office equipment, highly trained personnel, and specified procedures affect information management. Emphasis on the phases of the information-processing-cycle. Acquisition of a vocabulary and awareness of careers in office automation. Information processing applications on microcomputers. (2 lecture; 2 lab hours)

116. Word/Information Processing Management (3). Prerequisite: Background in word/information processing concepts and automated office equipment operation. Application of word/information processing concepts and skills and management and supervision principles to effective management and supervision of word/information processing systems.

117. Records Management (3). Systematic analysis and scientific control in the creation, use, maintenance, and disposition of business records. Emphasis on the importance of records management and the role of the records manager in introducing, implementing, and maintaining a program.

120. Shorthand II (3). Prerequisite: IS 20 or one year high school shorthand. Review of theory and development of proficiency in writing and transcribing shorthand notes; speed and endurance in writing and transcribing shorthand notes. (2 lecture; 2 lab hours)

* Not more than six units of credit in typewriting/keyboarding will be allowed toward any degree.

121. Transcription (3). Prerequisite: IS 120 (may be taken concurrently). Transcription from shorthand and machine dictation; development of production standards for office transcription. (2 lecture; 2 lab hours)

122. Office Services and Procedures (3). Prerequisite: IS 121. Duties and responsibilities of executive secretarial positions. (2 lecture; 2 lab hours)

142. Information in Health Care Organizations (3). Prerequisite: Acct 4A, IS 50. Design, implementation, and evaluation of comprehensive information systems for planning and controlling the operations of health care organizations.

151. Advanced Applications Software—BASIC (3). Prerequisite: IS 50, IS 53 or 54, Acct 4A–B, DS 71; IS 161 recommended. Advanced software development with an emphasis on structured programming, program debugging and efficiency, file handling, and logic structures. Documentation, software engineering, programming teams, and elements of systems design. Applications using the BASIC language on mini and microcomputers. (2 lecture; 2 lab hours)

152. Advanced Applications Software—COBOL (3). Prerequisite: IS 54, Acct 4A–B, DS 71; IS 161 recommended. Advanced software development with an emphasis on structured programming, program debugging, and efficiency, file handling, and logic structures. Documentation, software engineering, programming teams, and elements of systems design. Applications using the COBOL language on large and medium size computers. (2 lecture; 2 lab hours)

161. Information Systems Analysis (3). Prerequisite: IS 50, 53 or 54, Acct 4A–B, and upper-division standing. To develop a basic understanding of the systems approach to problem solving, systems development life cycle, and system analysis. This course will also furnish students with classical and structured documentation tools and techniques, logical systems specification, and methods for analyzing systems. (Former IS 166)

162. Information Systems Design (3). Prerequisite: IS 54, 161; IS 165 recommended. Physical design of information systems including structural design techniques, file design and access methods, system controls and language selection; system implementation considerations; and systems maintenance. (2 lecture; 2 lab hours)

163. Business Models and Simulation (3). Prerequisite: IS 53 or 54, DS 72, DS 173. Computer modeling of inventory, queuing, network, financial and planning problems. (2 lecture; 2 lab hours)

164. Computer Configurations (3). Prerequisite: IS 53 or 54 (a basic electronics course (I T 131) desirable). In-depth study of selection and installation of hardware and software of various computers; feasibility studies, comparisons of self-managed versus service bureau operations; comparison of competitive systems; costs of reprogramming; distributed systems and microcomputers.

165. File Organization and Data Base Systems (3). Prerequisite: IS 53 or 54; IS 161; IS 151 or 152 recommended. Data and storage structure; file design; approaches to data base management system design; use of generalized data base management systems. (2 lecture; 2 lab hours)

168. Data Processing Management (3). Prerequisite: Acct 4A–B, 129, or 132; IS 53 or 54; LOM 124 desirable. Theories, cost, and problems of operation of a computer center; standards; flow of work, scheduling, batching, spooling, multiprogramming and multiprocessing techniques as methods of control and operation.

> "I had done my undergraduate work at UC Berkeley and during my five years there, I had never spoken directly to my professors. So, when I came to Fresno and observed the professors interacting with students on an individual basis, I was thrilled."
>
> *— Graduate Student, English*

189T. Topics in Information Systems (1–3; max total 6 if no topic repeated). Prerequisite: permission of instructor. Theory or application of information systems or information management as applied to current developments in the field.

190. Independent Study (1–3; max total see reference). See *Academic Placement—Independent Study,* pages 96–97.

193. Supervised Work Experience (1). Open only to business majors. Prerequisite: permission of instructor. Workstudy: Learning through on-the-job experience in a business. Written reports. (Former O Ad 198)

195. Internship (3; max total 6). Open only to business majors: Prerequisite: permission of instructor. Workstudy: Student holds responsible position in business or a government agency and reports on firm's operations and suggested improvements. (Former O Ad 199)

200. Series. Graduate courses are listed under *Business—Graduate Program,* pages 226–229.

BUSINESS
Management and Marketing

School of Business and Administrative Sciences
Department of Management and Marketing
Gerald L. Jones, Chair
McKee Fisk Bldg., Room 125
(209) 294-2851

B.S. in Business Administration
Options in:
- **Human Resource Management**
- **Logistics/Operations Management**
- **Management**
- **Marketing**



The Department of Management and Marketing offers four options (areas of emphasis) within the Bachelor of Sciences in business administration degree program. These options are:

The *Human Resource Management Option* focuses upon the people that work in organizations. Consideration is given to personnel administration, labor relations and collective bargaining, employee compensation, and government legislation dealing with employees. The courses offered in this area will be of interest to those who wish to specialize in personnel work and to other students who wish to strengthen their understanding of people in organizations.

The *Logistics/Operations Management Option* is designed to furnish students with an integrated knowledge of transportation and physical distribution management, purchasing and materials management, and production and operations management. This option provides a base of knowledge for those individuals who seek a challenge for the future and wish to become professionals in the field of Logistics/Operations Management and prepares them for various exciting career opportunities in a field which is rapidly expanding.

The *Management Option* provides students with an opportunity to acquire skills and knowledge necessary for managing groups and organizations. Emphasis is given to development of skills in planning, organizing, leading and controlling, as well as the conceptual and analytical abilities which underlie the key managerial activities. Students may take electives in human relations, social issues, corporate/international issues, decision techniques and special management applications.

The *Marketing Option* provides an integrated set of courses which allows the student to study the impact and challenges of individuals and profit and non-profit organizations engaged in performing functions that seek to satisfy human wants by facilitating exchange relationships. The program is designed to explore the primary areas of buyer behavior, market segmentation, marketing research, channel management, physical distribution, pricing, and strategic marketing planning. It also gives the student the choice of examining promotion, sales and sales administration, marketing management, retailing, and psychology of personal persuasion.

Faculty and Facilities

The faculty of the Department of Management and Marketing is comprised of more than 30 individuals who have studied and pursued business careers throughout the world. Well over a dozen specializations within the field of Business Administration are taught, researched, and shared with the business community by these professors. Case studies, experiential exercises, computer simulations, laboratory research, business community projects, guest speakers, and seminar discussions are just a few of the ways in which instructors provide the students with a real-world exposure to business. The combination of faculty expertise, teaching skills, research activities, and business experiences assures the student of receiving the best education possible in management and marketing.

Faculty

Gerald L. Jones, *Chair*

David C. Anderson
Ralph H. Bergmann
Harold L. Best
Chris A. Betts
Karen D. Bowerman
Gerald O. Bryan
Gene E. Burton
Luis R. Calingo
Douglas A. Cords
William M. Coughran
Charlotte M. Erb
David S. Halfhill
Susan M. Halfhill
Robert E. Hampton
Harry G. Harris
Dee W. Henderson
Dewey E. Johnson
Robert I. Kutscher
Jahanguir M. Moghaddam
Richard D. Nordstrom
Victor G. Panico
Joseph J. Penbera
Richard L. Pinkerton
William E. Rice
Charles S. Sherwood
Douglas B. Simpson
Richard D. Tellier
Louis D. Volpp
Irwin Weinstock
Charles H. Wetmore

Bachelor of Science Degree Requirements

A 39-unit business core provides students with a general background commonly acknowledged as furnishing the basis for effective management of business enterprises. The following courses are required of all business majors.

	Units
Core Requirements	39
Acct 4A–4B; B A 18; DS 73, 173; Fin 130; IS 50; LOM 124; Mgt 110 or 104–106; Mgt 187, Mktg 100	
General Education Requirements	54
Choices must include Econ 1A and 1B or Ag Ec 1 in Breadth, Division 8. Business students must also complete DS 71 or one semester of approved college mathematics beyond intermediate algebra.	
Electives	3–10
Option	21–28
(Select one of the four options outlined below.)	
Total for Business Administration degree	124

Options

The four options available to students are outlined below. The completion of the 21–28 units as required by the option, the General Education requirements, special course requirements, and the electives, which may include a minor, total the 124 units required for the Bachelor of Science degree in business administration.

Human Resource Management Option

	Units
HRM 150, 152, 154, 157, 159	15
Elect from: BA 156; Econ 150; HRM 153; HRM 189T; Mgt 189T (by permission of HRM faculty); approved Independent Study or Internship (3 units maximum); Soc 132 or 146	6
	21

Note:

1. Only one of Soc 132 or 146 may be counted toward the required units.

Logistics/Operations Management Option

	Units
LOM 114, 136, 160, 177	16
Elect three courses from the following five areas	9–12
(1) System: IS 163, I T 105, Mgt 180	
(2) Human Resource Management: HRM 150, Mgt 127	
(3) Control: Acct 132, I E 111, I T 117	
(4) Analytical: DS 181; Fin 136; Mgt 130; Mktg 120 or 125	
(5) Logistics: I E 114, LOM 119, Mktg 138	
	25–28

Note:

1. With the approval of a Logistics/Operations Management adviser, one of the following may be substituted under any of the above five areas: HRM, Mgt, Mktg 189T, 190, 193, 195.

Management Option

	Units
Mgt 180, 182	8
Acct 129 or Fin 139	3
Elect from at least two but no more than three of the following categories	14–16
(1) Managerial Decision Techniques: B A 100; DS 178; DS 181; Fin 136; Mgt 126; Mgt 130; Mktg 120 or 125; Psych 149	
(2) Human Relations: HRM 150; HRM 152; HRM 157; Psych 134 or 176; Soc 132 or 146; Spch 167 or 168	
(3) Social Issues in Management: B A 101 or Phil 122; B A 120 or Soc 149	
(4) Corporate/International Management Issues: B A 150, 151, 155, 157, Mgt 131	
(5) Special Management Applications: IS 142, LOM 114, 136, 160, Mgt 108, 128, 129	
(6) Advanced Management Block: Mgt 102A–B–C–D	
	25–27

Notes:

1. The following courses may be applied to any of the above six categories with prior Department of Management and Marketing approval (6 unit maximum): HRM 189T, Mgt 190, 193, 195.
2. BA 120 and Soc 149 cannot be double counted as fulfilling both the G.E. requirement and an elective within the option.

Marketing Option

	Units
Mktg 102; LOM 114 or Mktg 115; Mktg 120 or 125; Mktg 188	16
Elect two of the following: Mktg 130; 132; 134; 136 or 138	8
	24

Notes:

1. Credit for both Mktg 136 and 138 is permitted, but one of the two must be a free elective outside the requirements of the marketing option.
2. Students desiring more depth may also take Mktg 189T, 190, 193, 195. These would count as free electives outside the requirements of the marketing option.

COURSES

Human Resource Management (HRM)

150. Administration of Personnel (3). Prerequisite: Mgt 104 and 106 or 110. Composition of labor force; acquisition and utilization of human resources in organizations; recruitment; selection; performance appraisal; motivation; compensation; communications; social issues and government influence. Indi-

vidual and group projects; written and oral reports. (Former Ind R 150)

152. Labor Relations and Collective Bargaining (3). Prerequisite: HRM 150. Relations between employers and organized employee groups; organization, election, and certification procedures; techniques of collective bargaining; labor agreements; grievance handling; settlement of industrial disputes. (Former Ind R 152)

153. Career Development (3). Prerequisite: HRM 150, senior standing. Self-assessment, personal objectives and career planning; careers and factors relating to personal career choice; career stages; role of mentor, inter/intra-organizational mobility, staffing and organization. Speakers, cases. (Former Ind R 153)

154. Compensation Administration (3). Prerequisite: HRM 150. Analysis of compensation programs for business, not-for-profit, and government organizations. Special attention given to job evaluation programs, motivation-to-work theory, micro and macro forces influencing compensation decisions. Case analysis; individual and group reports. (Former Ind R 154)

157. Equal Employment Opportunity (3). Prerequisite: HRM 150. Review of E.E.O. law and application; development of affirmative action programs and enforcement of government regulations; prevention of discrimination complaints; procedures for resolution of existing complaints. Attention given to newly developing E.E.O.-A.A.P. issues. (Former Ind R 157)

159. Seminar in Human Resource Management (3). Prerequisite: Last semester senior, HRM 152, 154, 157 (157 may be taken concurrently) and completion of Upper Division Writing Requirement. Integration of various aspects of human resource management knowledge through utilization of previously acquired academic and practical experience; emphasis upon advanced problems in human resource management. Case analysis and discussion; individual and group report. (Former Ind R 159)

189T. Topics in Human Resource Management. (1–3; max total 9 if no topic repeated). Prerequisite: senior standing. Studies in personnel and labor relations, recruitment, selection, retention, compensation, employment law, and business ethics. (Former Ind R 189T section)

190. Independent Study (1–3; max see reference). See *Academic Placement—Independent Study,* pages 96–97. (Former Ind R 190)

193. Supervised Work Experience (1). Open only to business majors. Prerequisite: permission of instructor. Workstudy: Learning through on-the-job experience in a business. Written reports. (Former Ind R 193)

195. Internship (3; max total 6). Open only to business majors. Prerequisite: permission of instructor. Workstudy: Student holds responsible position in business or government agency and reports on firm's operations and suggested improvements. (Former Ind R 195)

200 Series. Graduate courses are listed under *Business—Graduate Program,* pages 226–229.

Logistics/Operations Management (LOM)

114. Transportation and Physical Distribution Management (4). Prerequisite: Mktg 100. Systems approach to physical distribution activities aimed at minimizing cost and maximizing customer service. Emphasis on transportation system characteristics and the role of warehousing, inventory control, order processing, and materials handling in logistics management. Case studies and simulations. (Former Mgt 146 and 147)

119. Carrier and Traffic Management (3). Prerequisite: LOM 114. New tools and techniques in carrier management, physical distribution management, carrier-shipper cooperation; trends in intracarrier and intercarrier competition, pricing and regulatory philosophy. Case problems; computer simulation; individual and group problem solving. (Former Mgt 148)

124. Logistics/Operations Management (3). Prerequisite: DS 173 (may be taken concurrently), Mgt 104 or 110. Operations systems and problems; facility location and design; materials handling; operation planning and control; inventory control; product development; quality control; methods analysis and job design; work measurement. Lecture discussion; application of quantitative methods in solution of national and multinational operations problems; computer simulation. (Former Mgt 124)

136. Purchasing and Materials Management (4). Prerequisite: LOM 124 or permission of instructor. Purchasing planning, policies, and procedures; purchasing organization; sources of supply; pricing; contract negotiation; value analysis; traffic management; quality assurance; inventory management; public purchasing; and legal and ethical aspects of purchasing.

160. Production/Operations Planning and Control (4). Prerequisite: LOM 124 or permission of instructor. Material requirements planning; capacity planning and control; production/operations activity planning and control; lead time management; master production scheduling; forecasting; logistics; maintenance and safety; and project planning and control.

177. Problems in Logistics/Operations Management (4). Prerequisite: LOM 114, 136, 160. Integration of various elements of logistics/operations management with each other and with other functional areas of a business system; emphasis upon American and worldwide industries, logistics/operations goals and strategies, integrated logistics/operations management, and multi-plan and international logistics/operations management.

Management (Mgt)

101. Basic Management Block (12). Meets School of Business and Administrative Sciences requirements for LOM 124, Mgt 104 and 106 or 110, Mktg 100. Not open to students with credit in Mgt 104 and 106, 110, 124, Mktg 100. Prerequisite: first-semester junior, Econ 1A–B, Acct 4A, D S 73, application, and permission of instructor. Special integrative undergraduate seminar: 12 hours weekly; marketing, production, administration, organizational behavior. Small group projects; field trips and research; computer simulation; student planned and presented programs; business, government, academic guest presentations. Consult school or departmental office.

102A–B–C–D. Advanced Management Block (3–3–3–3). Can be substituted for some option requirements. Concurrent enrollment in A–B–C–D. Prerequisite: Permission of instructor. Undergraduate seminar integrating business disciplines, decision applications, models of local businesses, business simulation by computer, case analysis, student planned programs, individual and group presentations with executives and academicians, field trips, negotiations, group projects.

104. Administrative Principles of Management (3). Not open to students with credit in Mgt 110. Identification of management processes and development of administrative skills. Examination of planning techniques, organization theory and

practice, and control processes designed to ensure the achievement of organizational purpose. (Former Mgt 110A.)

106. Behavioral Principles of Management (3). Not open to students with credit in Mgt 110. Prerequisite: Mgt 104. Focus upon human dimensions and behavioral skills of management. Understanding of learning, perception, and motivation. Development of productive job designs, communication networks, and reward systems. Examination of group dynamics and leadership theory. Management of conflict, change, and stress. (Former Mgt 110B.)

108. Health Care Facility Management (3). Prerequisite: Mgt 104 or 110. Operational and administrative demands of health care facilities including the processes of planning and decision-making, organizational structure and behavior, and important areas of managerial control.

110. Administration and Organizational Behavior (6). Not open to students with credit in Mgt 104 or Mgt 106. Development of awareness of the management process and effective management techniques. Exploration of the nature of organizations, and applications to the formulation of management theory and practice.

126. Managing Uncertainty and Ambiguity (3). Prerequisite: Mgt 104 and 106 or 110. Examination and analysis of constraints imposed on the decision process by uncertainty, complex changes, and ambiguity; the roll of intuition and creativity in addressing such circumstances; and techniques for developing intuition and creativity. (Former Mgt 189T section)

127. First-Line Supervision (3). Prerequisite: Mgt 104 and 106 or 110. Emphasis on motivating, communicating, counseling, training, managing time, evaluating performance, and understanding the worker. Guest speakers, role-playing and incident reports.

128. Problems in Small Business Management (3). Prerequisite: senior standing. Special problems of small businesses: initiation, financing, operations. Class projects: studying local business operations; preparing business plans and financial requests.

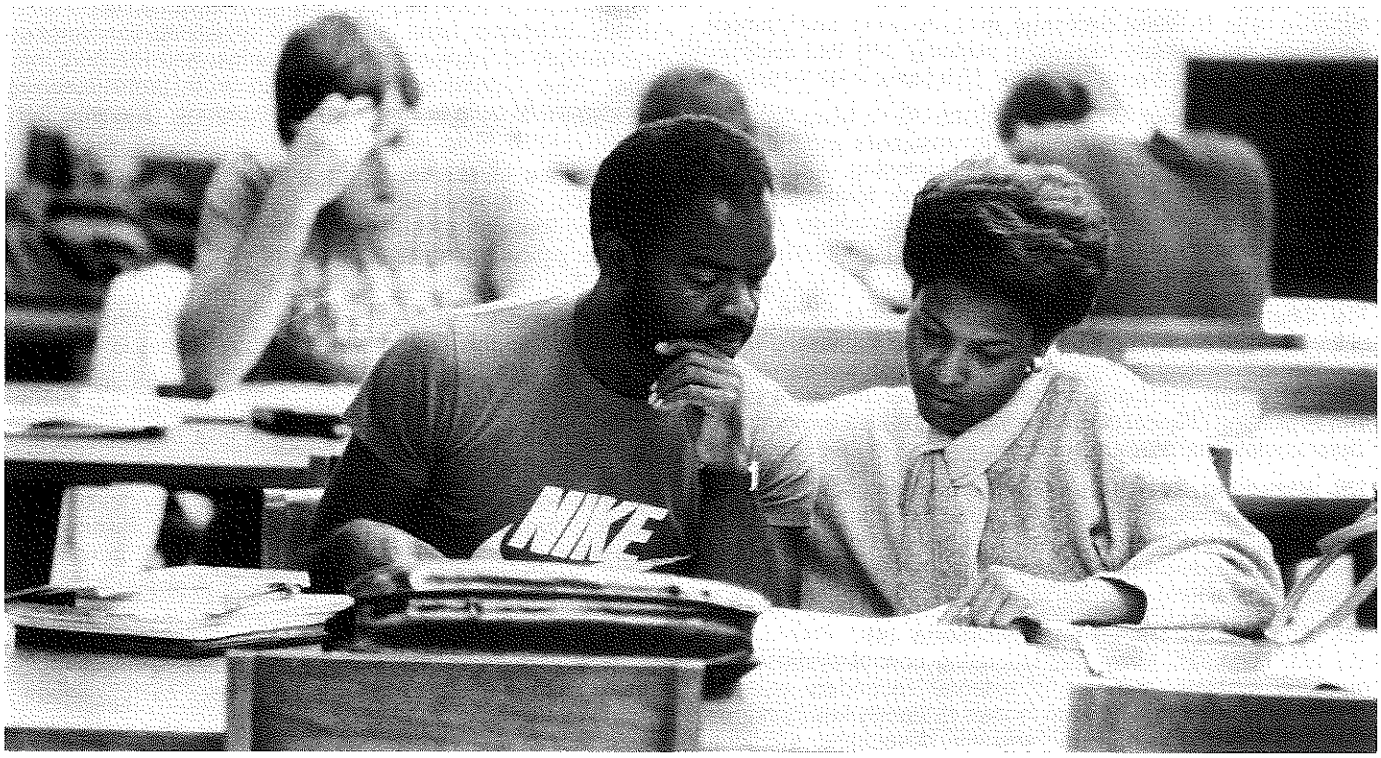
129. The Entrepreneurial Manager (3). Prerequisite: Mgt 104 and 106 or 110. Aspects of business evolution and product development (intrapreneurship) from inception through interdisciplinary (technological, marketing, financial, etc.) feasibility analysis to implementation and reward techniques are studied through cases and applied techniques. Course includes historical as well as current international approaches.

130. Managerial Economics (4). Prerequisite: Fin 130, LOM 124, Mktg 100. Economic analysis of management problems, applying an integrated model of the firm to: setting goals and standards for coordination, evaluation and control; allocating the firm's resources; organizing for competition and cooperation; analyzing market structure; and creating a management information system. (3 lecture; 2 lab hours)

131. International Management (3). Prerequisite: Mgt 104 and 106 or 110 or permission of the instructor. A review of the unique issues, problems and challenges of managing enterprises in an international environment. Comparative analysis of management styles and cultures, managerial processes and strategy formulation. Focuses on American, European and Japanese enterprises.

180. Seminar in Management Theory and Organization Design (4). Prerequisite: Mgt 104 and 106 or 110. Organizations as open systems functioning in the external environment; organization development as a planned intervention emphasizing effective implementation of system changes, integrating mechanisms in response to perceived contingencies; and strategic issues of organizational life cycles.

182. Seminar in Applied Management Techniques (4). Prerequisite: Mgt 104 and 106 or 110. Implementation of management strategy in the human context of organizations; the



organizational context which shapes behavior; climate and culture as an organization-wide process; and change, power and conflict in the organization as a systematic entity.

187. Seminar in Business Strategy (3). Prerequisite: last semester senior, completion of School of Business and Administrative Sciences core requirements, and completion of Upper Division Writing Requirement. Integration of various fields of knowledge through utilization of previously acquired academic and practical experience; emphasis upon decision making under conditions of uncertainty, and experience with international policy formulation and implementation.

189T. Topics in Management (1–3; max total 9 if no topic repeated). Prerequisite: senior standing. Studies in management, organizational theory, organizational behavior, production, transportation, business administration, special management and organizational problems.

190. Independent Study (1–3; max see reference). See *Academic Placement—Independent Study,* pages 96–97.

193. Supervised Work Experience (1). Open only to business majors. Prerequisite: permission of instructor. Workstudy: Learning through on-the-job experience in a business. Written reports.

195. Internship (3; max total 6). Open only to business majors. Prerequisite: permission of instructor. Workstudy: Student holds responsible position in business or government agency and reports on firm's operations and suggested improvements.

200. Series. Graduate courses are listed under *Business—Graduate Program,* pages 226–229.

Marketing (Mktg)

100. Marketing Concepts (4). Prerequisite: Econ 1A–B. Study/analysis of the challenges and problems faced by individuals, organizations (profit and non-profit) who attempt to expedite and facilitate exchange in a dynamic environment. Emphasis on strategic marketing planning and the decision-making process in the marketplace. (3 lecture; 2 lab hours)

102. Buyer Behavior (4). Prerequisite: DS 73, Mktg 100. This course leads to the understanding of consumers and industrial buyers as a guide for more effective marketing. A survey of appropriate research findings and methods from marketing, economics, sociology, psychology, and anthropology are applied to aspects of marketing decision making. (3 lecture; 2 lab hours) (Former Mktg 106)

115. Channel Marketing (4). Prerequisite: Mktg 100. Analysis of the coalition of merchants, agents, and other institutions which together constitute the channel of distribution for consumer and industrial goods; emphasis on designing, operating, controlling, and evaluating channel structures in a competitive environment. Case studies and problem solving.

120. Marketing Research (4). Prerequisite: DS 173, Mktg 102. Fundamentals of market and marketing analysis, research procedure, methods of analysis; individual and group problem analysis and presentation of results; computer simulation. (3 lecture; 2 lab hours) (Former Mktg 104)

125. Analysis of Marketing Operations (4). Prerequisite: DS 173, LOM 124, Mktg 102. Marketing control systems and reporting systems, and use of external secondary data for creating analytic and simulation models to identify key marketing problems; and opportunities, and for developing solutions. Computer spreadsheets and statistical software tools are applied to model building. (3 lecture; 2 lab hours)

130. Retail Management and Merchandising (4). Prerequisite: Mktg 102. Location, price, and promotion topics are enhanced with the buying and merchandising process, including buying planned stocks, style merchandising, and accounting and controlling systems. Laboratory includes interactive exercises, visual merchandising, and database and spreadsheet applications. (3 lecture; 2 lab hours)

132. Promotion Practices and Principles (4). Prerequisite: Mktg 102. The focus is on promotion as a communications process and the integration of promotional elements into the total strategy of the firm, keeping in mind competitive strategies and the constraints imposed by the major social and ethical issues surrounding promotional practices. (Former Mktg 140 and 142)

134. Product Marketing and Management (4). Prerequisite: DS 173, Mktg 102. This course investigates the various processes organizations employ in order to develop new products/services. Students will complete a term project which simulates the new product development process that would ideally be pursued in an actual situation. (Former Mktg 112 and 117)

136. Sales Administration and Personal Selling (4). Prerequisite: Mktg 102. Techniques of personal persuasion, behavioral sciences methods, selection training, and supervision of sales staff are integrated into the strategic marketing concepts. Role playing and case analysis. (Former Mktg 155)

138. Psychology of Personal Persuasion (4). Prerequisite: Mktg 100. Behavioral science approach to personal selling. Emphasis on analysis of psychological aspects of consumer decision-making and consumer attitudes toward the salesman that affect success. Case analysis, individual and group presentations. (3 lecture; 2 lab hours) (Former Mktg 150)

188. Marketing Strategy (4). Prerequisite: LOM 114 or Mktg 115, LOM 124, Mktg 120 or 125. Last semester senior standing recommended. A capstone course integrating prior knowledge and developing marketing planning and implementation skills. Primary emphasis upon analysis of situations/opportunities, development of problem-solving scenarios, and resultant marketing plans. Computer simulations, in-depth problem-solving research study, case analyses, and discussions. (3 lecture; 2 lab hours) (Former Mktg 109)

189T. Topics in Marketing (1–3; max total 6 if no topic repeated). Prerequisite: senior standing or permission of instructor. Topics in advertising, consumer behavior, distribution, industrial procurement, marketing research, retailing, wholesaling.

190. Independent Study (1–3; max see reference). See *Academic Placement—Independent Study,* pages 96–97.

193. Supervised Work Experience (1). Open only to business majors. Prerequisite: permission of instructor. Workstudy: Learning through on-the-job experience in a business. Written reports. (Former Mktg 198).

195. Internship (3; max total 6). Open only to business majors. Prerequisite: permission of instructor. Workstudy: Student holds responsible position in business or government agency and reports on firm's operations and suggested improvements. (Former Mktg 199).

200. Series. Graduate courses are listed under *Business—Graduate Program,* pages 226–229.

BUSINESS
Graduate Program

School of Business and Administrative Sciences
Graduate Business Program
Lynn M. Forsythe, Director
McKee Fisk Bldg., Room 123
(209) 294-2107

Master of Business Administration
M.S. in Business
M.S. in Accountancy



The School of Business and Administrative Sciences offers programs for the Master of Business Administration, the Master of Science in business, and the Master of Science—accountancy degrees. The Master of Business Administration degree program is designed to prepare students for careers in the upper levels of the management of business organizations, public corporations, educational systems, government and nonprofit institutions and agricultural enterprises. The Master of Science in business degree is offered for those graduate students who wish to specialize in certain approved areas of study at the graduate level. Either program may be used to increase the competency of teachers in secondary schools and community colleges. The Master of Science—accountancy program is designed for those persons who wish to advance their careers in accounting.

Admission. The M.B.A., M.S., and M.S.-A programs are open to students with business or other undergraduate degrees who have demonstrated intellectual promise and ability to perform at a satisfactory level. The School of Business and Administrative Sciences requires an entry index of 1050, based on a combination of overall undergraduate grade point average and the G.M.A.T. score, for admission to its graduate programs. The index is computed as 200 times the grade point average (based on $A = 4$), plus the G.M.A.T. total score. A score at or above the 25th percentile on both the quantitative and verbal portions of the G.M.A.T. is also required. In cases of exceptions to the minimum entry index, the Graduate Committee of the School of Business and Administrative Sciences will consider evidence of unusual motivation, career maturity, and past successes. A Test of English as a Foreign Language (TOEFL) score of 550 is required for international students whose native language is not English. Test scores must be submitted to the School before action can be taken on the admission application.

Acceptance by the university for graduate study does not imply acceptance by the School of Business and Administrative Sciences. Only students who meet all of the above criteria will be eligible for the School's graduate programs. Special application forms in addition to those required by the university are required by the School.

Before a student can enroll in a graduate (200-series) course, graduate classified standing is required. Students who have met all admission requirements are eligible for placement in classified standing when admitted to the graduate program. Teaching credential candidates may take Bus 280 and 282 in unclassified standing when approved by the business credential adviser.

(See also *Admission to Graduate Standing, Advancement to Candidacy, Program Requirements,* and *Criteria for Thesis and Project,* pp. 464–468.)

Master of Business Administration Degree Requirements

The degree of Master of Business Administration is awarded upon satisfactory completion of a 30-unit program of study. Students are required to have background courses in accounting, business law, computer science, economics, finance, management, marketing, operations analysis and statistics. Students who lack any of the required background courses must remove any deficiencies by completing the appropriate graduate foundation courses. For details, consult the Director, Graduate Business Program, School of Business and Administrative Sciences.

Foundation Requirements:	*Units*
Bus 202, 205, 207, 208, 209, 211, 214, 216, 217, 218	0–30
M.B.A. Core Course Requirements:	
Bus 221, 223, 224, 226, 228, 229	18
Elect from other Business courses, must include Bus 298 or Bus 299 *	12
Total	30

Master of Science in Business Degree Requirements

The Master of Science in Business degree is offered for students who wish to specialize in one particular area of study at the graduate level. The degree is based on individual programs developed in the student's special area of interest and it is awarded upon satisfactory completion of a 30-unit program of study. Students are required to have taken the appropriate background courses or to remove any deficiencies as outlined above in the section describing the

* A maximum of six (6) units of graduate work may be taken outside the School of Business and Administrative Sciences. No more than six (6) units may be taken in any one subject area.

Master of Business Administration degree. Application for approval of individual programs must be made through the Director, Graduate Business Program, School of Business and Administrative Sciences.

The M.S. in business degree requires a minimum of 30 units, including Bus 221, 223, and 299. Interested students should consult the Director, Graduate Business Program, for program approval.

Foundation Requirements:	Units
Bus 202, 205, 207, 208, 209, 211, 214, 216, 217, 218	0–30
M.S. Business Core Requirements:	
Bus 221, 223, 299	12
Approved electives *	18
Total	30

* A maximum of nine (9) approved units of upper-division undergraduate work may be counted toward the 18 elective units. A maximum of six (6) units of work may be taken outside the School of Business and Administrative Sciences.

Master of Science in Accountancy Degree Requirements

The Master of Science in Accountancy degree is intended for students desiring advanced theoretical and practical study in the field. The program is based upon a strong foundation in business and accounting subjects. The program is designed for those persons who wish to advance their careers in public accounting, in controllership, and accounting executive positions in business, government and other nonprofit organizations, and in consulting firms.

Students are required to have the equivalent of an undergraduate degree in business with a major in accountancy or to remove any deficiencies in these areas. The program calls for 30 additional units when these requirements have been met. A comprehensive examination is required of all students prior to the completion of the program.

Specific Prerequisite courses or their equivalents required:	Units
Bus 202, 205, 207, 208, 209, 211, 214, 216, 217, 218	0–30
Acct 120 A–B, 132, 144, 146, 162, 167	0–28
M.S.-A Core and Elective Requirements:	
Financial Accounting Option:	
Core: Bus 260, 263, 264, 265	12
Other Required Courses:	
Bus 224, 261, 276	9
Electives From:	
Bus 223, 228, 235	3
One Approved Course in Taxation	3
One Approved Elective	3
Total	30
Taxation Option:	
Core: Bus 260, 263, 264, 265	12
Other Required Courses:	
Bus 270, 277, 278	9
Electives From:	
Bus 269T, 279, Acct 145, or another approved graduate business course numbered between 220 and 299	9
Total	30

GRADUATE COURSES—Business and Administrative Sciences

(See Course Numbering System, p. 133)

Business (Bus)

Note: The foundation courses (Bus 202, 205, 207, 208, 209, 211, 214, 216, 217, and 218) are open only to classified graduate students and are required of those who have not completed equivalent undergraduate courses. Other 200 series courses are open only to graduate students in classified standing, except that teaching credential candidates may take Bus 280 and 282 in unclassified standing when approved by the business credential adviser. Business graduate courses are available for a letter grade only. Other courses which may be accepted as part of a business graduate program must also carry a letter grade.

202. Economics for Business Decisions (3). Not required of students with credit in Econ 1A and B. Microeconomic decisions; product, service, and factor markets; risk, uncertainty, and profits; macroeconomic framework of business decisions.

205. Financial and Managerial Accounting (3). Not required of students with credit in Acct 1A and B or 4A and B. Financial accounting; statement analysis and interpretation; transaction analysis; partnerships and corporations; taxation; financial reporting; managerial controls, information systems, budgeting; costs, capital budgets.

207. Quantitative Foundations for Business Decisions (3). Not required of students with credit in D S 71 and 72. Functional representation of business relationships; variable rates of change, marginal analysis and optimization of business functions; analysis of business data arrays.

208. Quantitative Methods in Business (3). Not required of students with credit in D S 73 and 173. Statistical analysis in business, tests of hypotheses, time series, correlation analyses, index numbers, estimation models, and Bayesian statistics in business decision making. (2 lecture, 2 lab hours)

209. Computers and Programming (3). Not required of students with credit in I S 50 and either I S 53 or 54. Computing algorithms, statistical and other software packages, data processing, programming languages; COBOL, FORTRAN, Interactive BASIC-PLUS. (2 lecture, 2 lab hours)

211. Legal Environment of Business (3). Not required of students with credit in B A 18 and either B A 155 or 157. Basic legal concepts, nature of the legal system, administrative law, law of contracts and of agency, antitrust law.

214. Organization and Management Theory (3). Not required of students with credit in Mgt 110 or Mgt 104 and 106. Organizational theory, structure and forms of organization, authority, leadership, group dynamics, policy formulation; conflict resolution, organizational control.

216. Operations Analysis (3). Not required of students with credit in LOM 124. Prerequisite: Bus 202, 207, 208 and 214 recommended. Operations theory and methods; operations planning and control; methods analysis, work measurements; materials handling and control, facilities location and layout; application of statistical techniques and electronic data processing; relationships with other functional areas of management.

217. Marketing Organization and Policies (3). Not required of students with credit in Mktg 100. Prerequisites: Bus 202, 205, 207; Bus 208 (or concurrently). Environmental factors for marketing, elements of marketing and marketing systems, marketing activities and strategies of the firm; evaluating marketing programs and systems.

218. Principles of Finance (3). Not required of students with credit in Fin 130. Prerequisites: Bus 202, 205; Bus 207 recommended. Impact of uncertainty and environmental considerations upon the finance function. Financial problems and policies; working capital management, capital budgeting, cost of capital, and dividend policy. Problems and cases.

221. Seminar in Business Research (3). Prerequisite: Completion of all foundation courses (or concurrently). Methods of research; applications to business problems.

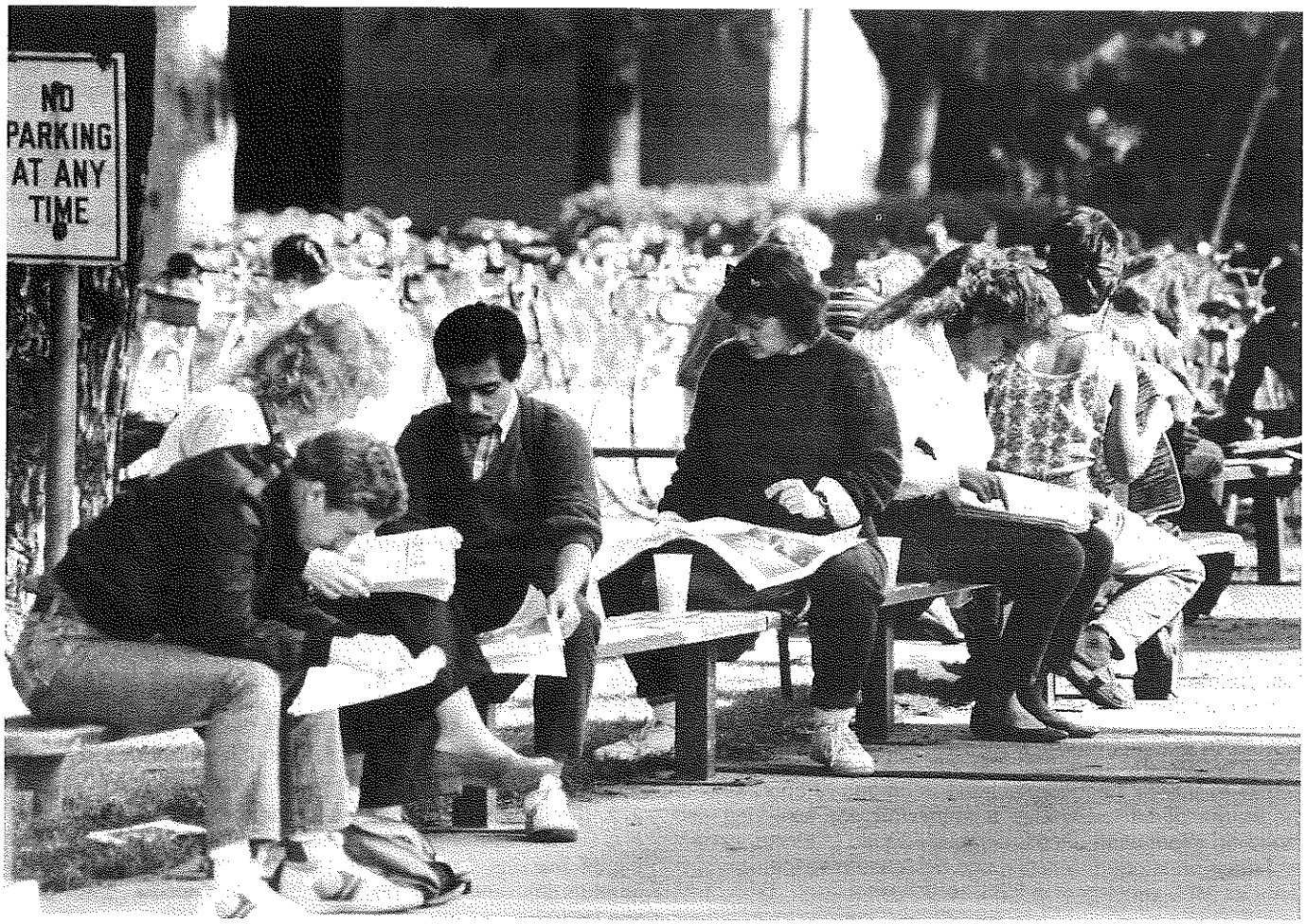
223. Seminar in Organizational Behavior (3). Prerequisite: Bus 214; Bus 221 (or concurrently with permission of the graduate program director). Problems of the individual and groups brought about by modern industrial organizations and techniques; motivations for work and cooperation between executives and different economic and social groups; analysis of effect of company policy on employee and public relations.

224. Seminar in Financial Management (3). Prerequisites: Bus 218; Bus 221 (or concurrently with permission of the graduate program director). An advanced study of the theories and techniques of financial management of the firm with special emphasis on working capital management, capital budgeting, cost of capital concepts and financial planning. Case studies and computer applications in finance stressed. (Former Bus 233)

226. Seminar in Accounting Control and Reporting (3). Prerequisite: Bus 205, 208, 218; Bus 221 (or concurrently with permission of the graduate program director). Procedures for financial reporting, systems and internal control, interpretation of administrative reports; accounting control—statistical inference, budgetary planning, standard costs, differential cost analysis, profit volume relationships.

228. Seminar in Quantitative Analysis (3). Prerequisite: Bus 207, 208, 209, 216; Bus 221 (or concurrently with permission of the graduate program director). Quantitative analysis of business problems; development of operations research models for decision making; applications.

229. Seminar in Organizational Strategy (3). Prerequisite: Completion of foundation requirements (courses); completion of M.B.A. core or concurrently completing M.B.A. core. Examination of strategic concepts, techniques and applications in both



profit and not-for-profit organizations. Strategy evaluation, analysis, formulation, execution, administration and control. Case studies and/or field studies.

232. Seminar in Money and Capital Markets (3). Prerequisite: Bus 218. Analysis of money and capital markets, their organization and role in economic activity.

235. Seminar in Managerial Economics (3). Prerequisite: Bus 202, 205, 207, 208, 217. Economic analysis of managerial problems; theory of the firm. (Former Bus 225)

236. Seminar in Risk Management and Insurance (3). Prerequisite: Bus 202, 211, 218. Use of insurance as a risk management tool; covers major aspects of the insurance mechanism, including analysis of basic life and non-life insurance contracts. Considers various noninsurance methods of handling nonspeculative financial risks as well as the traditional insurance methods. (Former Bus 289T section)

237. Seminar in Public Policy and Enterprise (3). Prerequisite: Bus 211. Development of legal controls of business, constitutional problems; legal aspects of business organization; anti-trust laws and competition, securities regulation, consumer protection.

240. Seminar in Marketing (3). Prerequisite: Bus 217. Critical review of the literature of marketing, special reports and research dealing with marketing institutions and organization, and marketing functions.

242. Seminar in Marketing Management (3). Prerequisite: Bus 217. 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 Management (3). Prerequisite: Bus 214. 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. Seminar in Labor Relations (3). Prerequisite: Bus 214. Current trends in labor relations theory and practice; labor relations systems; contract negotiations; dispute prevention and settlement; role of government; applications of behavioral sciences; individual research.

255. Seminar in Operations Management (3). Prerequisite: Bus 216. Current operations management theories and problems; critical analysis and review of present practices and theories.

257. Seminar in Business Communication (3). Investigation and analysis of the communication process as it relates to managerial effectiveness.

258. Seminar in Office Management (3). Managerial control of office functions, services, and personnel; case studies.

259. Management Information Systems (3). Prerequisites: Bus 205, 209, 214, 216; 226 and 228 are recommended. This course examines the theory of information and its application to the nature of MIS; provides a framework for analyzing and modeling information needs, computer-based planning, control and decision-support systems, and database management systems for MIS. (Former Bus 289T section)

260. Seminar in Accounting Theory (3). Prerequisites: Acct 120A and B. A historical perspective of the development of accounting theory. An evaluation of the objectives and standards of financial reporting as they are applied in contemporary income determination and asset valuation.

261. Accounting for Non-Profit Organizations (3). Prerequisite: Bus 205. Accounting for various types of funds as applied to governmental and other not-for-profit organizations. Budgets and accounting controls; revenues and appropriations, expenditures and encumbrances; accounting statements and reports.

262. Seminar in Programming (3). Prerequisite: Bus 209. Advanced techniques of sorting, file maintenance and information systems, controls and teleprocessing directed toward business applications.

263. Seminar in Cost Accounting (3). Prerequisite: Acct 132. The development, interpretation, and uses of accounting reports and supplementary information for management planning, control, and decision making. Topics include cost-volume-profit analysis; linear programming, capital budgeting; inventory models; the use of standards, budgets, and variance analysis for planning and control purposes; divisional performance; and transfer pricing issues.

264. Seminar in Auditing (3). Prerequisite: Acct 162. An advanced study of the philosophy, theory, and practice of auditing with special emphasis in recent developments, and cases involving ethical and legal responsibilities, statistical sampling methods, using the computer, and reliance on internal control; operational auditing.

265. Seminar in Information Systems (3). Prerequisite: Bus 209. Analysis of integrated and decentralized systems related to business organizations, their decision and control centers; underlying technologies and methods for designing, implementing, and operating an information system.

266. Data Processing Management and Computer Selection (3). Prerequisites: Bus 205 and 209. Theories, costs, and problems of operating computer centers; standards, flow of work, scheduling, batching, spooling, multiprogramming techniques. In-depth study of hardware and software of various computers; feasibility studies; comparisons of competitive systems; costs of reprogramming.

268. Regression, Correlation, Factor Analysis (3). Prerequisite: Bus 208. Conditional, marginal, and joint probability distributions; statistical dependence; simple, multiple, linear and nonlinear regression models; correlation analysis; analysis of variance and regression; introduction to Bayesian decision theory.

269T. Topics in Tax Planning (3). Prerequisites: Acct 144; Acct 145 (or concurrently). An indepth examination of tax planning and decision making with respect to income, estate, and gift taxes; tax research and review of current cases involving application of tax laws to individuals, partnerships, corporations, and fiduciaries. Opportunities in special industries such as agriculture, real estate, insurance, and natural resources.

270. Estate Planning (3). Prerequisites: Acct 144 and 145. Estate planning techniques to maximize wealth and minimize taxes. Indepth discussion of Federal and State systems for taxing transfers. Theory, practice and legal requirements for reporting by fiduciaries of estates and trusts.

272. Seminar in International Finance (3). Prerequisites: Bus 202 and 218. Theory and practice in international money and capital markets; foreign exchange; balance of payments; problems of adjustment; comparative financial systems.

275. Seminar in International Business (3). Prerequisite: Bus 221 (or concurrently with permission of the graduate program director). International trade and finance; cultural and

institutional environment of multinational enterprise, trade and development aid; accounting, marketing, production and operations aspects of international trade and enterprise.

276. Seminar in Current Accounting and Reporting Issues (3). Prerequisites: Acct 120A and B. A comprehensive examination of currently effective authoritative pronouncements that govern financial accounting. Included are pronouncements and proposals of the AICPA, the FASB, the AAA, the SEC, and related accounting literature.

277. Taxation of Corporations and Shareholders (3). Prerequisites: Acct 144; Acct 145 (or concurrently). A detailed study of tax problems of corporations and their shareholders. Areas covered include organization, capital structure and taxation of corporations; dividends, nonliquidating distributions, stock redemptions, and partial and complete liquidations; and corporate reorganizations.

278. Taxation of Partnerships and Subchapter S Corporations (3). Prerequisites: Acct 144; Acct 145 (or concurrently). An examination of fundamental legal concepts, technical rules, and computational procedures relating to federal taxation of partnerships and partners and Subchapter S Corporations. Areas of emphasis include partnership formation, operations, and termination.

279. Taxation of Property Transactions and Accounting Methods (3). Prerequisites: Acct 144; Acct 145 (or concurrently). A comprehensive coverage of property transactions and tax accounting methods including definition, realization, recognition, and computation of capital gains and losses, various tax accounting methods and planning opportunities relative to individuals and corporations.

280. Seminar in Business Education (3). Study of advanced problems in business education.

282. Seminar in Business Curricula (3). Objectives, principles, and curricula of business in secondary schools, and colleges and universities; evaluation and trends of current programs.

289T. Seminar in Business Topics (3; max total 9 if no topic repeated). Prerequisite: 9 units of 200 courses. Theory and developments in accounting, administration and organization, business education, communications, consumer economics, finance, industrial and regional studies, international business, law, management, marketing, personnel and industrial relations, quantitative studies, real estate and urban economics, records management, resource economics, risk and insurance, or transportation.

290. Independent Study (1–3; max see reference). See *Academic Placement—Independent Study,* pages 96–97.

292. Readings in Business (2–3; max total 6). Prerequisite: 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.

298. Management Project (3). Prerequisite: Completion of the M.B.A. core or concurrently completing the M.B.A. core. See *Criteria for Thesis and Project,* pages 467–468. Independent field analysis of an operating business firm or one of its principal functional areas. The managerial audit may be submitted to the faculty in lieu of a thesis. (Former Bus 291)

> "I would like to see more women pursuing not just jobs, but *Careers* in exciting fields that have previously been denied them. They have the ability and the talent — it just takes determination to follow through."
>
> *— Professor, Art*

299. Thesis (3 or 6). Prerequisite: Completion of master's core or concurrently completing master's core. See *Criteria for Thesis and Project,* pages 467–468. Preparation, completion, and submission of an acceptable thesis for the master's degree. Elective for Master of Business Administration.

IN-SERVICE COURSES

(See *Course Numbering System,* p. 133)

367. CPA Review (2–4).

380T. Topics in Business (1–3; may be repeated if no topic repeated).

381. Instructional Procedures in Vocational Business Education (2–3).

385. Bridging the Gap (2–4).

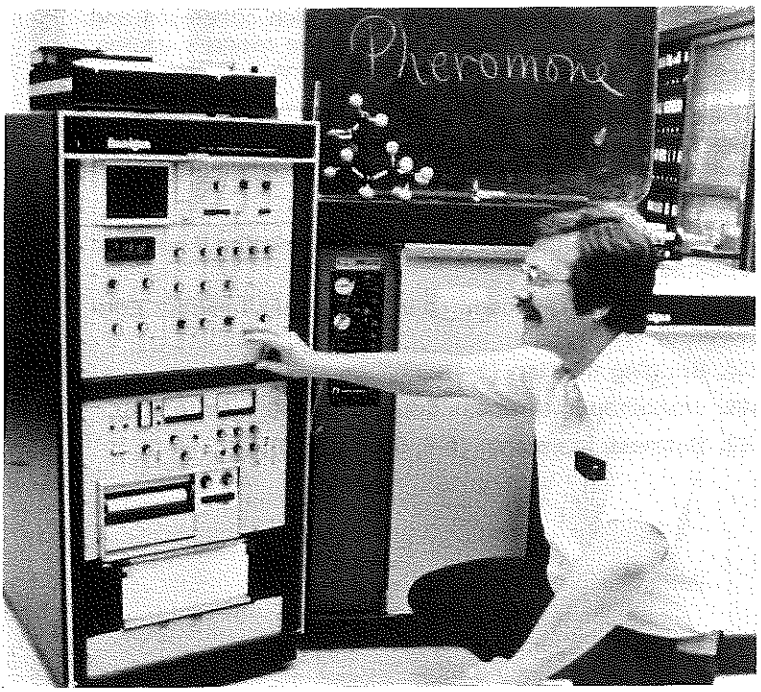
389. Workshop in Business Education (1–6; max total 6).

398. Business Internship (1–6; max total 6).

Chemistry

School of Natural Sciences
Department of Chemistry
Kenneth H. Russell, Chair
New Science Bldg., Room 380
(209) 294-2103

B.A. in Chemistry
B.S. in Chemistry
Minor in Chemistry
M.S. in Chemistry
Single Subject Teaching Credential in Physical Science



The Chemistry Department provides (1) undergraduate training in chemistry for students planning professional careers in chemistry, biochemistry, and allied professions and for those contemplating graduate work for advanced degrees; (2) undergraduate training in chemistry for those planning careers in professions such as medicine, chiropractic, dentistry, pharmacy, etc.; (3) participation in the preparation of teachers of chemistry and the other physical sciences in the teaching credential programs; (4) teaching of the basic chemical sciences required by students majoring in related fields such as physics, biology, nursing, engineering, geology, agriculture, home economics, and criminology; (5) stimulation of interest in and understanding of the achievements and contributions of chemistry to our civilization for nonscience students, as a part of general education; and (6) graduate instruction in chemistry for the Master of Science degree for students who intend to enter the chemical industry, pursue further advanced study, or who wish to improve their qualifications as teachers in secondary schools and community colleges.

The Bachelor of Science degree program (B.S.) in chemistry is accredited by the American Chemical Society. Students who satisfactorily complete the program will be recommended by the department for certification as graduate chemists by the American Chemical Society. Students completing the Bachelor of Arts degree (B.A.) may be recommended for certification by completing additional requirements of the American Chemical Society.

Faculty

Twenty full-time Ph.D. members are in the Department of Chemistry. Our faculty provide excellent research opportunities in analytical, biochemistry, inorganic, organic and physical chemistry. The broad interests within the faculty have resulted in interdisciplinary research projects in collaboration with scientists and professors in other science areas: agricultural chemistry, biotechnology clinical chemistry, forensics chemistry, chemical physics, enology, nutritional science and molecular biology. Research projects have involved local facilities such as the California State Crime Laboratory, Fresno Community Hospital, U.S.D.A. Research Station, U.S. Veteran's Administration Hospital, U.S. Forest Laboratory and Valley Children's Hospital.

Facilities

All upper-division and graduate chemistry laboratories and support areas are housed in our science building completed in 1976. Eight four-station graduate laboratories are well equipped, with access to modern instrumentation. Instrumentation in the department includes: Varian EM 360 and EM 390 NMR spectrometers, Finnegan GC-MS, atomic absorption spectrometers, Nicolet MX-1 Fourier Transform IR (FTIR), liquid scintillation counter, Pye-Unicam, Cary 14 and Cary 17D UV-VIS spectrophotometers, radiation equipment, liquid chromatographs, high speed refrigerated centrifuges and several gas chromatographs. Computer facilities include several Apples in the department. The university library includes more than 100 journal subscriptions in chemistry plus numerous texts and related books.

Career Opportunities

Because of the increasing technological nature of our society, chemistry graduates will find an impressive array of options and exciting opportunities in a wide range of fields. A chemistry degree can provide preparation for a career as a professional chemist in areas such as basic research, environmental protection, instrumentation, new product and process development, and education. There is an increasing need for technical expertise in expanding fields such as agricultural chemistry, biotechnology forensic science, clinical chemistry, food science, occupational safety and environmental monitoring. Careers for chemists in the academics include university teaching and science teaching in the secondary school—an area that will expand greatly in the future. In addition there is a need for technically trained people in nontraditional areas such as marketing and sales, scientific information, patent law and health and safety. The baccalaureate degree can also provide a strong foundation for studies at medical, dental, veterinary and pharmacy schools. Students with chemistry degrees have been notably successful in these areas.

Faculty

Kenneth H. Russell, Chair

Sydney Bluestone
Dale C. Burtner
Kenneth W. Chan
Richard P. Ciula
David E. Clark
David L. Frank
Joseph R. Gandler
Helen J. Gigliotti
Barry H. Gump
Robert M. Kallo
George B. Kauffman
Donald K. Kunimitsu
Ronald L. Marhenke
Barbara J. Mayer
C. Dean Mitchell
Kin C. Ng
Howard K. Ono
Stephen A. Rodemeyer
Jose Sy
Joe D. Toney
Allexander Vavoulis
Kin-Ping Wong
David L. Zellmer
Stanley M. Ziegler

Undergraduate Programs

Chemistry Majors: The Bachelor of Arts degree with a major in chemistry consists of a total of 124 units including 39 units of chemistry. The Bachelor of Science degree with a major in chemistry consists of a total of 124 units including 51 units in chemistry.

High School Preparation: The high school preparation for majors in the Department of Chemistry should include: algebra (2 years), plane and solid geometry, trigonometry; chemistry or physics; German (2 years) for B.S. degree.

Prospective students may elect to take the general chemistry placement test at college entrance. A satisfactory score in this test will permit the student to start the chemistry course sequence with Chem 1B.

Foreign Language Requirement for B.S. degree: German 1A–B or Russian 1A–B or two years of high school German or Russian. Computer Science 40 and 41 may be substituted for the foreign language requirement. Introductory "computer literacy" courses which include a brief introduction to BASIC cannot be used for this requirement. Any student planning advanced study is advised also to meet the foreign language requirement of the school the student plans to attend.

Bachelor of Arts Degree Requirements

Note: Chemistry majors are not allowed to take any of the courses listed as *Chemistry Major* or *Additional Requirements* for credit/no-credit grades.

	Units
1. Chemistry Major	39
Chem 1A–B, 102, 106, 110A–B, 111, 128A–B, 129A–B, 180	
2. Additional Requirements	22
Math 75, 76, 77, Phys 5A–B	
3. Remaining General Education unit requirements	42*
4. Electives	21
Total	124

* Of the 54 required General Education units, 12 are satisfied by Phys 5A–B (Division 1) and Math 75 (Core).

Note: A Student may orient his/her baccalaureate degree program in one of several directions by the proper selection of elective courses, as follows:

Agriculture Chemistry: Chem 155, 156; 9 units of approved electives in animal or plant science.

Biochemistry: Chem 155, 156, two biological science electives from Micro 104, Biol 120, 130

Clinical Chemistry: Chem 153, 154, 155, 156; Micro 104

Forensics Chemistry: Crim 20, 21, 113, 117

Spectroscopy: Chem 215, 190 (6 units)

Additional programs may be constructed upon consultation with a department adviser.

An example of a program for the B.A. degree in chemistry is outlined below:

1st Semester	Units
Chem 1A	5
Math 75	4
Eng 1	3
Pol Sci 2 or Hist 11 or 12	3
	15

2nd Semester	Units
Chem 1B	5
Math 76	4
Phys 5A	5
Hist 11 or 12 or Pol Sci 2	3
	17

3rd Semester	Units
Chem 128A	3
Chem 129A	2
Phys 5B	5
Math 77	4
Gen Ed	3
	17

4th Semester	Units
Chem 128B	3
Chem 129B	2
Chem 102	5
Gen Ed	6
	16

5th Semester	Units
Chem 110A	3
Gen Ed & Elect	12
	15

6th Semester	Units
Chem 110B	3
Chem 111	3
Chem 180	1
Gen Ed & Elect	9
	16

7th Semester	Units
Chem 106	4
Gen Ed & Elect	10
	14

8th Semester	Units
Gen Ed & Elect	14
Total Units	124

For changes or substitutions to the chemistry major, see your

academic adviser and submit a written request to the chemistry department chair.

Bachelor of Science Degree Requirements

	Units
1. Chemistry Major	**51–52**
Chem 1A–B, 102, 106, 110A–B, 111, 123, 124, 128A–B, 129A–B, 155, 180 (46 units).	
Chemistry Electives: Select either Route I or II.	
I. Independent Study Route	
Chem 190 (5–6 units). Students selecting this route must satisfy university requirements for independent study.	
II. Electives Route	
Elect 6 units from Chem 130, 156, or one additional approved physics, mathematics, or upper-division biology course (recommended: Phys 102, Math 81,C Sci 112, Biol 120, Micro 104). Three units must come from Chem 130 or 156.	
2. Additional Requirements	**22**
Math 75, 76, 77, Phys 5A–B	
3. Foreign Language or Computer Language Requirement	**0–8**
Either German 1A–B or Russian 1A–B or two years of high school German or Russian, or Computer Science 40 and 41. Introductory "computer literacy" courses which include a brief introduction to BASIC cannot be used for this requirement.	
4. Remaining General Education Unit Requirements	**36–42***
5. Electives	**6–9**
Recommended: Chem 99 (Glassblowing—1 unit)	
Total	**124**

* Of the 54 required general education units, 12 to 18 units are satisfied by Physics 5A–B (Division 1), Math 75 (Core) and German 1A–B or Russian 1A–B (Division 7).

An example of a program for the B.S. degree in chemistry is outlined below:

1st Semester	Units
Chem 1A	5
Math 75	4
Eng 1	3
Pol Sci 2 or His. 11 or 12	3
	15

2nd Semester	Units
Chem 1B	5
Math 76	4
Phys 5A	5
Hist 11 or 12 or Pol Sci 2	3
	17

3rd Semester	Units
Chem 128A	3
Chem 129A	2
Math 77	4
Phys 5B	5
Gen Ed	3
	17

4th Semester	Units
Chem 128B	3
Chem 129B	2
Chem 102	5
Gen Ed	6
	16

5th Semester	Units
Chem 110A	3
Chem 155	3
*Chem 123	2
Germ or Russ 1A or C Sci 40	4
Gen Ed	4
	16

6th Semester	Units
Chem 110B	3
Chem 111	3
Chem 180	1
*Chem 124	2
Germ or Russ 1B or C Sci 41	4
Gen Ed	3
	16

7th Semester	Units
Chem 106	4
Route I, Chem 190, or Route II, Chem Elect (from Chem 130, 156, approved math, C Sci 112, phys, biol)	3
Gen Ed or Elect	8
	15

8th Semester	Units
Route I, Chem 190, or Route II, Chem Elect. (from Chem 130, 156, approved math, C Sci 112, phys, biol)	2 (3)
Gen Ed or Elect	12
	14(15)
Total Units	**124**

* Chem 123 and 124 are only offered during the fall and spring semesters, respectively. They may be taken during the 7th and 8th semesters.

For changes or substitutions to the chemistry major, see your academic adviser and submit a written request to the chemistry department chair.

Credential Program

The Single Subject Waiver program for physical science (chemistry, earth sciences and physics), together with the chemistry B.A. degree consists of:

	Units
I. Core	**47**
Chem 1A–B, 102, 110A–B, 128A–B, 129A, Phys 2A–B, 102, Phy Sci 102, Geology 1	
II. Breadth	**21**
Chem 155, C Sci 20, N Sci 141, Math 75, 76	
III. Education	**24**
IV. Remaining General	**42**
Education Unit Requirements	**134**

Chemistry Minor

A minor in chemistry for a bachelor's degree requires at least 21 units, of which at least 7 are upper division. Specific course requirements are General Chemistry (1A–B or 2A–B), Organic

Chemistry (8 and 109), Quantitative Analysis (105), and one or more upper-division chemistry courses (101, 125, 150, 151, 153).

Graduate Program

The Master of Science degree program in chemistry is designed to provide the first graduate degree for students who expect to continue on to advanced graduate study in chemistry or biochemistry; it can also be used to extend the competence of students who anticipate employment in chemical industries, in government laboratories or as secondary school or junior college teachers.

Master of Science Degree Requirements

The Master of Science degree program in chemistry assumes undergraduate preparation equivalent to a CSU, Fresno major in chemistry. Each new student will be required to take the Diagnostic Placement Examinations in four fields of chemistry (physical, organic, analytical, and inorganic or biochemistry) to provide a basis for program planning. These are taken at the beginning of the first semester of residence.

Twenty of the 30 units required for the degree must be in chemistry. An option in agricultural chemistry is available in the School of Agriculture and Home Economics. For specific requirements, consult the departmental graduate adviser; for general requirements, see *Division of Graduate Studies and Research,* pages 462–471.

(See also *Admission to Graduate Standing, Advancement to Candidacy, Program Requirements,* and *Criteria for Thesis and Project,* pp. 464–468).

Under the direction of a graduate adviser, each student prepares and submits a coherent program individually designed according to Plan *A* or Plan *B* listed below. Other courses may be specified after examination of the student's record and performance on the departmental diagnostic examinations.

Plan A—M.S. degree with thesis	*Units*
Courses in Chemistry, including at least 20 units in 200 series (see *specific requirements*)	20
Approved Electives in Chemistry or related fields	10
Total	**30**

Specific requirements: Chem 280 (at least 2 units); 295 (2 units); 299 (4 units); and 3 units each from 4 of the 5 following groupings: (i) 211 or 215; (ii) 220; (iii) 225, 226, or 227; (iv) 230 or 235; (v) 250T. Chem 260 recommended.

Other courses may be specified after examination of the student's record and his/her performance on the departmental diagnostic examinations.

Plan B—M.S. degree without thesis	*Units*
Courses in Chemistry, including at least 18 units in 200 series (see *specific requirements*)	18
Approved courses in chemistry or related fields may include biology, engineering, geology, mathematics, physics, etc) according to the student's objective.	12
Total	**30**

Specific requirements: Chem 280 (at least 2 units); 295 (at least 4 units); and 3 units each from 4 of the 5 following groupings: (i) 211 or 215; (ii) 220; (iii) 225, 226, or 227; (iv) 230 or 235; (v) 250T.

Other courses may be specified after examination of the student's record and his or her performance on the departmental diagnostic examinations.

> "The thing to do is to set an attainable goal, gain it, set a new goal, gain it, and continue the process your entire life."
>
> — *Junior Biomechanics*

Instead of a thesis, a student must successfully complete a final comprehensive examination consisting of two parts: a) a general written examination in chemistry; b) an examination dealing with a specific area of chemistry. See department for *Policy Statement—Plan B Comprehensive Examination.*

COURSES

Chemistry (Chem)

1. Chemistry: Its Impact on Society (3). Not open to students with credit in college chemistry; for nonscience majors. Prerequisite: Math 4. The significance of chemical principles in contemporary society; benefits and hazards relative to areas such as energy, health, diet, environment and agriculture. (3 lecture-demonstration hours)

1A–B. General Chemistry and Qualitative Analysis (5–5). Chem 1A not open to students with credit in Chem 2A–B or 1B. Students with credit in Chem 2A will receive only two units of credit. Prerequisite: high school chemistry or physics; advanced algebra or Math 4. 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). No credit for Chem 2A after 1A. No credit for Chem 2B after 2C or 1B. Prerequisite: Math 4, plane geometry. 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) *

2C. Introduction to Organic and Biological Chemistry (4). No credit for Chem 2C to students with credit in Chem 2B or 1B. Primarily for students in the health-oriented professions; not a substitute for Chem 8. Prerequisite: Chem 2A, Math 4. Introduction to the basic concepts of organic and biological chemistry. Structure and behavior of organic and biochemical compounds, metabolism, and regulation. (3 lecture, 3 lab hours) *

8. Elementary Organic Chemistry (3). Not open to chemistry majors. Recommended for students requiring a one-semester course in the field. Prerequisite: Chem 1A or 2A–B. Lectures, discussions, and demonstrations of fundamental principles; structure and chemical behavior of organic compounds.

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) *

* For safety reasons, "soft" contact lenses may not be worn in chemistry labs.

101. Introductory Physical Chemistry (3). Not open to chemistry majors. Prerequisite: Math 70 or 75 or permission of instructor. Chem 1B or 2B, 8 or 105. Physics 2A–B recommended. Basic treatment of gas laws, thermodynamics, phase equilibria, properties of solutions, kinetics, spectroscopy, macromolecules and nuclear chemistry. Especially recommended for students in the agricultural, earth, life and physical sciences, engineering and other related areas.

102. Analytical Chemistry (5). For chemistry majors; recommended for other science majors. Prerequisite: Chem 1B, 128A, and Phys 5A. Students with credit in a similar lower-division quantitative analysis course will receive only one additional unit of credit. Introduction to principles and methods of analytical chemistry. (3 lecture, 6 lab hours) *

105. Quantitative Analysis Laboratory (4). Not open to chemistry majors. Prerequisite: Chem 2B (Chem 1B recommended), Chem 8 (or concurrently), Math 4. Laboratory study of principles and methods of quantitative analysis. (2 lecture, 6 lab hours) *

106. Analytical Measurements Laboratory (4). Prerequisite: Chem 111. Principles and methods of analytical measurements of organic and inorganic substances by instrumental and non-instrumental techniques. (2 lecture, 6 lab hours) (Former Chem 111B) *

109. Elementary Organic Chemistry Laboratory (3). Not open to chemistry majors. Prerequisite or concurrently; Chem 8 or 128B. Laboratory study of the carbon compounds with coordinating lectures. (1 lecture, 6 lab hours) *

110A–B. Physical Chemistry (3-3). Prerequisite: Math 77, Chem 1B, 8 or 128A; Phys 5A–B (or permission of instructor). Mathematical treatment of the laws of thermodynamics, reaction kinetics, elementary statistical and quantum mechanics, properties of solutions, kinetic theory of gases, crystal structure, molecular structure, and nuclear chemistry.

111. Physical Chemistry Laboratory (3). Prerequisite: Chem 110B (or concurrently), Chem 102. May not be taken concurrently with 106. Techniques of physical measurements, error analysis and statistics; ultraviolet, infrared and nuclear magnetic resonance spectroscopy; dipole moments, viscosity, calorimetry, kinetics, phase diagrams, thermodynamic measurements, and report writing. (1 lecture, 6 lab hours) (Former Chem 111A) *

123. Advanced Inorganic Chemistry (2). Prerequisite: Chem 1B, 102, and 110A (or concurrently). Treatment of ionic and covalent bonding, atomic structure, molecular structure, and reaction mechanisms. Introduction to visible and infrared spectroscopy of transition metal complexes.

124. Synthesis and Characterization (2). Prerequisite: Chem 123 (or concurrently). Techniques of preparation to include high temperature reactions, vacuum line and glove box preps, nonaqueous syntheses, solid state reactions. Emphasis on structural characterizations using instrumental methods. (1 lecture, 3 lab hours) *

125. Laboratory Instrumentation (3) (Same as Phys 125). Not open to Chemistry majors. Prerequisite: Chem 8 or 128A and Chem 105. Basic electricity/electronics, light and optical systems as they apply to the design, use and limitations of instrumentation typical to the analytical and bioscience laboratory. (1 lecture, 6 lab hours) *

127. Organic Problems (1). Prerequisite: Chem 8 or 128A; 128B concurrently. A course designed to review organic chemistry, in particular for those students who have taken only a brief course in organic chemistry. Must be taken *CR/NC* grade only and is not applicable to the requirements of a major in chemistry.

128A–B. Organic Chemistry (3–3). For chemistry majors; recommended for premedical students and other science majors. Chem 128A not open for credit to students with credit in Chem 8. Prerequisite: Chem 1–B or Chem 2A–B. Introduction to structure and reactivity of principle classes of organic compounds with emphasis on theory and mechanism. (Former Chem 28,128)

129A–B. Organic Chemistry Laboratory (2–2). Prerequisite or concurrently: Chem 128A (for 129A); 128B (for 129B). Laboratory study of the methods, techniques, syntheses and instrumentation or representative classes of organic compounds; introduction to research techniques by way of independent projects; introduction to qualitative organic analysis. (6 lab hours) (Former Chem 29,129)

130. Organic Analysis (3). Prerequisite: Chem 102, 128B, 129B. Characterization of organic compounds through study of chemical and physical properties; application of spectroscopy, chromatography and functional group analysis to elucidation of structure. (1 lecture, 6 lab hours) *

140T. Topics in Chemistry (1–4; max total 6 if no area repeated). Prerequisite: permission of instructor. Seminar covering special topics in one of the areas of chemistry:



* For safety reasons, "soft" contact lenses may not be worn in chemistry labs.

analytical, biochemistry, inorganic, organic, physical. Some topics may have a laboratory.

142. Introduction to Biotechnology (3). Prerequisites: Chem 150 or 155. This course emphasizes the principles and industrial utilization of recombinant D.N.A., monoclonal antibodies, enzyme and cell immobilization, fermentation technology, and downstream processing.

150. General Biochemistry (3). Prerequisite: Chem 8, 109. (Chem 150 and 153 together constitute a year sequence.) Chemistry and metabolism of basic cellular constituents including carbohydrates, lipids, proteins, and nucleic acids.

151. General Biochemistry Laboratory (2). Prerequisite: Chem 8, 105, 109, 150 (or concurrently). Chemical and physical properties of naturally occurring compounds; introduction to techniques of chromatography, polarimetry, electrophoresis, photometry, and enzymology. (6 lab hours)*

153. Physiological Chemistry and Metabolism (2). Prerequisite: Chem 150 or 155. Continuation of Chem 150 or 155. Intensive discussion of the degradation and biosynthesis of major cellular constituents; energy metabolism; control of metabolic processes and pathological implications in mammalian systems.

154. Clinical Biochemistry Laboratory (3). Prerequisite: Phys or Chem 125, (or concurrently), Chem 151, 153 (or concurrently). Clinical laboratory methods of analysis of tissues and body fluids and their diagnostic value; emphasis on instrumental methods. (1 lecture, 6 lab hours)*

155. Fundamentals of Biochemistry (3). Primarily for chemistry majors; recommended for premedical students and graduate students in the sciences. Prerequisite: Chem 102 or 105, 109 or 129A, 128B. (Chem 155 and 153 together constitute a year sequence.) Structure, function, and metabolism of chemical entities in living systems.

156. Biochemical Laboratory Techniques (3). Prerequisite: Chem 150 or 155 (or concurrently). This course is designed to introduce the student to a range of techniques and methodology appropriate to the study or phenomena at the biochemical, cellular and organismic levels. (1 lecture, 6 lab hours)*

180. Seminar in Chemistry (1). Prerequisite: Chem 129B, 102. Oral presentation of topics based on the chemical literature.

190. Independent Study (1–3; max see reference). See *Academic Placement—Independent Study,* pages 96–97.

GRADUATE COURSES

(See *Course Numbering System,* p. 133.)

211. Chemical Thermodynamics (3). Prerequisite: Chem 110A–B, 111. Principles of thermodynamics; application to chemical problems; introduction to statistical methods, calculation of thermodynamic functions from spectroscopic data.

212. Chemical Applications of Group Theory (1–2). Prerequisite: Chem 110A–B. Introduction to symmetry operations, point groups and their properties. Application of group theory to chemical problems such as; selection rules for electronic, IR, Raman and microwave activity, molecular orbital theory, transition metal complexes, hybridization, and other chemical topics.

215. Quantum Chemistry (3). Prerequisite: graduate standing. Seminar on recent advances in quantum mechanics; chemical bonding, and atomic and molecular spectroscopy.

220. Theoretical Inorganic Chemistry (3). Prerequisite: Chem 110A–B. Seminar on theoretical inorganic chemistry emphasizing structure and bonding of inorganic and coordination compounds; valence bond, molecular orbital and ligand field theories; correlation of structure and reactivity.

225. Separation Methods in Chemistry (1–3). Prerequisite: Chem 106 and 129B. Seminar on the theory, application, and literature of various separation methods for organic and inorganic analysis. May include laboratory.

226. Electrochemistry (1–3). Prerequisite: Chem 106. Seminar on the theory, application, recent developments, and literature of electrochemistry and electrochemical methods of organic and inorganic analysis. May include laboratory.

227. Analytical Spectroscopy (1–3). Prerequisite: Chem 106, 110A–B or permission of instructor. Theory, instrumentation and application. Recent developments and literature of spectroscopic techniques. May include laboratory.

230. Advanced Organic Chemistry (3). Prerequisite: Chem 128B,129B. Seminar on recent advances in organic chemistry including reaction mechanisms and synthetic applications with references to current literature.

235. Physical Organic Chemistry (3). Prerequisite: Chem 110A–B, 128B. Seminar in applications of modern theoretical concepts to the chemical and physical properties of organic compounds.

240T. Topics in Advanced Chemistry (1–3). Seminar covering special topics in one of the areas of chemistry: analytical, biochemistry, inorganic, organic, physical. Some topics may have a laboratory.

241A–B. Molecular Biology I–II (3–3) (Same as Bio 241A–B). Prerequisite: Biol 135, Chem 150 or 155, and permission of instructor. Seminar covering current topics in molecular biology. Topics include: protein and nucleic acid structure, DNA replication, transcription, translation, bacterial and animal viruses, prokaryotic and eukaryotic regulation, mechanisms of exchange of genetic material, and recombinant DNA technology. Biol/Chem 241A is prerequisite for Biol/Chem 241B.

250T. Topics in Advanced Biochemistry (1–4). Prerequisite: Chemistry 150 or 155. Seminar covering special advanced topics in biochemistry such as the structure and function of enzymes, metabolic regulation, nucleic acid, biochemistry and analytical biochemistry.

260. Advanced Research Techniques (3). Prerequisite: Classified standing, permission of the instructor. Advanced concepts in the design of experiments. Development of practical research skills through the planning and undertaking of a short laboratory project. (1 lecture, 6 lab hours)

280. Seminar in Chemistry (1; max total 3)

290. Independent Study (1–3; max see reference). See *Academic Placement—Independent Study,* pages 96–97.

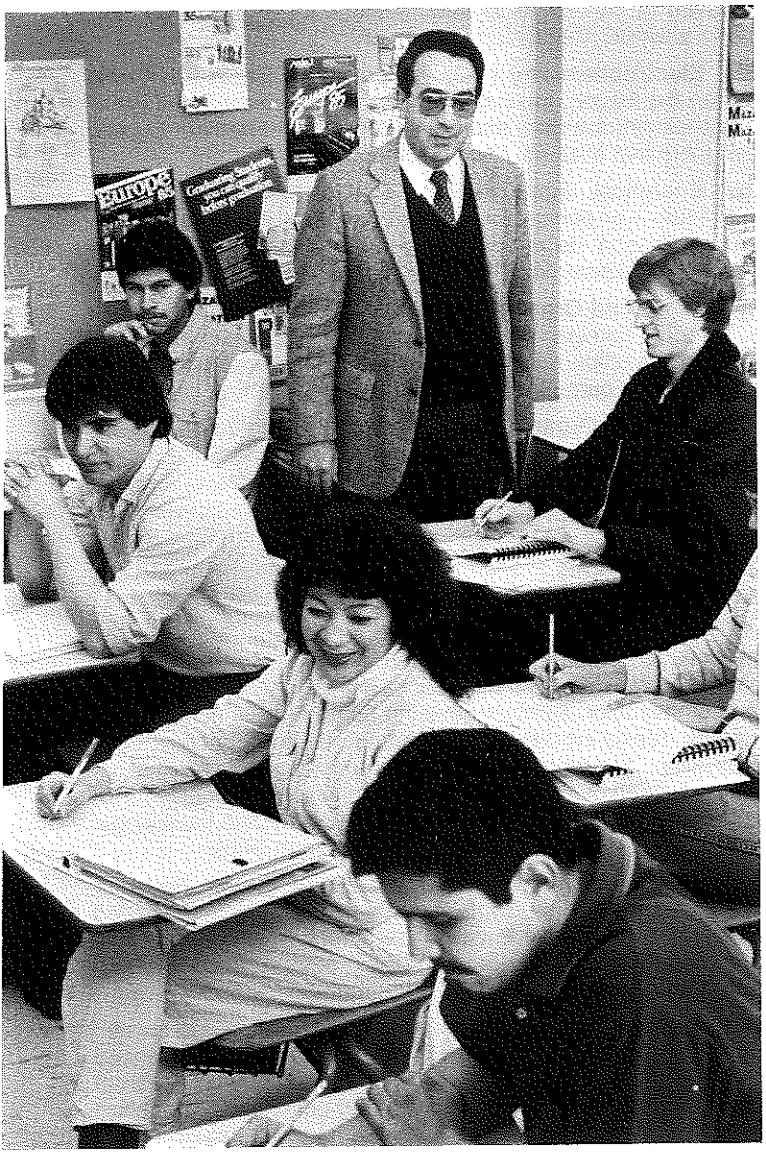
295. Research (2). Prerequisite: permission of instructor. Independent investigations of an advanced character for the graduate student with adequate preparation. (May include conferences, laboratory, library.)

299. Thesis (4). Prerequisite: See *Criteria for Thesis and Project,* pages 467–468. Preparation, completion, and submission of an acceptable thesis for the master's degree.

Chicano-Latino Studies

School of Social Sciences
Chicano-Latino Studies Program
Manuel Figueroa, Coordinator
San Ramon 4, Room 116
(209) 294-2848

Minor in Chicano-Latino Studies



The Chicano-Latino Studies Program is designed to meet several objectives. One of its objectives is to promote an awareness of the historical and cultural factors that characterize Chicanos and Latinos in the United States. Another is to cultivate an understanding and appreciation of ethnic differences among all people. A third is to critically analyze the Chicano experience in terms of significant issues, concepts, theories, and current problems. The program integrates this knowledge into the major academic fields of study. Accordingly, the courses offered in Chicano-Latino Studies are interdisciplinary in nature. They reflect the various areas of study that will give students an understanding and appreciation of the essence and diversity of Chicanos and other Latinos. The program emphasizes social, psychological and community studies, education, history and culture, art, music, and literature.

Faculty and Facilities

The Chicano-Latino Studies Program consists of five full-time faculty and several part-time faculty whose teaching and research expertise cover a broad spectrum, including anthropology, education, history, sociology, music and dance. The program administers a Chicano Research Center that is engaged in research and community development and serves as a training center for students. The offices of the program also serve as a resource center for all of the Chicano/Latino student organizations and as an information center for the community.

Career Opportunities

Chicanos and other Latinos are the largest ethnic group in California. It has been estimated that in California half the population will be of Mexican ancestry by the year 2000. This segment of our population will have a major impact on our society, as its presence translates into an increasing economic and political influence. Crucial social, economic, and political decisons will be made that affect this group and the nation at large. The growth of Latino-owned businesses, Spanish language media networks, and political organizations are all indicators of the importance of the Spanish-speaking people in the U.S. economy. Business corporations and government agencies are looking for individuals who have a basic awareness of the Chicano-Latino population. Educators, lawyers, civil service employees and other professionals in various careers will enhance their marketability by having a basic knowledge of this population.

About half of the students taking Chicano-Latino Studies courses are of non-Mexican origin. They have found that Chicano-Latino Studies courses are personally rewarding because they enable them to understand and relate to persons of different social and cultural backgrounds. Chicano and other Latino students find our courses highly conducive to strengthening their sense of identity and pride in their heritage.

For more information regarding career options in Chicano-Latino Studies, contact the program coordinator at (209) 294-2848. For academic advising and assistance, students are encouraged to visit the office of Chicano-Latino Studies Program situated in San Ramon 4, Room 116.

Faculty

Manuel Figueroa, *Coordinator*

Jesus Luna
Ernesto A. Martinez
Manuel Pena
Lea Ybarra

Chicano-Latino Studies Minor

A student intending to pursue a minor in Chicano-Latino Studies should see the coordinator of the Chicano-Latino Studies Program for assignment to a faculty adviser who will assist the student in planning his or her program.

	Units
Lower Division: CLS 3, 5 and 7 or 9	9
Upper Division: 12 units of approved electives	12
	21

Credential Program

Bilingual/Cross-Cultural Emphasis in Liberal Studies

Students wishing to prepare to teach in Bilingual/Cross Cultural education settings should include the following courses in their Liberal Studies Major Program: In Area IV B, 9 units from CLS 116,* 145, and 143 **

* Prerequisite: CLS 5
** Prerequisite: CLS 3, 116, and 145

Bilingual/Cross-Cultural Specialist Credential

The Bilingual Cross-Cultural Specialist Credential requires completion of a basic teaching credential program with bilingual emphasis and approval of an application for admission to the Specialist Credential. Courses taken in the Bilingual/Cross-Cultural Specialist Program may be used to satisfy part or all of the fifth-year postgraduate semester units, providing prior approval is obtained from the coordinator, bilingual education and the chair of the teacher education department. Students wishing to complete the Specialist Credential are required to take 9 units from CLS: 103, 106A, 112, 114, 141, 142, 154, 156.

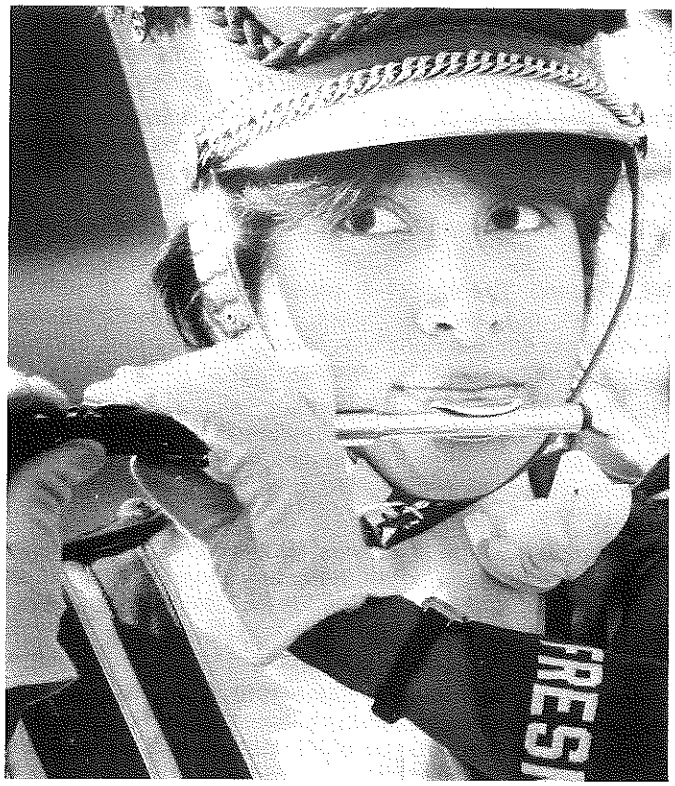
COURSES

Chicano-Latino Studies (CLS)

1. Sex, Race and Class in American Society (3). This course examines the concepts of race and sex in American society, and their application to the class structure of the Southwest. Special attention is focused on how racism and sexism affect Chicanos' ethnic and gender identity and socio-economic status.

3. Introduction to Chicano-Latino Studies (3). Introduction to the historical and contemporary experiences of Chicanos and other Latinos in American society. Their contributions to the U.S. and their current economic, political and social status will be discussed. (Former La R 3)

5. Chicano Culture (3). A historical examination of Chicano culture from the pre-Columbian period to the present. The customs, values, belief-systems and their symbols are analyzed; important events and changes occurring through time are emphasized. (Former La R 5)



7. Music of Mexico and the Southwest (3). A study of Mexico's musical culture starting from its pre-Columbian origins to the present and its impact on contemporary Chicano music. (Former La R 7)

9. Chicano Artistic Expression (3). Introduction to Chicano artistic expression, with special attention to cultural continuity and change; the interrelationships between popular music, dance, drama, literature and the graphic arts are analyzed. (Former La R 9)

10. Developing Chicano Writing (3). Theory and practice of composition; research methods; emphasis on sentence structure, grammar, punctuation as related to the Chicano language abilities. (Former La R 10A)

100. Chicano Literature (3). An interpretive analysis of written Chicano literature: poetry, drama, short story, novel and essay. The relationship between literature and a changing Chicano sociocultural environment is explored. (Former La R 132, CLS 111)

101. Chicano Art (3; max total 6). Chicano Studio Arts, including various media such as oil, ceramics, weaving, sand painting and murals that relate to the heritage of the Chicano. Special emphasis on individual development of artistic and technical expression. (Former La R 101)

103. Chicano Folklore (3). An analysis of Chicano folklore and its relationship to earlier Indo-Hispanic antecedents. Emphasis is placed on the folk arts: verbal, material and musical, as well as folk beliefs and practices, as these have been modified by intercultural contact. (Former La R 120)

106A–B. Music and Dance of La Raza (3–3). Development and performance of Mexican folk music and dance; Indian, Black, Spanish, and European influences; contemporary relationships to Chicano culture. (Former La R 121A–B)

107. Latino Dance (2; max total 4). Examination of origins, composition, and performance of various types of Chicano-Latino music and dance: boleros, huapangos, cumbias, chachas, salsa; emphasis on contemporary and cross-cultural influences in Chicano-Latino music-and-dance. (Former La R 122)

108. Chicano Theatre (1–3; repeatable up to 12 units). Production of Chicano Theatre for major performances. *Comedia del Arte,* Passion Plays, Theatre of the Absurd, Socially Popular Theatre: *Teatro Compesino.* (Former La R 130)

112. Pre-Hispanic Civilizations (3). Historical examination of the origins of the Maya-Aztec civilizations in Meso America until 1521. The values, social organization, religion and their daily lives, technological and scientific achievements will be examined. (Former La R 112)

114. Mexico and the Southwest 1810–1910 (3). Nineteenth Century origins of Mexican Nationality from the period of Mexico's Independence from Spain to the Mexican Revolution of 1910. The experiences of La Raza in the U.S. after the Treaty of Guadalupe Hidalgo. (Former La R 114A)

115. Mexico-U.S. Relations Since 1910 (3). Historical perspective of changing relationship between Mexico and the U.S. during 20th Century. Analysis of Mexican Revolution, the Great Depression, WWII, immigration, and their impact on Mexico-U.S. relations. Special emphasis on status of Mexicanos/Chicanos in the U.S. (Former La R 115)

116. Cultural Change and the Chicano (3). Prerequisite: CLS 5. An analysis of the continuities and the changes in the culture and daily life of the urban and rural Chicano in the 20th Century created by immigration, acculturation, urbanization and technological and scientific changes. (Former La R 105)

123. Business Development in Minority Communities (3). Business and economic development in minority communities and their relationship to the wider economic and social systems. (Former La R 140)

126. Chicanos in the U.S. Economy (3). Historical analysis of the Mexicano's relationship to American economy. The transformation of the Chicano/Mexicano from rural, agricultural laborer to urban, industrial worker; special emphasis on immigration, the development of dual labor markets, and their effects on Chicanos. (Former La R 126, CLS 119)

128. Contemporary Political Issues (3). Political philosophies, goals, and strategies of Chicanos and Latinos as reflected in their attempts to gain political power. (Former La R 133)

141. The Chicano and the Educational System (3). Exploration of the socio-historical development of public education in the southwest, with special emphasis on the Chicano experience. Topics include segregation/desegregation, institutional racism, and equality of opportunity. (Former La R 109, CLS 136)

142. Chicano Research: Issues and Analysis (3). An interdisciplinary approach to research techniques with special emphasis upon issues, problems, and research designs appropriate to the study of Chicano communities. Filed application of research plans, techniques including methods of observation, gathering, and analyzing data. (Former La R 142, CLS 138)

143. Bilingual/Bicultural Education (3). Prerequisite: CLS 3. Investigation into what it means to be bilingual and bicultural; review of programs scaled toward a more meaningful education for the Chicano child. (Bilingual Education majors see Coordinator for further prerequisites) (Former La R 110, CLS 137)

145. Field Work in Community Settings (3; max total 6). Prerequisite: CLS 3 or 5. Supervised placement in community and educational settings. Provides a variety of learning experiences in community agencies, organizations, or educational institutions. (Bilingual Education majors, see coordinator) (Former La R 145, CLS 139)

152. The Chicano Family (3) (Same as W S 152). Traditional and changing relationships in the family structure of the Chicano; interaction with wider institutional social system. (Former La R 118, CLS 129)

154. The Chicano Child (3). General psychological principles and theories of growth and development and their applicability to the Chicano child. (Former La R 124, CLS 131)

156. The Chicano Adolescent (3). The adjustment of Chicano adolescents to American society and its impact on self, peer group relations, and family life; with emphasis on sources of conflict and tension. (Former La R 127, CLS 134)

158. Health and Social Services in the Chicano Community (3). An analysis of health and social service programs, their policies and effects on the Chicano community. Explores alternatives to dependent social services programs. (Former La R 117, CLS 135)

180T. Topics of Chicano Society (1–3; repeatable with different topics). Culture, art forms, economy, and societal organization. (Former La R 125T, CLS 150T)

190. Independent Study (1–3; max see reference). See *Academic Placement—Independent Study,* pages 96–97. (Former La R 190)

Classical Studies

Although the university does not offer a bachelor's degree program in classical studies, the School of Arts and Humanities has coordinated a variety of courses in several disciplines that allow comprehensive study of the Greek and Roman world. For students interested in classical studies, two alternatives are available. First, a student may petition for a special major based on the program approved by the campus-wide Committee on Classical Studies, available from the coordinator of classical studies. Students are strongly urged to read carefully the policy for the special major for the Bachelor of Arts degree. (See *Degree Requirements—Special Major for the Bachelor of Arts Degree,* pp. 98–99.) Second, the university offers a classical studies minor with three areas of interest.

Minor

The classical studies minor is designed for students who are interested in classical civilization and for those who wish to have a chance to teach classical languages and culture or who wish to enter a graduate school where such a minor would give a sound foundation for further work in any of the areas mentioned above.

The minor allows for three areas of interest: Latin, Greek, and Classics (Greek and Latin).

Latin

Required Courses:

	Units
History 112	3
Latin 1A–B	6
Latin 131T (2)	6
Electives	9
Total	24

Greek

Required Courses:

	Units
History 111	3
Greek 1A–B	6
Greek 131T	6
Electives	9
Total	24

Classics

Required Courses:

	Units
History 111, 112	6
Latin 1A–B	6
Greek 1A–B	6
Latin 131T or Greek 131T	3
Electives	3
Total	24

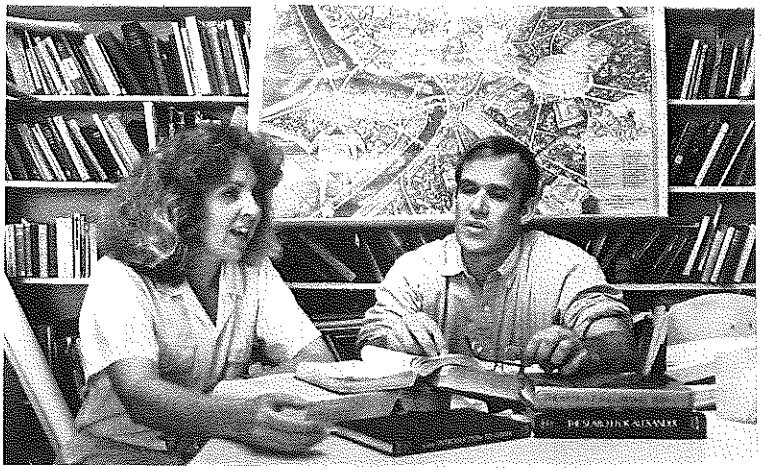
Course Electives

The following list includes the courses most directly concerned. For further information, consult the **coordinator of classical studies, Dr. Victor D. Hanson, Department of Foreign Languages, San Ramon 4, Room 101.**

Art History	10	The Ancient and Primitive World (3)
	109T	Topics in Art History (1–3; max 3 per area)
Drama	185	History of the Theatre and Drama (3)
English	112	World Literature: Ancient (4)
	169T	Forms of Literature: Mythology (4)
	191T	Supervised Independent Readings (1–4): Ancient Literature
Foreign Language:		
Greek	1A–B	Elementary Greek (3–3)
	131T	Greek Literature (3–3)
	148	Greek Literature in English Translation (3)
	190	Independent Study (1–3)
Latin	1A–B	Elementary Latin (3–3)
	131T	Latin Literature (3; max total 9 if no topic repeated)
	132	Classical Mythology (3)
	148	Roman Literature in English Translation (3)
	190	Independent Study (1–3)
History	1	Western Heritage I (3)
	103A	History of Early Christianity (3)
	110	Ancient Near East (3)
	111	Ancient Greece (3)
	112	Ancient Rome (3)
	116	Greek and Roman Religion (3)
	119T	Studies in Ancient History (1–3; max total 6 if no topic repeated)
	190	Independent Study (1–3)
Philosophy	101	Ancient Philosophy (3)
Physical Science	106	History and Philosophy of Physical Science (3)
Physical Education	111	The Olympic Games (3)
Political Science	110	Seminar in History of Political Thought to Macchiavelli (3)

Classical Studies Interdisciplinary Minor

School of Arts and Humanities
Joseph Satin, Dean
San Ramon 4, Room 222
(209) 294-3056



Communicative Disorders

School of Health and Social Work
Department of Communicative Disorders
Kenneth G. Shipley, Chair
Laboratory School, Room 125
(209) 294-2423

Minor in Communicative Disorders
B.A. in Communicative Disorders
M.A. in Communicative Disorders



Audiology, education of the deaf, and speech-language pathology are concerned with the development, problems, and disorders found with people's speech, hearing, and language. These professions are devoted to providing diagnostic, rehabilitative, and educational services to children and adults with communicative problems.

Bachelor of Arts

The Bachelor of Arts degree in communicative disorders provides the student with a liberal arts foundation integrated with courses designed to provide a basic understanding of speech, language, and hearing development and communicative problems. This degree also leads to graduate specialization in audiology, education of the deaf, or speech-language pathology.

Master of Arts

Education beyond the bachelor's degree is necessary for completion of the academic, credential, and licensure requirements leading to professional employment. There are three (3) training options available to the student:

Audiology—Our audiology program will provide you with a balanced program of study including basic speech and hearing science, diagnostic testing procedures, aural rehabilitation, and the clinical treatment of hard-of-hearing individuals. You will receive at least 400 clinical clock hours of clinical contact with children and adults.

Education of the Deaf—Our education of the deaf program will give you a broad background in speech, language, auditory training, sign language, and psychology of the deaf. We present a "total communication" approach that includes all of the essential elements of a good education for the deaf child. You will have many opportunities to work with professionals and children who are deaf. The program is nationally accredited by the Council on Education of the Deaf (C.E.D.).

Speech-Language Pathology—Our speech and language pathology program will provide you with a broad professional background in normal speech and language development, language disorders, voice disorders, articulation disorders, and fluency disorders. In addition to the academic course work, you will receive a minimum of 400 clinical hours of practical experience working with children and adults. The program is accredited by the Educational Standards Board (E.S.B.) of the American Speech-Language-Hearing Association.

Depending upon the option you choose, the undergraduate curriculum plus a master's degree in communicative disorders will prepare you for one or more of the following: State licensure as a speech-language pathologist or audiologist; national certification by the American Speech-Language-Hearing Association in speech-language pathology or audiology; public school special education specialist or clinical rehabilitation credentials; and/or School Multiple Subjects Credentials.

Minor

A minor in communicative disorders is also available for students in various education and health professions (nursing, health science, physical therapy, counseling, elementary and secondary education, special education, child development, linguistics, criminology, etc.) who are interested in expanding their understanding of children and adults with communicative disorders.

Facilities

As a student at CSU, Fresno you will have the opportunity to work in a modern, well-equipped clinical facility. You can also gain practical experience in a variety of school, private practice, and hospital situations. Library facilities contain specialized collections including student access to local medical libraries. In the Anna Michelson Memorial Instructional Media Center, students have access to a wide range of therapy production materials such as films, video, clinical equipment, and professional journals.

Language, Speech, and Hearing Clinic—The Department of Communicative Disorders operates an ongoing clinic that provides diagnostic, therapeutic, and counseling services to clients of all ages with communicative disabilities experiencing a variety of different communication problems or disorders.

The clinic provides supervised clinical practice for students who are preparing to be professional speech-language pathologists, audiologists, and educators of the deaf.

Functioning as a community resource, the clinic serves hundreds of clients each year from the Fresno metropolitan area. The clinic is accredited by the Professional Services Board (P.S.B.) of the American Speech-Language-Hearing Association.

Career Opportunities

The Department of Communicative Disorders will prepare you to work in various diagnostic and rehabilitation settings in preschool programs, elementary and secondary schools, colleges, hospitals, rehabilitation centers, private or community clinics, or private practice. Employment opportunities have been and are expected to remain good.

Faculty

Kenneth G. Shipley, *Chair*

Bette J. Baldis
M. N. Hegde
Karen M. Jensen
Ben R. Kelly
Paul W. Ogden
Ron M. Parker
Susan J. Shanks
Steven D. Wadsworth

Graduate Coordinator: Bette J. Baldis
Audiology Advisers: Ben R. Kelly, Ron M. Parker
Education of the Deaf Advisers: Bette J. Baldis, Karen M. Jensen, Paul W. Ogden
Speech-Language Pathology Advisers: M. N. Hedge, Susan J. Shanks, Kenneth G. Shipley, Steven D. Wadsworth
Clinic Director: David R. Foushee

Bachelor of Arts in Communicative Disorders

	Units
1. Major requirements (see Note 1)	49
a) Core: C D 80, 90, 95, 102, 103, 114, 116, 128, 131, 136	(28)
b) Concentration: (select one)	
Speech and Language Pathology: C D 105, 107, 109, 110, 112, 115	(16)
Audiology: C D 105, 107, 108, 109, 110, 137, 3 units approved electronics elective	(18)
Education of the Deaf: C D 106W, 108, 137, 162, 163, 164	(17)
c) Approved electives	(3–5)
2. General Education requirement:	54
3. Electives and remaining degree requirements (see *Degree Requirements,* pp. 98–101); may be courses used to satisfy credential requirements or a minor in another field	21
Total	124

Notes:

1. Contact the communicative disorders department chair or faculty advisers for a list of approved elective courses.
2. Optional *CR/NC* grading is not permitted for majors in the communicative disorders department.
3. General Education and elective units may be used toward a dual major or minor (see *Dual Major,* pp. 98, or departmental minor). Consult the appropriate department chair, program coordinator, or faculty adviser for further information.

Communicative Disorders Minor

A minor in Communicative Disorders is designed to provide students in psychology, education and the health professions with an appreciation and understanding of the problems and procedures related to people who suffer from speech, language and hearing disorders.

	Units
C D 80, 90, 95, 102, 128, 131, 136, 137	23
	23

Graduate Program

The master's degree is considered essential for the professional training needed for effective clinical practice in audiology, education of the deaf, or speech-language pathology. The degree also provides the first graduate degree for students who may pursue advanced training toward a doctoral degree. The master's degree generally involves about two years of full-time study.

Admission Requirements

Admission as a classified graduate student in communicative disorders requires:

- a baccalaureate degree
- an undergraduate major (or its equivalent) in communicative disorders
- a 3.0 grade point average for the last 60 units of coursework taken
- Graduate Record Examination (G.R.E.) scores of 450 on the verbal section or 430 on the quantitative section
- three letters of recommendation

Students with a bachelor's degree in a field other than communicative disorders will need to complete the undergraduate requirements of the major before beginning their graduate study. These students are eligible for unclassified graduate status at the university while completing their prerequisite coursework.

Applicants who have specific deficiencies or need coursework may be accepted with conditionally classified status. Students must apply to the department for fully classified graduate standing as soon as any conditions of acceptance have been met. No more than 10 units of graduate work taken under conditional classification can be used to meet the requirements of the master's degree.

Admission Procedures

Applications for the graduate program in communicative disorders are accepted until November 1 for the spring semester and March 1 for the fall semester. Applications received after these dates are considered the following semester. Application is a two-step process that involves submitting the following:

1. *To the University*
   - An Application of Admission and the Supplemental Application for Graduate Admission (Forms *A* & *B* in the CSU application booklet)
   - Official transcripts from all universities and colleges other than CSU, Fresno
   - Official Graduate Record Examination scores
2. *To the Department*
   - Departmental application
   - Official transcripts from all universities attended (CSU, Fresno students may supply the unofficial transcripts issued by Admissions and Records)

- Official G.R.E. scores. (Educational Testing Services lists the departments of Audiology and Speech Pathology. Your scores will be forwarded to us automatically if you indicate either of these options.)
- Three letters of recommendation. These letters should be written by instructors or other persons familiar with communicative disorders.

The departmental application and letter of recommendation forms are available from the department. Please be aware that students cannot be accepted into the graduate program until all materials are received by the university and the department. Students are encouraged to take their G.R.E. *early* during their senior year to avoid delays in acceptance for graduate work.

Advancement to Candidacy

Each student in a master's degree program must file for Advancement to Candidacy. See *Admissions and Master's Degree Programs, Division of Graduate Studies and Research,* pages 462–471.

Graduate-Level Writing Competence

CSU, Fresno requires that students have graduate-level writing abilities before being advanced to candidacy for the master's degree. Students can demonstrate these abilities by taking C D 200 and obtaining written clearance from the instructor. Written clearance can be obtained from the department for students who have demonstrated graduate-level writing abilities in coursework equivalent to C D 200.

Program of Study

Audiology	*Units*
Common Core Courses: C D 200, 202, 231	9
Specialization: C D 232, 233, 235, 240	12
Approved electives	3
Thesis or project; or non-thesis alternative	6
Total	30

Education of the Deaf	
Common Core Courses: C D 200, 202, 231	9
Specialization: C D 232, 262, 263, 264	12
Approved electives	3
Thesis or project; or non-thesis alternative	6
Total	30

Speech-Language Pathology	
Common Core Courses: C D 200, 202, 231	9
Specialization: C D 204, 206, 207, 210, 214	15
Thesis or project; or non-thesis alternative	6
Total	30

Other coursework is developed with the adviser to reflect such factors as students' desires regarding thesis or project, individual needs and desires for training, meeting certain state or national requirements, etc.

Thesis, Project, and Non-Thesis or Project Alternatives

The department offers students an opportunity to write a thesis or project. (See *Criteria for Thesis and Project,* pp. 467–468.) Six units of credit are earned for a thesis or project. These units may be applied toward the unit requirements of the degree. An adviser's permission is required before enrolling in a thesis or project. Selecting a thesis or project option is highly recommended for students who may at some point consider working toward a doctoral degree.

Clinical Training

All students are involved in supervised clinical practicum experience during their graduate training. At least 400 clinical clock hours are required prior to receiving the M.A. degree. A minimum of 150 of these hours must be at the graduate level. These hours are gained at the CSU, Fresno clinic and in at least one other setting (internship, student teaching, residency program, etc.).

Culminating Experience

A culminating experience is required of all CSU, Fresno master's degrees. Students in communicative disorders are involved with written examinations and an oral culminating experience.

Students choosing a non-thesis or project alternative take a written examination on six areas of the field, then take an oral examination on their written and subject matter within the field. For thesis and project students, their thesis or project is considered as the written examination. These students are orally examined on the material subject matter of their work and within the field. Additional information about these options is available from an adviser.

Certificate of Clinical Competence in Speech–Language Pathology and Audiology

Completion of the master's degree fulfills all the academic and clinical practicum requirements for the Certificate of Clinical Competence (C.C.C.) in Speech Pathology or Audiology. A Clinical fellowship year (C.F.Y.) of paid, professional supervised experience is required along with passing the National Examination in Speech Pathology or Audiology (N.E.S.P.A.) before the certificate is granted by the American Speech-Language-Hearing Association. A Certificate of Clinical Competence is required for employment in nearly all work settings except the public schools. All students are encouraged to acquire national certification regardless of the work setting they may choose.

California License as a Speech Pathologist or Audiologist

The master's degree fulfills all academic and clinical practicum requirements for the State License. A year of Required Professional Experience (R.P.E.) is necessary along with passing the N.E.S.P.A. before the license is issued by the Board of Medical Quality Assurance. The license is required for employment in almost all settings except the public schools.

The Clinical Fellowship Year (C.F.Y.) and Required Professional Experience (R.P.E.) can be completed concurrently when graduates accept their first professional position.

Credentials

There are two major school credentials available through the Department of Communicative Disorders; one of which has two option areas and the other has three option areas. By completing one (or more) of the credential options, students are eligible to receive the credential(s) they desire upon completion of the master's degree. Information regarding these credentials and options is available from departmental credential advisers.

Also, see *Admissions—Undergraduate Application Procedures,* pages 68–73, *and Education—Teacher Education—Admission to the Credential Program,* pages 272–276.

Special Education Specialist: Communication Handicapped Credentials

Deaf and Severely Hard of Hearing Option

	Units
Core courses: C D 80, 90, 95, 102, 103, 106W, 128 and 131 (concurrently), 136	25
Ed Deaf core: C D 108, 137, 162, 163, 164, 200, 202, 231, 232, 262, 263, 264	35
Clinical core: C D 160 or 260; C D 164B (4–9 units); C D 268 (6 units)	12–17
Generic core: C D 114, 116; T Ed 130, 140, 156, 160B (5 units) *	20
Education core: T Ed 150, 160A (5 units) *	10
	102–107

Speech and Hearing Option

	Units
Core courses: C D 80, 90, 95, 102, 103, 128 and 131 (concurrently), 136	22
Speech and Hearing core: C D 105, 107 and 110 (concurrently), 109, 112, 115, 200, 202, 204, 206, 207, 210, 213, 214, 231	43
Clinical core: C D 164A (4–9 units), 209 (1 unit), 230 (6–9 units) 250 (2 units)	13–21
Generic core: C D 114, 116; T Ed 130, 140, 156, 160B (6 units) *	21
Education core: T Ed 150, 160A *	10
	109–117

Clinical Rehabilitative Services Credentials

Audiology Option

	Units
Generic Courses: C D 80, 90, 95, 102, 103, 105; 107 and 110 (concurrently), 108 and 137 (concurrently), 109, 114, 116; 128 and 131 (concurrently), 136; Psych 101, 136	48
Advanced Specialization in Audiology: C D 162, 163, 200, 202, 231, 233, 234, 235, 240	27
Clinical Core: C D 164A (4–9 units) or 269 (6 units), C D 130 or 230 (3 units), 150 or 250 (6–9 units)	13–21
	88–96

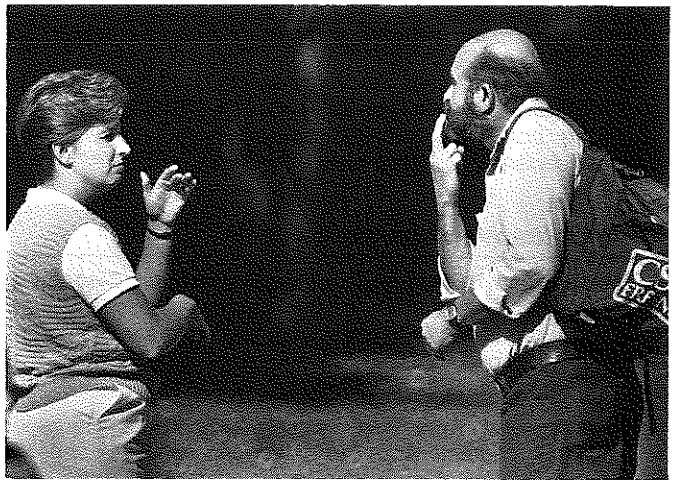
Language, Speech and Hearing Services Option

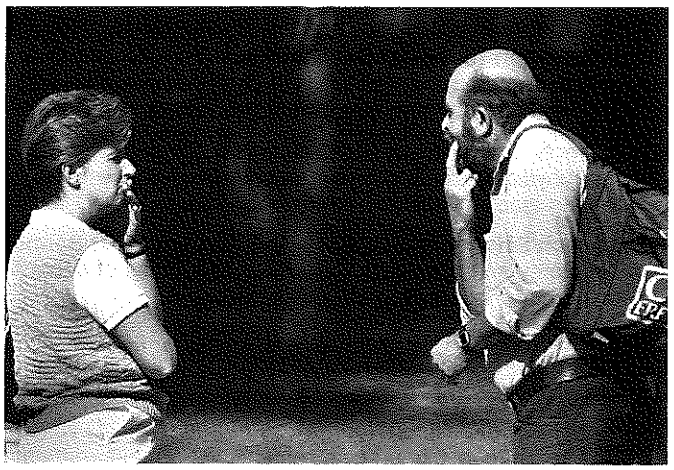
	Units
Generic Courses: C D 80, 90, 95, 102, 103, 105, 107, 109, 110, 112, 114, 115, 116, 128 and 131 (concurrently); Psych 101, 136	50
Advanced Specialization in Language, Speech, and Hearing: C D 200, 202, 204, 206, 207, 210, 213, 214, 231	27
Clinical Core: C D 164A (4–9 units), 209 (1 unit), 130 or 230 (6–9 units), 150 or 250 (2 units)	13–21
	90–98

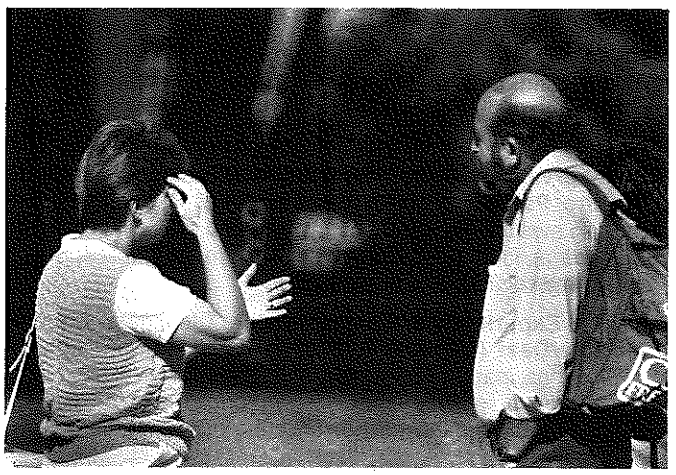
Language, Speech and Hearing Services with Severe Oral Language Handicapped Authorization Option

	Units
Generic Courses: C D 80, 90, 95, 102, 103, 105; 107 and 110 (concurrently), 109, 112, 114, 115, 116; 128 and 131 (concurrently), 136; Psych 101, 136	50
Advanced Specialization in Language, Speech and Hearing: C D 200, 202, 204, 206, 207, 210, 213, 214, 231	27
Advanced Specialization in Severe Oral Language Handicapped: C D 232, 264, T Ed 120MA, 120LA, 150, 156, P E 146	19–21
Clinical Core: C D 164A (4–9 units), 209, 130 or 230 (6–9 units), 250 (2–3 units)	13–22
	109–120

* See requirements for the Student Teaching Multiple Subjects Credential—Education—Teacher Education, page 273.







A deaf student is seen on campus communicating with his interpreter using American Sign Language. The Department of Communicative Disorders offers several sign language courses.

COURSES

Note: Students must provide their own transportation in those courses requiring off-campus clinical instruction or observation and defray any resulting personal expense. Students involved with clinical practice must carry professional liability insurance and meet departmental health requirements.

Communicative Disorders (C D)

80. Introduction to Human Communication and Disorders (3). The bases of normal communication; assessment and remediation of speech, language, and hearing disorders; interrelationships among the fields of audiology, education of the deaf, and speech-language pathology.

90. Phonetics of American English (3). Perceptual and physiological characteristics of American English speech sounds; application of phonetics to the study of normal and abnormal speech patterns and regional dialects. (Former C D 101)

95. Introduction to Verbal Development (3). Study of normal verbal development; compilation of developmental milestones in speech and language, acquisition. (Former C D 121)

102. Speech Science I: Anatomy and Physiology (3). Physical, physiological, and neurological bases of the speech and hearing mechanisms.

103. Speech Science II: Acoustics and Perception of Sound (3). Anatomy and physiology of the ear; acoustics of speech and hearing, and perception of sound.

104L. Physiology and Anatomy Laboratory (1). Prerequisite: C D 102 (or concurrently). Laboratory study of anatomy and physiology of speech and language; cadaver dissection.

105. Disorders of Articulation (3). Prerequisite: C D 80, 90, 95, 102. Seminar in the process of articulation; assessment, prognostic and therapeutic procedures related to articulation disorders. (2 lecture, 2 lab)

106W. Written Language Skills for Teaching the Communicatively Handicapped (3). Prerequisite: Engl 1. Analysis of the structural written language of normally developing children for comparison with language handicapped children.

107. Observation in Communicative Disorders: Speech-Language Pathology (1–3; max total 3). Observation of diagnostic evaluations, parent counseling and clinical services in the Language, Hearing and Speech Clinic, in the public/private schools, and related clinical settings.

108. Field Experience in Communicative Disorders: Education of the Deaf (1–3; max total 3). Observation of diagnostic evaluations, parent counseling and educational/clinical services at clinical sites on campus, in public and/or private schools, and at residential schools for the deaf.

109. Disorders of Language (3). Prerequisite: C D 80, 90, 95, 102. Seminar in the description and analysis of language disorders in children; assessment, prognostic and therapeutic procedures related to language disorders in both children and adults. (2 lecture, 2 lab hours)

110. Diagnostic Procedures (3). Prerequisite: C D 80, 90, 95, 102, 103, 105 must be taken concurrently with C D 107 (1 unit). Seminar in the selection and use of various speech, language, voice, and prosody tests and procedures used in the diagnostic process.

112. Voice Disorders (3). Prerequisite: C D 80, 90, 95, 102. Seminar in normal and deviant vocal productions; assessment, prognostic and therapeutic procedures related to voice disorders. (2 lecture, 2 lab)

113. Introduction to Birth Defects (3). Etiology, physical characteristics, diagnosis, treatment and prognosis of genetic and non-genetic syndromes. Implications of various diagnoses for the health professional. Discussion of newborn and carrier screening, prenatal diagnosis, local services, genetic counseling, and ethical considerations.

114. Education of Exceptional Children (3). Identification of common and differentiating characteristics of exceptional children. Diagnostic and instructional programs, legal provisions, and certification requirements. Observation in clinical sites on and off campus, public and/or parochial schools. (2 lecture, 2 lab hours)

115. Disorders of Fluency (3). Prerequisite: C D 80, 90, 95, 102. Seminar in the description and analysis of disorders of fluency.

116. Prescriptive and Individualized Instruction (3). Prerequisite: C D 114. Development and examination of methods and materials relative to individual learning problems; study of models and individual programs. (2 seminar, 2 lab hours)

128. Observation in Communicative Disorders: Audiology (1–3; max total 3). Observation of audiologic testing; practice in audiological testing; practice in interpreting test results.

130. Clinical Practice in Speech and Hearing Therapy (1–3; max total 12). Prerequisite: C D 80, 90, 95, 102, 103, 105, 107, 110. Supervised clinical practice in speech and hearing therapy; diagnosis of speech deficiencies, referral procedures, parent counseling, case records. Clinical sites on campus, satellite centers, public and/or private schools.

131. Principles of Audiology (3). Prerequisite: Must be taken concurrently with C D 128. Definition of hearing loss and the medical aspects of hearing loss; an introduction to hearing conservation; testing procedures utilized in detection and evaluation of hearing loss; basic interpretation of diagnostic test results.

136. Manual Communication for the Deaf (3). Development of skills necessary to communicate with deaf adults and children.

137. History, Education and Psychology of Deafness (4). Prerequisite: Must be taken concurrently with C D 108. History of the education of the deaf; research studies related to psychology, social adjustments and learning problems of deaf; psychological implications and effects of deafness on families, cultural and social aspects of deafness; school records and testing procedures. (May include lab hours)

138. American Sign Language (3). Prerequisite: C D 136 and permission of instructor. The study of American Sign Language, its syntax and grammar. Advanced techniques in the use of sign language with deaf adults.

140. Behavior Modification for the Multihandicapped Deaf (3). Prerequisite: permission of instructor. Techniques of adapting behavior modification principles with multihandicapped deaf children. Includes contingency contracting, positive reinforcement, charting behavior, and videotaped observations.

150. Clinical Practice in Audiology (1–3; max total 12). Prerequisite: C D 80, 90, 95, 102, 103, 128, 131. Supervised clinical practice in the diagnosis and treatment of hearing problems, parent counseling, therapeutic planning, etc.

160. Clinical Practice in Education of the Deaf (2; max total 6). Prerequisite: C D 136, 162, 163, 164. Supervised clinical participation and practice in clinical/classroom teaching of persons who are deaf and severely hard of hearing; parent counseling. Therapy planning and implementation; clinical sites on campus and public and/or private schools.

162. Speech for the Deaf (3). Prerequisite: C D 80, 90, 95, 106W. Seminar in techniques employed in the development of speech with deaf children. Yale charts and diacritical marking systems. Devices for developing all English sounds. Includes observation, demonstration, and practice with deaf children.

163. Language for the Deaf (3). Prerequisite: C D 80, 95, 106W. Seminar in techniques employed in the development of language with deaf children; construction of English sentences and grammar; methods of correcting language mistakes of the deaf child; comparative studies of various language curricula.

164. Elementary School Subjects for the Deaf (3). Prerequisite: C D 80, 95, 106W, and permission of instructor. Seminar in detailed study of the process of teaching reading to deaf children. Investigation of classroom procedure and presentation of content areas (math, science, social studies); integration with visual instructional materials. Includes observation and demonstration.

164A. Student Teaching: Speech and Hearing Handicapped (4–9; max total 9). Prerequisite: 4–6 units of C D 130 or 230, including 150 clock hours of therapy; admission to the credential program. To be taken concurrently with C D 209. Directed observation, participation, and clinical practice (120 hours minimum) under supervision. Weekly conference with university supervisor. (Former A S 164A)

164B. Student Teaching: Deaf and Hard of Hearing (4–9; max total 9). Prerequisite: 4 units of C D 160 or 260; approval by a departmental review committee; admission to the credential program. Teaching under supervision in a class for the deaf or hard of hearing. Directed observation, participation and weekly conference with university supervisor. (Former A S 164B)

188T. Topics in Communicative Disorders (1–3; max total 6). Speech pathology, audiology, education of the deaf, speech and hearing science, language disorders.

190. Independent Study (1–3; max total 6). See *Academic Placement—Independent Study,* pages 96–97.

GRADUATE COURSES

(See *Course Numbering System,* p. 133.)

200. Graduate Studies and Research in Communicative Disorders (3). An introduction to graduate and professional education in communicative disorders; review of clinical research methods; and professional and scientific writing skills.

202. Aural Rehabilitation (3). Prerequisite: C D 128, 131. A review of current habilitative/rehabilitative procedures employed in assisting the hearing impaired, including amplification, communication rehabilitation (speech-reading, auditory training, speech and language) and psychosocial issues.

> "The campus isn't too large and all of the buildings have elevators. It's particularly good for people in wheelchairs because the terrain is flat, and ramps and curb cuts make all areas of the campus accessible."
>
> *— Junior, Physical Therapy*

204. Seminar in Stuttering (3). Prerequisite: permission of instructor. In-depth study of specific characteristics, causes, and therapeutic approaches to remediating stuttering.

206. Seminar in Phonological Disorders (3). Prerequisite: C D 90, 95, 105. Seminar in the phonological and articulatory process and their disorders in both the first and second language production; review of assessment and treatment procedures and research trends.

207. Dysphasia in Adults (3). Prerequisite: permission of instructor. Seminar in the history of dyphasia; neurological concepts needed for understanding this disorder; application of linguistic theory to testing and therapy; formulation of programs for dysphasics.

209. Speech-Hearing in Public School Environment (1). Prerequisite: concurrent enrollment in C D 164A. Seminar in selection, application, and interpretation of diagnostic tests for public school children; demonstration and application of therapy for children with a variety of language, hearing, or speech disorders; organization and administration of school speech and hearing program.

210. Seminar in Structural Speech Disorders (3). Prerequisite: permission of instructor. Theories, etiologies, and habilitative processes. Emphasis given to orofacial growth and cleft palate.

212. Management of Severe Language Disorders (3). Prerequisite: C D 109 and permission of instructor. Seminar in assessment and remediative approaches to severe language delayed and disordered children. Causation, assessment and remedial approaches for semantic, syntactic, and morphologic disorders.

213. Seminar in Neurological Speech Disorders (3). Prerequisite: C D 102. Symptomatology, etiology, habilitative, and rehabilitative processes related to neurological speech disorders of children and adults.

214. Seminar in Language Disorders of Children (3). Prerequisite: C D 95, 109. Etiology, symptomatology, assessment, and habilitation of language disorders in children. Practical experience includes diagnosis and management of a child's language disorder. Clinic sites on campus and in public and/or private schools.

230. Advanced Clinical Practice in Speech and Hearing Therapy (1–3; max total 12). Prerequisite: C D 80, 90, 95, 102, 103, 105, 107, 110. Supervised clinical practice in diagnosis/treatment of complex speech and hearing problems; causative factors; outlining therapy; parent counseling; referrals. Clinic sites on campus, satellite centers, and public and/or private schools.

231. Audiology II (3). Prerequisite: permission of Instructor. Advanced differential diagnosis procedures; special problems in audiology related to nonorganic hearing loss, central auditory loss, the "dizzy" patient and the difficult to test patient. (2 lecture, 2 lab hours)

232. Seminar in Differential Diagnosis of Auditory Disorders in Children (3). Procedures for differentiating children who may have hearing deficits, mental retardation, emotional disturbances, or brain dysfunction. Syndromes characteristic of these disorders.

233. Seminar in Analysis of Hearing Aids (3). Prerequisite: C D 131, 202, 231. Study in depth of current hearing aids, body, post-auricle, and insert types; specific application to conductive and sensory-neural hearing losses. Analysis of frequency response and harmonic distortion of various instruments; theory of sloped amplification.

234. Seminar in Industrial Audiology (3). Prerequisite: permission of instructor. Principles of industrial hearing conservation and the design of a comprehensive plan for a specific industry.

235. Seminar: Instrumentation in Communicative Disorders (3). The course will contain information relating to basic electroacoustic principles, test calibration equipment and procedures, signal generation, recording, storage and analysis, as well as information relating to specific instrumentation for clinical and research uses related specifically to communicative disorders.

240. Advanced Seminar in Audiology (3). This course is designed to be taken later in the student's program for the purpose of indepth study in an area of the student's interest, indepth study in new or current topics, and professional issues and problems.

250. Advanced Clinical Practice, Audiology (1–3; max total 12). Prerequisite: C D 128, 131. Supervised clinical practice in diagnosis and treatment of complex hearing problems; causative factors, counseling parents, therapy planning, etc.

260. Advanced Clinical Practice, Education of the Deaf (2; max total 6). Prerequisite: C D 136, 162, 163, 164, 202. Supervised clinical participation and practice in clinical/classroom teaching of persons who are deaf and severely hard of hearing; parent counseling. Therapy planning and implementation. Clinical sites on campus and in public and/or private schools.

262. Seminar in Speech for the Deaf (3). Prerequisite: C D 162, permission of instructor; and successful completion of the N.T.E. (General Knowledge—Core Battery) or a Single or Multiple Subjects Credential. Development of oral communication for deaf child. Detailed study of essentials of good speech and methods to build or correct speech of the deaf. Projects in library research or experimentation. Includes demonstration and off-campus practicum.

263. Seminar in Language for the Deaf (3). Prerequisite: C D 163, permission of instructor; and successful completion of the N.T.E. (General Knowledge—Core Battery) or a Single or Multiple Subjects Credential. Investigation of language errors of the deaf. Techniques with deaf students. Specialized equipment and production of materials used in the classroom for the deaf.

264. Seminar in Elementary School Subjects for the Deaf (3). Prerequisite: C D 164 and successful completion of the N.T.E. (General Knowledge—Core Battery) or a Single or Multiple Subjects Credential. Special problems and techniques of adjusting the elementary school curriculum to the needs of deaf children; innovations and research in curriculum development. Project required. Includes demonstration and practice.

268. Internship with the Deaf (6). Prerequisite: C D 136, 164B, 262, 263, 264, and successful completion of the N.T.E. (General Knowledge—Core Battery) or a Single or Multiple Subjects Credential. Supervised internship in a residential school for the deaf. Full time in residence for 8 weeks.

269. Internship in Audiology (6). Prerequisites: C D 202, 231, 232, 233. Supervised internship in audiology. Full time in residence for a semester.

270. Seminar in Organization and Management of Speech, Language and Hearing Clinics (3). Prerequisite: permission of instructor. Establishing, organizing, and maintaining speech, language and hearing clinics in colleges and universities, hospitals, and private organizational settings. Project required.

290. Independent Study (1–3; max see reference). See *Academic Placement—Independent Study,* pages 96–97.

298. Individual or Group Research Project (1–6; max total 6). Prerequisite: consent of advisory committee. See *Criteria for Thesis and Project,* pages 467–468. Utilization of communication research principles and techniques to select study design, determine data collection techniques, collect and process data, interpret findings, and prepare final written report. Same standards as for thesis.

299. Thesis (2–6; max total 6). Prerequisite: See *Criteria for Thesis and Project,* pages 467–468. Preparation, completion and submission of an acceptable thesis or project for the master's degree.

IN-SERVICE COURSES

(See *Course Numbering System,* p. 133.)

300T. Selected Topics in Communicative Disorders for Continuing Education (1–3).

Computer Science

School of Natural Sciences
Department of Computer Science
Harold B. Haslam, Chair
San Ramon 3, Room 106
(209) 294-4373

B.S. in Computer Science

Computer science is applied reasoning using both art and science: it requires the ability to communicate ideas through a combination of language and powerful technology. It is concerned with the interaction of man and machine, and man's conquest of the future through continuing developments in the application of computers to a myriad of common and specialized problems.

The goal of the Department of Computer Science is to offer programs to a diverse audience: **(1)** students interested primarily in computing, **(2)** students interested primarily in applying computing to some other field of study, and **(3)** students who wish to include computing as part of their general undergraduate education. The department offers a bachelor of science degree in computer science, as well as service courses for the general student body.

For the computer science major, the department offers courses that represent both the core of study considered essential to all aspects of computing, and advanced study sequences in particular fields of interest. The core classes introduce all majors to the wide spectrum of thought represented in computing. The advanced sequences allow the individual student to pursue concentrated work within such areas as artificial intelligence, data bases, compilers, operating systems, and computer science theory. The department also offers topics courses intended to keep students informed of current advances and methodology in computing.

In addition to courses designed for majors, the department also offers courses intended to introduce computing to non-majors. These courses will benefit any major who wishes to include computer literacy in their undergraduate study.

The bachelor's degree in computer science prepares students for careers in the computing industry or for graduate study. Combined with a minor in any other field of study, the bachelor's degree will allow students to utilize their computing expertise in a variety of specialized fields as well. The core and computer science theory courses are excellent preparation for students who intend to pursue an advanced degree in computer science.

Faculty and Facilities

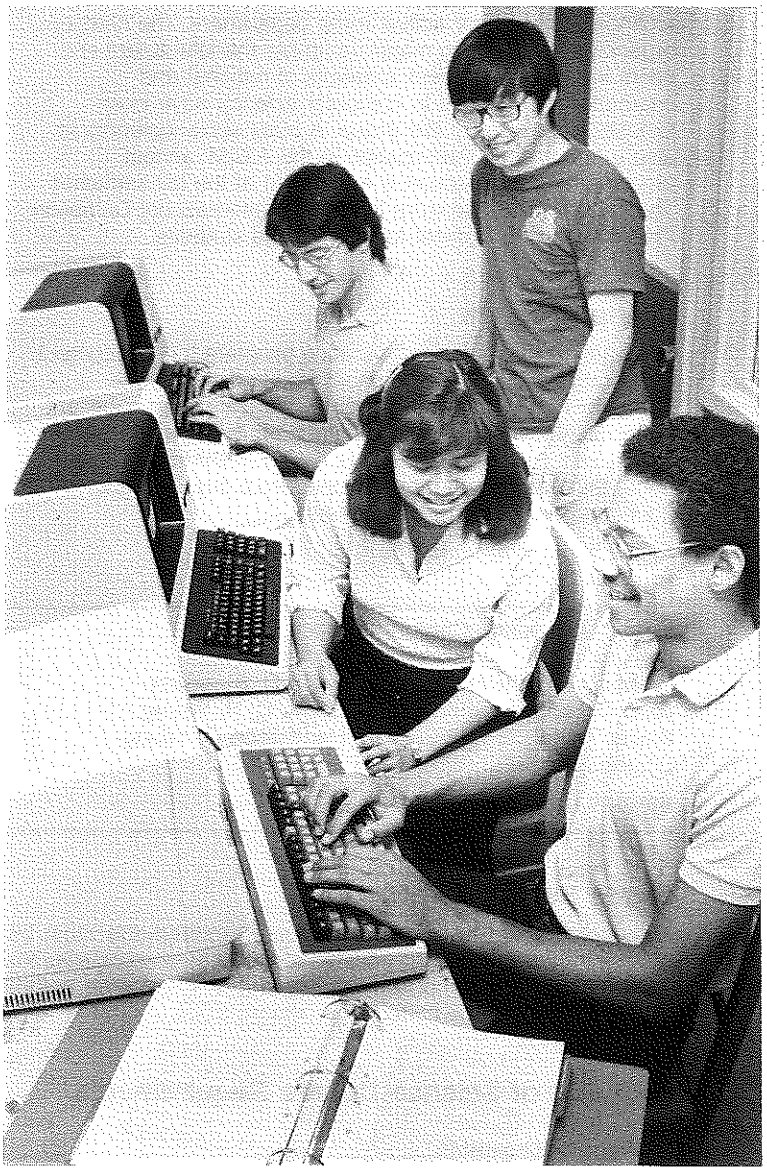
The department intends to maintain a program offering a solid background in all the core computer science areas, providing the student with a balanced mixture of theoretical background and hands-on experience.

The faculty who support this program come from a variety of areas including theoretical computer science, programming languages, software engineering, and applied mathematics. They have in common a desire to provide a program that will give the student a broad range of experience in computer science as well as the depth of education that will be needed in the student's later career, whether professional or academic.

In addition to sharing the university computing facilities, which include a VAX 11/785, CYBER 720 and 760, and PRIME 9750, the computer science department maintains its own VAX 11/785, AT&T 3B5, a terminal laboratory, and a microcomputer laboratory with IBM PCs.

Career Opportunities

Computer use is pervading all aspects of our society, and the industry supporting that use has been growing rapidly for several decades. Graduates from this program will find job opportunities in such diverse fields as computer design, software development, systems analysis, database design, and technical programming. Because of the strong theoretical orientation of our program, graduates will be attractive to companies involved in computer manufacturing and to those industries using computers in high technology applications. Our proximity to two of the largest computer use areas in the



nation—Silicon Valley and Los Angeles, provides our graduates with a flourishing and broad-based collection of potential employers. Graduates have also obtained exciting and challenging positions at Air Force and Naval bases in California. We expect that a high proportion of our graduates will pursue post-baccalaureate studies.

Organizations

A student chapter of the Association for Computing Machinery (A.C.M.), the national association for computer scientists and technologists, is very active in the department. The chapter organizes field trips to major computer manufacturers and users in California. Guest speakers of national and international eminence in computer science have been brought to Fresno by this group. A busy social calendar is also a major goal. Participation in the A.C.M. annual programming competition is a highlight of the fall semester. The chapter also sponsors the annual International Computer Problem Solving Contest for pre-college students.

Co-op Program

Through the Cooperative Education program the department encourages full-time employment for students for one semester in computer-related positions. This is an excellent opportunity for a student to obtain experience, a reasonable salary, and college credit in this field. Further information about this program can be obtained from the Cooperative Education office or this department.

Faculty

Harold B. Haslam, *Chair*

Brent J. Auernheimer
John D. Holt
Walter Read
Shigeko Seki
Linda C. Stanberry
Grace C. N. Yeung
Henderson C. Yeung

Adviser: Linda C. Stanberry

Grade Requirements

All courses taken to fulfill major course requirements must be taken for a letter grade. All courses required as prerequisites for a course must be completed with a grade of *C* or better before registration will be permitted.

Bachelor of Science Degree Requirements

	Units
1. Major requirements	53–54
a. C Sci 40, 41, 112, 113, 115, 117, 119	(26)
b. C Sci 124, 134, 144, 164, 174, 186, Math 121	(12)
c. Two of the following sequences must be completed: C Sci 124–126, 134–136, 144–146, 144–148, 164–166, 186–188, Math 121–122	(6)
d. Elective: C Sci 154, 172, 191T or other approved C Sci, Math or E E elective	(6–7)
e. C Sci 198 or completion of a third sequence from the list in *c*	(3)
2. Additional requirements	12
Math 75, 76, 77	
3. General Education	54
4. Electives	4–11*
Total	124

* This figure takes into account that Math 75 may also be applied to satisfy the General Education-CORE mathematics requirement if intermediate algebra was completed in high school. Under certain circumstances, two units of Math 76 may also be applied toward the total 54 unit requirement (See *General Education*, pp. 104–111). Consult department chair or faculty adviser for details.

COURSES

Computer Science (C Sci)

1. Introduction to Computer Science (3). Overview of the field of computer science. Introduction to problem solving and organization techniques. Methods of algorithm design and data abstraction. Introduction to hardware and theoretical limitations of computation. Translation of algorithms into high-level computer languages. Future trends.

10. Intensive BASIC Programming (1). Prerequisite: Elementary algebra. Introduction to structured programming techniques using the programming language BASIC. Topics include input/output, branching, looping, subroutines, and computer graphics. No prior experience required.

20. Introduction to Computer Programming (4). Prerequisite: ELM Exam, intermediate algebra and trigonometry. Introduction to programming in FORTRAN with emphasis on program design, debugging and documentation. Elementary applications and structured programming for algorithm development. No credit if taken after C Sci 40. (3 lecture, 2 lab hours)

40. Computer Programming I (4). Prerequisite: E.L.M. Exam, intermediate algebra and trigonometry. Introduction to problem solving, algorithm development, procedural and data abstraction; program design, coding, debugging, testing and documentation; programming language Pascal. No credit if taken after C Sci 20. (3 lecture, 2 lab hours)

41. Computer Programming II (4). Prerequisite: C Sci 40. Programming methodology, program correctness. Review of data types. Data structures: linear and nonlinear structures, files. Implementation of data structures. Recursion. Searching and sorting. (3 lecture, 2 lab hours)

112. Assembly Language Programming (4). Prerequisite: C Sci 41. Boolean algebra, combinational logic, elementary digital circuits. A comparison of several assembly languages with an in-depth study of the organization of a particular computer. (3 lecture, 2 lab hours)

113A. Introduction to Computer Organization (4). Prerequisite: C Sci 112. The organization and structuring of the major components of a modern computer: combinational circuits, sequential circuits, simulation of circuits, coding, computer organization and architecture. A detailed study of a microcomputer or minicomputer. (3 lecture, 2 lab hours)

115. Data Structures (3). Prerequisite: C Sci 41. Review of basic data structures. Graph, search paths and spanning trees. Algorithm design and analysis of sorting, merging and searching. Memory management, hashing, dynamic storage allocation. Integration of data structures into system design.

117. Structures of Programming Languages (4). Prerequisite: C Sci 112. Examination of general concepts of programming languages; scope and binding rules, applications and implementations of language concepts. A study of two or more of the following languages; ADA, ALGOL, PL/I, MODULA II, PROLOG, SNOBOL, LISP, C. (3 lecture, 2 lab hours)

119. Introduction to Automata Theory (3). Prerequisite: C Sci 41. Introduction to theoretical computer science. Sets; relations; mathematical induction; pigeonhole principle; diagonalization principle. Regular expressions, regular languages, finite automata, their relationship and their properties. Introduction to pushdown automata and Turing machines.

124. Introduction to File Processing (3). Prerequisite: C Sci 115. Definition of file components, access methods and file operations. Algorithms for efficient implementation of data structures; characteristics of bulk storage media for mainframe and microcomputers. Introduction to database management systems.

126. Database Systems (3). Prerequisite: C Sci 119, 124. Database concepts; hierarchical, relational and network models. Data normalization, data description languages, data manipulation languages and query design.

134. Compiler Design (3). Prerequisite: C Sci 115, 117, 119. Syntax and semantics of programming languages. Lexical analysis, parsing techniques, run-time storage management, symbol table organization. Introduction to semantic routines, intermediate code, interpreters.

136. Compiler Construction (3). Prerequisite: C Sci 134. Advanced topics in compiler design. Parser generators, SLR and LALR parsing. Error recovery techniques. Code optimization and generation. Compiler generators.

144. Operating Systems and Computer Architecture I (3). Prerequisite: C Sci 112, 115. Review of system architecture. Dynamic procedure activation. Process management—interrupt hardware, process control blocks, concurrent processes, semaphores, monitors, deadlock. Storage management—real and virtual. Processor management—job and processor scheduling, multiprocessing.

146. Operating Systems and Computer Architecture II (3). Prerequisite: C Sci 113A, 144. Auxiliary storage management—disk scheduling, file and database systems. Performance—measuring, monitoring and evaluation, analytic modeling. Networks, security and case studies.

148. Systems Programming (3). Prerequisite: C Sci 113A, 144. An in-depth study of a particular computer with selected system programming projects.

150. Software Engineering (3). Prerequisite: C Sci 115. History, goals, and motivation of software engineering. Study and use of software engineering methodologies. Requirements, specification, design, implementation, testing, verification, and maintenance of large software systems. Team programming.

154. Simulation (3). Prerequisite: Math 107, C Sci 41. Simulation as a tool for the study of complex systems in computer science, statistics, and operations research. Generating random variables. Review of principles behind and examples of simulation languages. (Former C Sci 191T Section.)

164. Artificial Intelligence Programming (3). Prerequisite: C Sci 115, 117. Introduction to functional programming and applicative languages via LISP. Production systems. Knowledge-based systems. Examples from: game playing, theorem proving, language processing. Introduction to logic programming and declarative languages via PROLOG. Introduction to expert systems.

166. Principles of Artificial Intelligence (3). Prerequisite: C Sci 164. Automated reasoning including nonmonotonic logic. Topics from: robot planning, natural language processing, perception (computer vision, speech), learning.

172. Computer Graphics (4). Prerequisite: Math 77, C Sci 112, 115. Introduction to algorithms and devices for construction and display of computer-generated images. Standard graphics packages are surveyed with applications to representation of two- and three-dimensional shapes, including hidden edges, shading, raster algorithms, and dynamic image generation. (3 lecture, 2 lab hours)

174. Design and Analysis of Algorithms (3). Prerequisite: C Sci 115, 119. Models of computation and measures of complexity, algorithms for sorting and searching, set representation and manipulation, branch and bound, integer and polynomial arithmetic, pattern-matching algorithms, parsing algorithms, graph algorithms, NP-complete problems.

186. Automata Theory and Formal Languages (3). Prerequisite: C Sci 119. Introduction to formal language theory. Regular grammars, context-free grammars, context-sensitive grammars, unrestricted grammars; properties of context-free languages, pushdown automata.

188. Theory of Computation (3). Prerequisite: C Sci 186. Computability, effective procedures, algorithms; finite-state and infinite machines; Turing machines, recursive functions, limitations of effective computability, the halting problem, the debugging problem, computable and noncomputable real numbers. (Former Math 113 and C Sci 113A and C Sci 184)

190. Independent Study in Computer Science (1–3).

191T. Proseminar (1–3). Prerequisite: permission of instructor. Presentation of advanced topics in computer science.

194. Cooperative Education (1–4; max 8). Prerequisite: Courses appropriate to the work experience: approval by major department Cooperative Education Coordinator. Integration of work experience with academic program, individually planned through coordinator. Graded *CR/NC* only.

198. Project (3). Prerequisite: Senior standing in Computer Science and approved subject. See *Criteria for Thesis and Project,* pages 467–468. Study of a problem under the supervision of a faculty member. A final report is required.

391T. Topics in Computer Science (1–6; repeatable with different topics).

Criminology

School of Social Sciences
Department of Criminology
Max D. Futrell, Chair
San Ramon 2, Room 36
(209) 294-2305

B.S. in Criminology
Options in:
Corrections
Law Enforcement
Minor in Criminology
M.S. in Criminology
Victim Services Certificate



The Department of Criminology provides undergraduate and graduate education in criminology for students planning professional careers in the criminal justice field. The program is diversified and integrated, reflecting the wide range of job opportunities in the field, including direct service and administration in law enforcement, corrections, and juvenile justice. The department offers the Bachelor of Science degree, Master of Science degree, and a minor.

Undergraduate Program

Criminology courses at the undergraduate level include integration of theoretical and applied materials of an interdisciplinary nature. The undergraduate curriculum is designed to prepare for beginning professional work in criminal justice and to provide preparation for graduate work.

The corrections program is designed for students interested in careers in probation, parole, correctional institutions, and other affiliated forms of work. The law enforcement program is designed for students interested in careers with federal, state, and local law enforcement agencies, or law enforcement careers within the private sector. An internship course is required in both corrections and law enforcement options.

Graduate Program

The Master of Science degree in criminology is a 30-unit, flexible program which provides a solid core in the field of criminology while permitting students to pursue specialized areas of interest. The master's program is designed to prepare students for service and responsible administrative and professional positions in agencies in the criminal justice system. The master's program also prepares students for a wide variety of occupations including in-service education, administrative education and management, community college teaching, marriage, family, and child counseling, pre-doctoral studies, and research.

Justice Center

The department also administers a Justice Center that provides education, training, assistance, and consultation to criminal justice agencies throughout the Valley. The Justice Center offers intensive seminars in areas of interest to working professionals. Some of these areas may include: victimology, drug abuse, alternative sentencing, juvenile justice, exclusionary rule, crime prevention, and industrial security.

Faculty and Facilities

The criminology department consists of 11 full-time faculty members whose expertise includes numerous specialties in the criminal justice system, including corrections, counseling, victimology, juvenile delinquency, theory, legal studies, supervision and management, criminal justice administration, forensics, and polygraphy. Various part-time faculty members from major criminal justice agencies also instruct in the department.

Career Opportunities

Many diversified local, state, federal, and private agencies employ our graduates in criminal justice. On the local level are municipal police departments, county sheriffs' offices, probation departments, halfway and pre-release houses, group homes, crisis centers, juvenile halls, welfare fraud units, retail, and industrial security agencies. At the state level are the State Police, Department of Corrections, Alcohol and Beverage Control, prisons, Department of Motor Vehicles, Departments of Justice, Fish and Game, and Forestry. At the federal level there are the Border Patrol, F.B.I., Secret Service, Alcohol, Tobacco and Firearms, Internal Revenue Service, Park Service, Customs, Immigration, and federal prisons.

Faculty

Max D. Futrell, *Chair*

John H. Burge
R. Thomas Dull
Caryn B. Horwitz
Ruth E. Masters
Lester P. Pincu
John R. Quinn
D. N. Ray
Cliff Roberson
Doug Shannon
O. J. Tocchio

All advisers are listed above.

Bachelor of Science Degree Requirements

	Units
I. Criminology—Corrections Option Major:	51
Lower-Division Requirements (see Note 1): Crim 2, 20, 31, 50, 73	(15)
Upper-Division Core (must be taken before or concurrent with other upper-division requirements): Crim 100, 102, 109, 112, 170	(15)
Upper-Division Requirements: Crim 118, 133, 134, 135, 139, 181	(18)
Crim Electives (one of the following courses): Crim 104, 117, 119, 120, 121, 136T, 140, 141, 147, 153, 160T, 175, 176, 190	(3)
II. Criminology—Law Enforcement Option Major:	53
Lower-Division Requirements (See Note 1): Crim 2, 4, 20, 21, 31, 50, 73	(21)
Upper-Division Core (must be taken before or concurrent with other upper-division requirements): Crim 100, 102, 109, 112, 170	(15)
Upper-Division Requirements: Crim 113, 117, 180 or 108	(11)
Crim Electives (two of the following courses): Crim 104, 111, 118, 119, 120, 121, 133, 134, 135, 136T, 139, 140, 141, 153, 160T, 175, 176, 190	(6)
III. General Education requirement	54
IV. Electives and remaining degree requirements (*see Degree Requirements,* pp. 98–101); may be used toward a dual major or minor	21–23*
Total	128

* This figure takes into consideration that up to six units of "additional electives" may also be applied to satisfy General Education-BREADTH requirements (see *General Education,* pp. 104–111). Consult the criminology department chair or faculty adviser for details.

Notes:

1. Lower-division courses should be taken before upper-division courses.
2. Upper-division core should be taken prior to upper-division electives.
3. Department policy requires that students should see their advisers prior to registration each semester.
4. No course used to satisfy General Education CAPSTONE requirements may be used to satisfy criminology major requirements.
5. *CR/NC* grading is not permitted in the major with the exception of Crim 108, 180, 181, and 281.
6. Crim 170 must be taken no later than the first semester of the student's junior year.
7. Any course that meets the Upper Division Writing Skills requirement cannot be applied to the major requirements.
8. Crim 134 and 139 must be taken concurrently.
9. General Education and elective units may be used toward a dual major or minor (see *Dual Major,* p. 98 or departmental minor). Consult the appropriate department chair, program coordinator, or faculty adviser for further information.

	Units
Criminology Minor:	21
Lower Division: Crim 2, 20	(6)
Upper Division: Crim 100	(3)
Select from upper-division criminology courses	(12)

Note: Crim 100, 120, and 153 may still be used to meet requirements for both general education and the minor, for those catalogs to which it applies.

	Units
Master of Science Degree Requirements:	30

(See also Admission to Graduate Standing, Advancement to Candidacy, Program Requirements, Foreign Language Requirements, and *Criteria for Thesis and Project,* pp. 464–468.)

Under the direction of a graduate adviser, each student prepares and submits a coherent program individually designed within the following framework:

All students must complete required core courses, and successfully complete a qualifying examination as a condition of advancement to candidacy.

	Units	
	Plan A	Plan B
Required courses in criminology 200 series (see specific requirements)	15	12
Electives in criminology or related areas 200 series (under special circumstances a maximum of 6 upper-division units may be allowed)	15	18
At least 21 units must be CSU, Fresno resident credit excluding credit by examination and 300-level course work.		
Total	30	30

Specific Requirements:

Plan *A*—Thesis or Project Program: Crim 200, 201, 202, 203, and 298 or 299.

Plan *B*—Non-Thesis Program: Crim 200, 201, 202, 203.

All Plan *B* degree candidates must pass a comprehensive examination.

Victim Services Certificate

The Department of Criminology and S.O.E.H.D. jointly offer the Victim Services Certificate. The purpose of this program is to provide appropriate educational experiences for matriculating students and practitioners. The certificate provides the opportunity for developing knowledge and skills necessary for individuals working with crime victims.

Program Prerequisites: (1) completion of 60 units of undergraduate coursework, and (2) completion of one general course in psychology, sociology, anthropology, health science, or child and family studies.

Program Requirements: A minimum of 12 units is required; three units must be taken in each of the four areas:

	Units
1. Theory	
Victimology (Crim 175)	3
2. Victim Issues	
Family Violence (Crim 140)	3
Children as Victims (EHD 107)	3
Domestic Violence (WS 116)	1
Rape (WS 108)	1
3. Service Delivery	
Victim Intervention and Counseling (EHD 108)	3
Victim Services (Crim 176)	3
Child Welfare (S Wrk 128)	3
4. Legal/Social Policy	
Education for Community Change (EHD 109)	3
Social Movements (Soc 122)	3

In addition, three units field experience (Crim 181) is available. For additional information or advising, contact the Department of Criminology.

COURSES

Criminology (Crim)

1. Crime in America (3). Not open to students majoring in criminology who have more than 60 units. Social justice and criminal law; state vs. accused; crime and criminals; police function; prosecution; correctional process; prevention.

2. Administration of Justice (3). Purpose, function, and history of agencies dealing with administration of justice; survey of criminal procedures; organization of law enforcement agencies at federal, state, and local levels; organization and functions of courts; probation, parole, and pardons; penology and prison administration.

4. Police Operations (3). Open only to criminology majors. Basic theories, objectives, and activities of police patrol and field operations.

20. Criminal Law (3). Introduction to the case method of studying criminal law, theory, concepts, and philosophy of substantive law and criminal offenses; analysis of court decisions and opinions through case method.

21. Criminal Evidence (3). Fundamental questions of evidence and theory of proof through analysis of court decisions and opinions by case method, code sections, judicial notice, burdens of proof, presumptions and inferences, competency, hearsay, privilege, relevance, documentary evidence, and the exclusionary rule.

31. Interpersonal and Community Relations (3). The relationship of the criminal justice system and the community; nature and causes of complex problems in people to people relations in criminal justice.

50. Statistical and Computer Applications in Criminal Justice (3). Introduction to statistical and computer applications as they relate to criminological research and policy. Emphasis will be on basic statistical methods for the analysis of data and the application of appropriate computer techniques.

73. Criminal Justice Communications (3). Open only to criminology majors. The fundamentals of gathering and organizing data, and writing reports in the criminal justice system.

100. Criminology (3). Not open to students with credit in Crim 132. Theories of criminal behavior; sociological factors; organized crime; professional criminals; selected types of social deviants and criminal offenders.

102. Criminal Justice Organization and Management (3). Fundamentals of organization/management theory, principles, and processes relating to the operation and functioning of the criminal justice system.

104. Trends and Issues in Criminal Justice Management (3). Prerequisite: Crim 102. Analysis of current criminal justice management programs and problems from the perspective of both the administrator and the line staff officer: integrating established scientific knowledge with practical experience in the various areas of criminal justice management.

108. Directed Policing (3; max total 12). Open only to criminology majors. Prerequisite: or concurrently: Crim 4, permission of instructor and sponsoring agency. Supervised field experience in police work for interpreting theories developed in parallel criminology courses. Purchase of uniform required. (Minimum of 6 field hours per unit.)

109. Comparative Systems of Criminal Justice (3). Study of selected criminal justice systems in other jurisdictions; examination of the organization; administration and operations of criminal justice agencies in the United States, Europe, the United Kingdom, and Asia.

111. Police Supervision (3). Not open to students with credit in Crim 101. Prerequisite: Crim 102. Analysis and evaluation of sound human relations and supervisory techniques as related to effective policy performance: discipline; motivation, problem handling, personnel policies; supervisory relationships; wages; grievances; morale and safety; instruction; training.

112. Professionalism in Criminal Justice (3). Professionalism in criminal justice including formal and informal control, political activity, use of discretion, conflict of interest, rights of clients, and other current topics.

113. Forensic Science (5). Open only to criminology majors. Advanced study of scientific crime investigation, identification, and detection methods. (4 lecture, 3 lab hours)

117. Criminal Legal Process (3). Prerequisite: Crim 20. Specific emphasis on the laws of arrest, search and seizure, interrogation and confession, procedure prior to and during trial, post-conviction procedures, limitations on criminal prosecutions and juvenile proceedings.

118. Individual Rights in the Criminal Justice System (3). Prerequisite: Crim 20. Examines specific issues relative to the rights of individuals in substantive design of our criminal justice system. Deals with the development and protection of rights; surveys common abuses in the criminal justice system and their causes.

119. Juvenile Law (3). The history of juvenile law, the evolution of juvenile courts, and survey of current juvenile law and procedures.

120. Juvenile Delinquency (3). The problem of juvenile delinquency; portrait of delinquency; causal factors; agencies of justice; treatment process; programs for control and prevention.

121. Delinquency Prevention (3). An analysis of the role of the police, correctional agencies, the courts, group and community oriented programs of the prevention and control of juvenile delinquency.

126. Legal Rights of Women (3) (Same as W S 126). Legal rights of women: constitutional law, employment legislation,

family law, property rights, criminal law, and women's legal rights in other countries.

133. Correctional Institutions (3). Examination of institutional philosophy, theory, function and practice; historical and systems approach to incarceration; contemporary prison facilities; socio-psychological effects of incarceration; inmates and staff; institutional programs; parole; rights of the confined; institutional issues; future of corrections.

134. Criminal Justice Counseling (3). Student must take Crim 139 concurrently. Not open to students with credit in Crim 145. An overview of counseling modalities and counseling techniques as practiced in criminal justice settings.

135. Issues and Trends in Community Corrections (3). Examination of community-based corrections issues and trends; alternatives to incarceration; offender diversion; restitution; community treatment facilities; probation; parole.

136T. Topics in Criminology (1–3; max total 12 if no topic repeated). Analysis of selected areas of criminology; deviant behavior; institutional and noninstitutional treatment; corrections; administration and management; law enforcement; criminalistics.

139. Criminal Justice Counseling Skills Practicum (3). Students must take Crim 134 concurrently. Fundamental counseling practicum including problem identification, listening, empathy, clarification, disclosure, confrontation, goal setting, evaluation, and ethics.

140. Family Violence (3). Typology and history of family abuse, including: legal guidelines; treatment approaches; emotional abuse; sexual abuse; spousal abuse; elderly abuse; and child abuse as a criminogenic factor. (Former Crim 136T section)

141. Alcohol, Drugs, and Criminality (3). Drug and alcohol related criminal behavior and the response of the criminal justice system.

146. Small Groups in the Administration of Justice (4). An examination of the theory and practice of small groups within the criminal justice setting. (3 lecture, 3 lab hours)

147. Individual Counseling Theories in the Administration of Justice (3). Prerequisite: Crim 134 (may be taken concurrently). Psych 10 recommended. Theories, techniques, and methods of counseling within the field of corrections.

153. Psychology of Crime (3). Psychological bases of crime; motivation, alcoholism, economic and cultural pressures; forms of crime; criminal careers; psychology and the criminal justice system.

160T. Topics in Crimes (1–3; max total 12 if no topic repeated). Intensive focus on particular crime categories, e.g., political, corruption, terrorism; corporate, computer, white collar, fraud, embezzlement; homicide, assassination, mass murder, sex crimes, violence, assault, rape, mayhem; property, burglary, robbery, piracy, professional pickpocketing, swindling, safecracking; organized; arson; environmental; other.

170. Research Methods in Criminal Justice (3). Prerequisite or concurrently: Crim 50. Must be taken no later than the first semester of the student's junior year. Research methodology; use of library resources; preparation and handling of materials in criminology; written report required.

175. Victimology (3). Introduction to victimology, with special emphasis on family violence, sexual assault, restitution, compen-



sation, culpability, victim services, victim rights, vulnerability, victim surveys, and the international victimology movement.

176. Victim Services (3). Overview of community services dealing with victims, including social welfare services, crisis centers, medical services, criminal justice, and others. This course will focus on the role of a victim service agency as a new subsystem, with special emphasis on services.

180. Internship in Law Enforcement (1–12; max total 12). Open only to criminology majors. Prerequisite: Crim 4, permission of instructor and sponsoring agency. Relates student's classroom studies with occupational and professional experiences. Weekly conference with field supervisor. (Minimum of 3 field hours per unit) (Transfer students should be aware that 12 unit total must include units previously earned; check with departmental adviser.)

181. Internship in Corrections (1–12; max total 12). Open only to criminology majors. Prerequisite: Crim 133 and 135, permission of instructor and sponsoring agency. Relates the student's classroom studies with occupational and professional experiences. Weekly conference with field supervisor. (Minimum of 3 field hours per unit) (Transfer students should be aware that 12 unit total must include units previously earned; check with departmental adviser.)

190. Independent Study (1–3; max see reference). See *Academic Placement—Independent Study,* pages 96–97.

GRADUATE COURSES

(See *Course Numbering System,* pp. 133.)

200. Research Methods in Criminology (3). Prerequisite: Crim 170. Methods and techniques of research in criminology; research designs and models; statistical techniques; preparation and critique of a research paper.

201. History of Western Criminological Thought (3). Prerequisite: Crim 100. An historical approach to criminological theory in Western civilization. Special treatment to the theoretical underpinnings of contemporary United States criminological thought. Detailed analysis of major 18th, 19th, and early 20th century Occidental thought.

202. Law and Society (3). Prerequisite: Crim 117 or 118. Development of law and legal systems; social organization of law in society; roles; functions of law, including social control, change and conflict resolution.

203. Criminal Justice Administration (3). Prerequisite: Crim 102. A comprehensive assessment of the historical evolution of the criminal justice system, including current status and future growth organization/management theory and practice relating to criminal justice; individual research.

220. Seminar in Group Therapy in Criminal Justice Agencies (3). Prerequisite: Crim 200, 201, 202, and 203. The theory and practice of group therapy in criminal justice agencies. Use of transactional analysis concepts in describing group interactions.

221. Seminar in Family Counseling in Criminal Justice Agencies (3). Prerequisite: Crim 200, 201, 202, and 203. The theory and practice of family counseling in criminal justice agencies.

227. Seminar in Crime and Delinquency Prevention Programs (3). Prerequisite: Crim 200, 201, 202, and 203. Policies and programs for prevention and control of delinquency and crime; evaluation of specific programs; principles of prevention and control.

252. Seminar in Criminal Justice Personnel Administration (3). Prerequisite: Crim 200, 201, 202, and 203. The historical development of modern personnel theory and practice in criminal justice agencies; manpower, merit concepts, concepts of man and work, classification, training and compensation, collective bargaining and organizational communication.

255. Seminar in Criminal Justice Labor Relations (3). Prerequisite: Crim 200, 201, 202, and 203. The historical development of labor relations theory and practice in criminal justice agencies; legislation, court decisions, collective bargaining agreements, arbitration awards and fact-finding, and administrative law decisions.

270T. Problems in Criminology (1–6; max total 12 if no topic repeated). Prerequisite: Crim 200, 201, 202, and 203. Special problems in law enforcement or corrections; individual research in laboratory, library, or field work; formal written reports. Weekly conference with instructor.

281. Supervised Professional Experience (1–6; max total 6). Open only to criminology majors. Prerequisite: permission of instructor and selected agency. Supervised professional experience in law enforcement or correctional work.

290. Independent Study (1–3; max see reference). See *Academic Placement—Independent Study,* pages 96–97.

292. Readings in Criminology (1–3; max total 3). Prerequisite: permission of instructor and chair, Criminology Graduate Committee. Individually directed readings in an area of special concern to the student's graduate program; appropriate written reports and evaluation required; individual student conferences.

298. Project (2–4; max total 4). Prerequisite: Crim 200, 201, 202, and 203. See *Criteria for Thesis and Project,* pages 467–468. Preparation and completion of a project demonstrating a significant undertaking such as implementing a program, evaluating an ongoing program, developing pilot studies of innovative ideas or implementing organizational change in the field of criminology, and submission of a written abstract.

299. Thesis (2–4; max total 4) Prerequisite: Crim 200, 201, 202, and 203; see *Criteria for Thesis and Project,* pages 467–468. Preparation, completion, and submission of an acceptable thesis for the master's degree.

IN-SERVICE COURSES

(See *Course Numbering System,* p. 133.)

302. Topics in Criminology (1–3).

Economics

School of Social Sciences
Department of Economics
Izumi Taniguchi, Chair
Social Science Bldg., Room 211A
(209) 294-3916

B.A. in Economics
Minor in Economics

Economics is the social science that studies the way in which societies are organized to produce the goods and services that sustain and enhance the life processes of the community. As a fundamental scientific discipline, economics employs systematic analysis in the study of the production and distribution of income within and among nations. Since all social policy issues in modern societies have an economic dimension, the study of economics offers the student an opportunity to investigate the most important and exciting problems of political economy facing the world today.

Topics like inflation, unemployment, labor union, banking, international trade, and development have long been within the province of economics. More recently the scope of the economic way of thinking has been extended to other areas. Economic theories have been used to explain the level of crime, the birth rate, class conflict, pollution, marriage decisions, migration, and many other topics involving human behavior. Not all economists would agree with these theories, but ongoing debate helps to make economics a lively and challenging discipline.

Economics majors acquire skills in critical and analytical thinking that contribute to an individual's intellectual independence and self-confidence in the problem solving processes. In addition, economics majors confront the necessity of developing a broad view of the options facing mankind in organizing the production and distribution of income. The literature of economics presents widely diverse systems of political economic philosophy. The CSU, Fresno, Department of Economics offers a well-developed and balanced curriculum encompassing the major schools of modern economic thought, including the neoclassical, Marxian and American institutionalist schools.

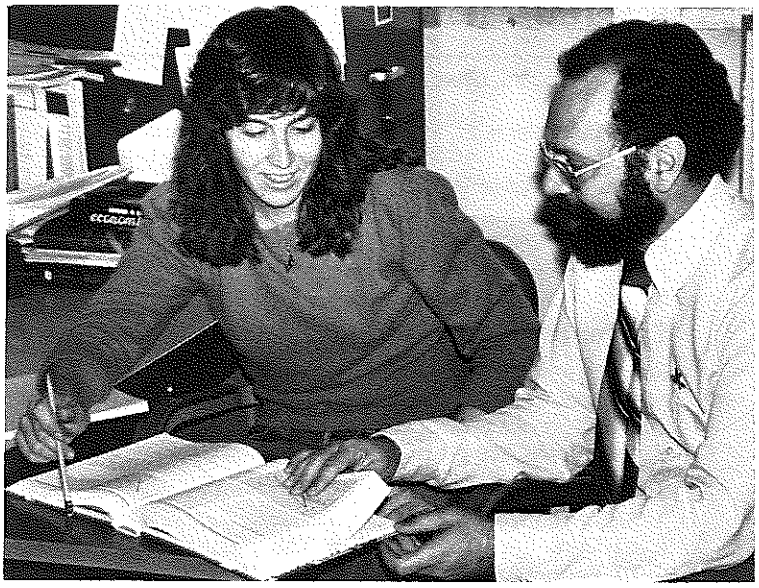
The program in economics at CSU, Fresno is designed to give the student maximum flexibility in the choice of courses offered for the economics major. A typical economics major might take courses in intermediate macroeconomic theory and statistics while also learning about global corporations in the third world or Marxist economics or pursue an independent study project on the foundations of supply-side economics. The economics major is designed to permit the student to pursue a broad liberal arts undergraduate degree, integrating the study of economics with other social sciences, humanities, natural sciences and business administration.

Faculty

The faculty of our department is staffed by professors whose primary professional commitment is to undergraduate education. Every member participates in the full range of teaching assignments from moderate sized sections of economics principles to small, upper-division classes (averaging 16 students). They offer a wide variety of courses ranging from the traditional core of intermediate micro and macroeconomic theory to problem oriented courses like the economics of ecology, population, and government regulation. The background of the faculty, like its program offerings, represents a broad spectrum of intellectual tastes and professional specialties.

Career Outlook

Graduates of the department pursue a variety of challenging careers in industry, finance, education and government. A B.A. in economics (with the specific major requirements of our program) qualifies a graduate to apply for a position of



"economist" with federal, state and local civil services. A career as a "professional economist" generally requires an advanced degree, usually the Ph.D. The department has been quite successful in placing its graduates in the finest doctoral programs in the country. Over the past 20 years, approximately thirty graduates from our department have undertaken doctoral studies, and most of those individuals acquired Ph.D.s. A number have achieved national and international stature by virtue of their scientific contributions to the field. The economics B.A. degree is an excellent foundation for graduate study in public administration and business. The undergraduate major in economics has also proved to be an ideal pre-law major. The faculty provides counseling on legal careers to students interested in this career option. A number of distinguished attorneys are graduates of the department.

Careers for professional economists fall into the following patterns:

1. **Business**—roughly one-third of all economists are employed by private firms both large and small, although big corporations, banks, insurance companies, and the like tend to employ larger staffs of economists.
2. **Government**—approximately one out of five professional economists works for a local, state or federal government agency. The federal government recognizes the importance of an economics degree at the undergraduate level by

allowing members of the economics honor society (Omicron Delta Epsilon) to enter government service at the GS-7 level rather than at the GS-5 level for general college graduates.

3. Education—about 45 percent of all economists are involved in teaching the discipline, but employment at this level has become more difficult as overall university enrollments have declined. However, there is a reawakening of interest in teaching economics in the secondary and even primary grades as more states across the nation are beginning to mandate economics in the public schools curriculum.

Faculty

Izumi Taniguchi, *Chair*

Robert J. Allison
Paul D. Bush
James M. Cypher
Don R. Leet
Robert A. Minick
Grady L. Mullennix
Louis F. Pisciottoli
Linda J. Shaffer
John A. Shaw, Jr.
Edwin F. Terry

Bachelor of Arts Degree Requirements

Econ 1A and 1B are prerequisite to all upper-division courses in economics except those offered in extension. Any student planning graduate work is advised to take *additional mathematics and some foreign language.*

Economics Major

	Units
1. Major requirements:	34
a) Core: Econ 1A–B, 100A–B, 120	(16)
b) Economics electives (at least 14 units upper division):	(18)
2. General Education requirement:	54
3. Electives and remaining degree requirements (See *Degree Requirements,* pp. 98–101); may be used toward a dual major or minor:	36
Total	124

Notes:

1. No course used to satisfy General Education Capstone requirements may be used to satisfy Economics major requirements.
2. *CR-NC* grading is not permitted in the Economics major.
3. General Education and elective units may be used toward a dual major or minor (see *Dual Major,* p. 98 or departmental minor). Consult the appropriate department chair, program coordinator, or faculty adviser for further information.
4. Economics majors may not use Econ 1A and 1B for General Education-Breadth, Div. 8.

Economics Minor

The minor in economics requires 18 units as listed below; 20 units are required for use in a credential program.

	Units
Econ 1A–B	6
Elect from: Econ 100A, 100B, 101	3
Economics electives (11 units required for credential program)	9–11
	18–20

Note: Econ 1A–B may also count for G.E. Breadth, Div. 8.

COURSES

Economics (Econ)

1A. Principles of Economics (3). May be taken prior to or concurrently with Econ 1B. Introduction to macro-economics; levels of income, production, employment; economic role of government and banking system in the United States; relationships between the aggregate and world economies.

1B. Principles of Economics (3). May be taken prior to or concurrently with Econ 1A. Introduction to micro-economics; price determination via supply and demand; resource allocation under pure competition, monopolistic competition, monopoly, oligopoly; fundamentals of distribution theory and international trade.

100A. Economic Theory: Microeconomic 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: Macroeconomic Analysis (3). Prerequisite: Econ 1A–B. An examination of classical, Keynesian and post-Keynesian theories of the determination of the levels of income, output, and employment; the scientific and ideological implications of Keynesian thought; and the theoretical foundations of contemporary monetary and fiscal policies.

101. History of Economic Thought (3). Prerequisite: Econ 1A–B. Evolution of economics as a science; doctrines of different schools of thought—Mercantilists, Physiocrats, Historical School, Classical Economists; contributions of outstanding economists.

102W. Explorations in Economic Literature (3). Prerequisite: Econ 1A–B, Engl 1, upper-division standing. An investigation into important Economic ideas and issues through selected readings of either contemporary literature or classics in the history of economic thought or both. The class is conducted as a seminar with emphasis on student contributions. This course meets the Upper Division Writing Skills Requirement for graduation.

103. Economics of Inflation, Unemployment and Growth (3). Prerequisite: Econ 1A. A theoretical and empirical analysis of the various types of inflation and unemployment in the United States economy.

104T. Contemporary Economic Problems (3). Prerequisite: upper-division standing or permission of instructor. Analysis of current economic issues which are of public interest and importance at the time the course is given.

105. Marxian Economic Theory (3). Prerequisite: Econ 1A–B. Marxian economic theory and its relevance for modern economic theory and analysis; Marx's value, production and distribution theory; modern developments of Marxian models.

107. Institutional Economics (3). Prerequisite: Econ 1A–B. Study of the literature of American institutionalism, e.g., Veblen, Commons. Systematic study of the process of institutional adjustments; interplay of ceremonial and technological aspects

of economic activity; application of institutionalist theory to specific fields in economics.

108. Radical Traditions in Economics (3). Prerequisite: Econ 1A–B. Economic philosophies of the Utopian, Anarchist, Anti-Materialist, Marxist, and Fabian Socialist schools. Intensive examination of contemporary radical economic ideas and the radical critique of modern neo-classical economics.

109. Principles of Political Economy (3). Prerequisite: Econ 1A–B or permission of instructor. A critique of political economy; political nature of applications of economic theory. (Former Econ 10 section)

110. Economic History of the United States (3). Prerequisite: 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). Prerequisite: Econ 1A–B or permission of instructor. European expansion from the Middle Ages to present. Emphasis is placed on the causes of the Industrial Revolution and its spread throughout Europe; present economic conditions and trends in Europe; the interest of the United States in the European Economy.

114. Economics of Underdeveloped Areas (3). Prerequisite: Econ 1A–B. Survey and analysis of developmental problems of emergent economies.

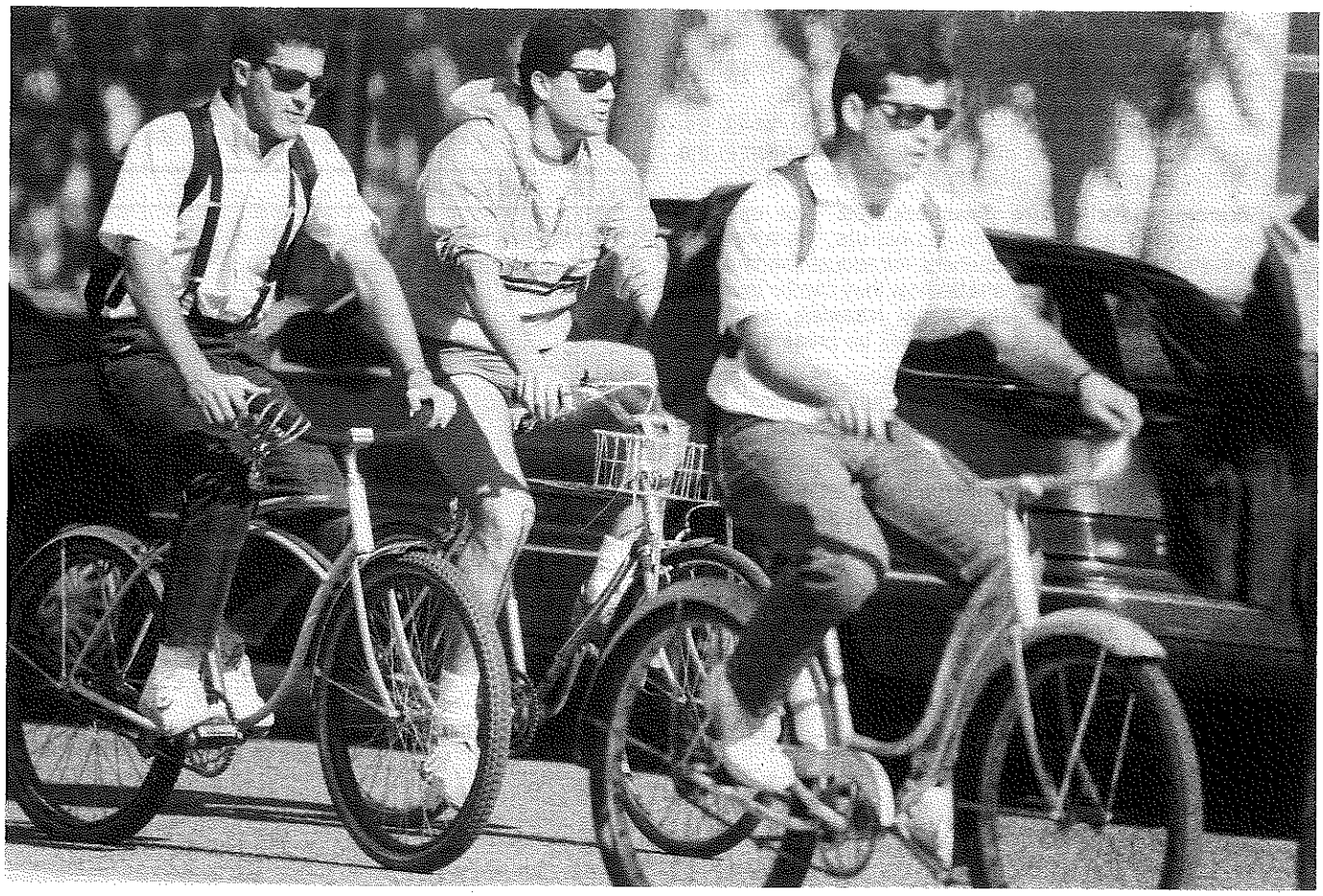
115T. Topics in US Economic History (1–3; max total 6). Detailed investigation of developments in the United States economy. Topics vary with the needs and interests of students and faculty.

117. Economics of Ecology (3). Prerequisite: Econ 1A–B. Investigation into the economics of resource use. Development and creation of resources through the application of technology and the destruction of resources through misuse and pollution of the environment.

120. Economic Statistics (4). Prerequisite: Econ 1A–B and Math 4. Introduction to the use of statistics in economics; consideration of measures of central tendency and dispersion, index numbers, time series analysis, test of hypotheses and simple regression analysis. (3 lecture, 2 lab hours)

125. Introduction to Mathematical Economics (3). Prerequisite: Econ 1A–B, Math 75. Designed to demonstrate to the mathematical novice the deductive power of a mathematical statement of economic theory. Subject material includes some neoclassical results, a multiplier-accelerator model, input-output analysis, and an illustration of post Keynesian analysis. (Former Econ 188T section)

131. Public Finance (3). Prerequisite: Econ 1A–B. Governmental revenues and expenditures at federal, state, and local levels of jurisdiction. Tax limitation measures, efficiency in government, subsidies, and fiscal relationships between different levels of government.



135. Money and Banking (3). Not open to students with credit in Fin 135. Prerequisite: Econ 1A–B. Survey of the monetary and banking system of the United States and analysis of its role in economic growth and stabilization.

140. The Political Economy of the Military-Industrial Complex (3). Prerequisite: Econ 1A. Economic effects of military expenditures in historical perspective. Economic effects of World War II, Korea and Vietnam. The Military-Industrial Complex, war profiteering, and the economic effects of disarmament.

150. Labor Economics (3). Prerequisite: Econ 1A–B. 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 1A–B. Analytical topics from historical viewpoint; evolution of unions and labor legislation interpreted in terms of economic theory.

152. Economics of Human Resources (3). Prerequisite: Econ 1A–B or permission of instructor. Economic theory of investment in education and training; economic theories of discrimination; analysis of earnings differentials for women and ethnic minorities. Issues discussed include returns to class members' educational choices, affirmative action, comparable worth, and "manpower" planning policies. (Former Econ 188T section)

161. Population Economics (3). Prerequisite: Econ 1A–B. Development of an economic framework for studying components of population growth: fertility, mortality, and migration. Analysis of relationship between population change and modern economic growth in both developed and lesser developed nations.

162. Medical Economics (3). Prerequisite: Econ 1A–B. Examination of several aspects of the health care situation in the United States from the viewpoint of economic analysis.

165. Economics for Future Teachers (3). Not open to students majoring or minoring in Economics. Designed for prospective elementary school teachers. Introduces fundamental economic concepts and demonstrates how they can be taught in the elementary classroom. Audio-visual materials, computer applications and classroom simulations will be presented.

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 1A–B. Justification for regulation, constitutional limitations, public utility regulation, regulation of monopoly; competitive practices; government policy in other areas of economic activity.

176. Economics Through Films (3). Prerequisite: Econ 1A–B or permission of instructor. Emphasizes economics concepts, issues and institutions through an integrated series of classic films, lectures, and discussions. Students will apply economic theory to contemporary problems. (Former Econ 76)

178. International Economics (3). Prerequisite: Econ 1A–B. International economic relations; problems and policies in the light of fundamental economic theory.

179. Global Corporations and the Third World: The World Economy (3). Problems of economic underdevelopment in the Third World within the context of the world economy, nature and function of multi-national corporations, theories of economic imperialism.

180. Comparative Economic Systems (3). Prerequisite: Econ 1A–B. Comparative study of economic systems of the modern world; capitalism, socialism, communism, fascism, and the problems which arise within each.

181. Political Economy of Central Planning (3). Prerequisite: Econ 1A–B. Theory, history, and institutional application of central planning; examination of existing centrally planned economies, feasibility of central planning in the underdeveloped economies, welfare criteria for nonmarket economies.

182. The Political Economy of China (3). Prerequisite: Upper division standing and/or permission of instructor. A survey and analysis of economic development in China and its linkages with politics, history, society, and foreign policy.

185. Directed Readings (1–3). Prerequisite: Econ 1A–B and permission of instructor. Directed readings in the literature of economics. Intensive reading of economic literature on special topics under faculty supervision.

188T. Special Topics (1–3; max total 6). Prerequisite: Econ 1A–B. Consideration in depth of special topics in political economy; systematic, detailed study into issues not possible in survey courses. Topics vary with the needs and interest of students and faculty.

189T. Topics in Public Policy (1–3; max total 6). Prerequisite: Econ 1A–B. Detailed analysis of questions of economic policy. Areas of investigation include social welfare policy, farm policy, environmental quality policy, and others. Topics to be varied with the interests and needs of students and faculty.

190. Independent Study (1–3; max see reference). See *Academic Placement—Independent Study,* pages 96–97.

IN-SERVICE COURSES

See Course Numbering System, page 133.

365T. Economics for Teachers (1–6).

EDUCATION
Advanced Studies

School of Education and Human Development
Department of Advanced Studies
H. Dan Smith, Chair
Ed./Psych. Bldg., Room 123
(209)294-2271

M.A. in Education/Administration and Supervision
Credentials in:
Preliminary Administrative Services
Professional Administrative Services

M.A. in Education/School Counseling
Credential in:
Pupil Personnel Services

M.S. in Counseling
Options in:
Career Development Counseling
Marriage, Family, and Child Counseling

M.A. in Special Education
Specialist Credentials in:
Learning Handicapped
Severely Handicapped
Resource Specialist Certificate of Competence

The Department of Advanced Studies offers programs for credentials and master's degrees in the areas of educational administration, counseling, and special education. The programs utilize the services and facilities of community agencies and school districts within the university service area.

Educational Administration: The Master of Arts degree in administration and supervision is a 30-unit degree in education with a specialization in educational administration. Study is directed toward such areas as school law, school finance, curriculum development, supervision, school management, and planning.

The Preliminary Administrative Services Credential Program is a 24-unit program that provides basic preparation for employment in a public school (grades kindergarten through 12) administrative position. The Professional Administrative Services Credential Program provides advanced preparation (minimum 24 units) and is taken following completion of the preliminary credential and successful employment as a school administrator.

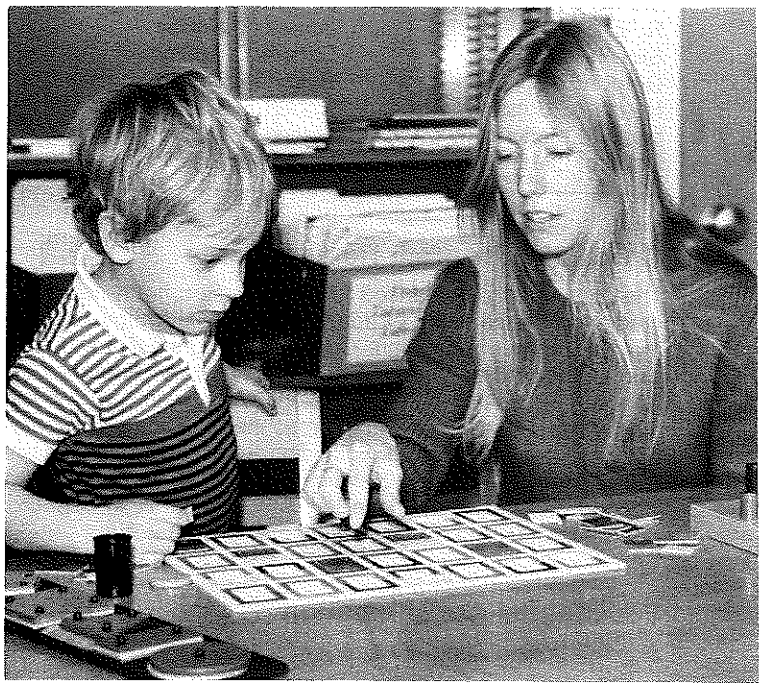
Counseling: Two masters degrees are available in the field of counseling: the Master of Arts degree in education with an option in school counseling, and the Master of Science degree in counseling. The M.A. degree is a 30-unit program in education for individuals seeking advanced preparation for counseling careers within educational settings. The M.S. degree is a 60-unit program designed for persons who desire professional preparation for the practice of career development counseling or marriage, family and child counseling in agency or private settings.

The Pupil Personnel Services Credential program is a 32-unit program that provides preparation for the individual who desires to function as a school counselor in grades kindergarten through 12. The credential program may also be taken concurrently with the M.A. or M.S. degree.

Special Education: The Master of Arts degree in special education is awarded after completion of a minimum 30 units. This degree provides opportunities for the development of special skills needed for the teaching of special populations including the learning handicapped and the severely handicapped.

The Special Education Program provides preparation for two Special Education Specialist Credentials including Learning Handicapped and Severely Handicapped. Persons desiring to work with these unique populations in a school setting (grades kindergarten through 12) must possess the appropriate Special Education Specialist Credential. The Resource Specialist Certificate of Competence Program provides the credentialed special education teacher with advanced preparation for functioning as a resource person, consultant, and adviser for special education teachers and other school personnel.

Individuals interested in community college positions in special education may qualify for a Community College Credential in special education by completing advanced coursework in the specialty area.



Career Opportunities

Persons completing the Educational Administration programs could expect to serve in such positions as a school district superintendent, principal, program director, and any related administrative assignments at all school levels.

Persons completing the counseling credential and degree programs may qualify to work in public schools, social agencies, colleges, career development settings, marriage and family counseling, and related areas. Completion of the M.S. in counseling degree with the option in marriage, family, and child counseling may fulfill the educational requirements for the State of California Marriage, Family, and Child Counseling License.

Persons completing the special education credential and degree programs may seek employment in public school programs, clinics, resource classrooms, educational programs in hospitals, and other agencies serving students with special needs.

Faculty

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Steven Ilmer
Gordon F. Johnson
Homer M. Johnson
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Robert H. Monke
Rosemary Papalewis
J. Leonard Salazar
Deanna E. Schilling
H. Dan Smith
James G. Snider
Satsuki I. Tomine
Susan M. Tracz
Robert E. Valett
Marvin B. Wampler
Bruce M. Wilkin

Credential Program Requirements

The Department of Advanced Studies offers programs leading to credentials in the fields of educational administration, counseling, and special education. Credential programs provided include: *Educational Administration:* Preliminary Administrative Services Credential and Professional Administrative Services Credential; *Counseling:* Pupil Personnel Services Credential: *Special Education:* Special Education Specialist Credential with emphasis in: 1) Learning Handicapped and 2) Severely Handicapped. In addition to these the Special Education Resource Specialist Certificate of Competence is also offered.

Educational Administration

Administrative Services Credentials

Holders of the Preliminary Administrative Services Credential and the Professional Administrative Services Credential are authorized to serve in such positions as district superintendent, principal, program director, and any related administrative assignments at all school levels.

Individuals who wish to serve as educational administrators must complete preliminary and advanced levels of preparation. The preliminary level qualifies the candidate for the Preliminary Administrative Services Credential. The advanced level of preparation qualifies the candidate for the Professional Administrative Services Credential. Both the Preliminary and the Professional Administrative Services Credential carry the same employment authorization.

Preliminary Administrative Services Credential

Admissions Requirements: Applicants for the Preliminary Administrative Services Credential must meet the following requirements for admission to the program:

1. Complete application for post-baccalaureate standing at CSU, Fresno.
2. Complete application for Admission to School of Education and Human Development Graduate Programs.
3. Possess a G.P.A. of 2.75+ over the last 60 semester units.
4. Obtain three (3) letters of recommendation.
5. Provide evidence of having taken the California Basic Educational Skills Test (CBEST).
6. Meet with the program coordinator.

Program Requirements: Candidates for the Preliminary Administrative Services Credential who have been admitted to the program and who want to be recommended for this authorization must meet the following requirements:

1. Possession of a valid California Teaching Credential based on a bachelor's degree or a Pupil Personnel Services Credential.
2. Verification of three (3) years of successful, full-time teaching experience in the public schools, or in private schools of equivalent status, or three (3) years of experience in the field of pupil personnel work.
3. Completion of A S 261, 262, 263, 264, 265, 266, 267, 268.
4. Verification of training in the needs of and methods of providing educational opportunities to individuals with exceptional needs through completion of A S 111, T Ed 162, one year of full-time experience in special education, *or* six (6) units of approved special education coursework.
5. Receive a passing score on the California Basic Educational Skills Test (CBEST).
6. Pass the competency exit review.

Professional Administrative Services Credential

Admission Requirements: In addition to meeting all admission requirements for the Preliminary Administrative Services Credential, persons desiring admission to the Professional Administrative Services Credential program must meet the following requirements:

1) Possess a G.P.A. of 3.00+ over the last 60 semester units.
2) Hold a valid Preliminary Administrative Services Credential.

Program Requirements: Candidates for the Professional Administrative Services Credential who have been admitted to the program and who want to be recommended for this authorization must meet the following requirements:

1) Verification of a minimum of two years of successful, full-time school administrative experience in public schools, or private schools of equivalent status.
2) Completion of A S 220, 285, and 298B or 299; a minimum of eight (8) units from A S 244, 271, 272, 274, 275, 277, 278T, 288, or T Ed 282; and A S 279 (8 units).
3) Completion of at least one-half of the required course work while employed full-time in a school administrative position.
4) Receive a passing score on the California Basic Educational Skills Test (CBEST).
5) Pass the competency exit review.

Counseling

Pupil Personnel Services Credential—Counseling

The Pupil Personnel Services Credential is required to function as a counselor in a public school setting, grades kindergarten through 12.

Admissions Requirements: Applicants for the Pupil Personnel Services Credential must meet the following requirements for admission into the program:

1. Complete application for Post-Baccalaureate Standing at CSU, Fresno.
2. Complete application for Admission to School of Education and Human Development Graduate Programs.
3. Possess an undergraduate G.P.A. of 2.75+ (overall or on the last 60 units).
4. Obtain three (3) letters of recommendation.
5. Complete prerequisite A S 153 or equivalent.
6. Write an autobiography.
7. Verify no prior criminal convictions that would preclude issuance of a credential.
8. Provide evidence of prior work experience.
9. Show evidence of having taken the California Basic Educational Skills Test (CBEST).
10. Receive approval through a review by a program faculty committee.

Program Requirements: Candidates for the Pupil Personnel Services Credential who have been admitted to the program and who want to be recommended for authorization must meet the following program requirements:

1. Completion of A S 172, 174, 221, 222, 224, 226, 227, 230 or 285, 231, 237.
2. Completion of practicum and fieldwork with a grade of *B* or better.
3. Receive a passing score on the California Basic Educational Skills Test (CBEST).
4. Pass the competency exit review.

Pupil Personnel Services Credential—School Psychologist: See *psychology department,* pages 412–417.

Special Education

Special Education Specialist Credential

The Special Education credential program offers preparation for teaching in areas of learning handicapped, severely handicapped, and resource specialist.

An emphasis in Career/Vocational Education is available to all Special Education credential candidates; see the coordinator of Special Education for details.

All individuals making application for a Special Education Specialist Credential are also required to concurrently make application for the Master of Arts degree in special education.

Admission Requirements: Applicants for a Special Education Specialist Credential must meet the following requirements for admission to the program:

1. Complete application for Post-Baccalaureate Standing at CSU, Fresno.
2. Complete application for Admission to School of Education and Human Development Programs.
3. Possess an undergraduate G.P.A. of 2.75+ (overall or on the last 60 units).
4. Complete an autobiography.
5. Obtain three (3) letters of recommendation.
6. Complete prerequisites including: A S 111, 112, 115F (1 unit), 170 for Learning Handicapped program applicants only *or* 171 for Severely Handicapped program applicants only, A S 153 and T Ed 160B or equivalent teaching experience.
7. Arrange for an interview with the program coordinator to: a) develop an approved program and b) be assigned an adviser.
8. Provide evidence of having taken the California Basic Educational Skills Test (CBEST).
9. Obtain the minimum score required on the Graduate Record Examination—General Aptitude Test.
10. Receive approval through a review by a program faculty committee.

Program Requirements: Candidates for the Special Education Specialist Credential who have been admitted to the program and who want to be recommended for authorization must meet the following requirements:

1. Completion of a basic teaching credential.
2. Completion of required courses for the desired area of specialization:
   a. *Learning Handicapped* (learning disabled, educationally handicapped, behaviorally disturbed and educable mentally retarded): A S 230, 242, 243, 245, 246, 248, 253, 256.
   b. *Severely Handicapped* (severely mentally retarded, severely emotionally disturbed or autistic, and multiple handicapped): A S 230, 240, 241, 242, 245, 253, 254, 255.
3. Receive a passing score on the California Basic Educational Skills Test (CBEST).
4. Pass the competency exit review.

Resource Specialist Certificate of Competence

The Resource Specialist program offers credentialed special education teachers advanced preparation emphasizing specialized instruction and assistance; consultation and coordination of special services; implementation of laws, regulations, and compliance requirements; parent education; staff development; and review of special pupil progress.

All individuals making application for the Resource Specialist Certificate of Competence Program and also who do not possess a master's degree are required to concurrently make application for the Master of Arts degree in special education.

Admission Requirements:

1. Complete application for Post-Baccalaureate Classified Standing at CSU, Fresno.
2. Complete application for Admission to School of Education and Human Development Graduate Programs.
3. Possess a Special Education Specialist Credential.
4. Verify three (3) or more years teaching experience in both regular and special education classes.
5. Arrange for an interview with the program coordinator to: a) develop an approved program and b) be assigned an adviser.
6. Provide evidence of having taken the California Basic Educational Skills Test (CBEST).
7. Obtain the minimum score required on the Graduate Record Examination—General Aptitude Test.

8. Receive approval through a review by a program faculty committee.

Program Requirements: Following admission, each candidate will need to:

1. Enroll in A S 290, Independent Study (2 units), and complete an initial resource specialist competency evaluation.
2. If prescribed, enroll in and complete A S 295, Seminar: The Special Education Resource Specialist (3 units).
3. If prescribed, enroll in and complete A S 296, Practicum: Special Education Resource Specialist (3–6 units).
4. Receive a passing score on the California Basic Educational Skills Test (CBEST).
5. Pass the competency exit review.

Graduate Programs

The Department of Advanced Studies offers programs leading to Master of Arts degrees in education with a concentration in administration and supervision, school counseling, and special education and a Master of Science degree in counseling. Candidates who qualify for a preliminary teaching credential with completion of a bachelor's degree program may, with prior approval, use a master's degree program to satisfy the fifth-year requirements for a clear teaching credential.

MASTER OF ARTS DEGREE IN EDUCATION, OPTION IN ADMINISTRATION AND SUPERVISION

The Master of Arts degree program in educational administration and supervision is designed to provide professional preparation for the positions of principal, consultant, supervisor, program director, assistant superintendent, and superintendent.

Admission Requirements for Classified Standing

(*School:* See *General Admission Requirements,* pp. 68-74.)

Program Prerequisites: 15 units in Education including A S 153; an adequate background for advanced work in the field.

Course Requirements:	*Units*
A S 220, 285 or 288, 298B or 299	10
Select fifteen (15) units from A S 261, 262, 263, 264, 265, 266	15
Electives: A S 267, 268, 272 or other approved electives	5
Total	30

MASTER OF ARTS DEGREE IN EDUCATION, OPTION IN SCHOOL COUNSELING

The Master of Arts degree in education with an option in school counseling is designed for individuals seeking advanced preparation for careers within educational settings.

Admission Requirements for Classified Standing

(*School:* See *General Admission Requirements,* pp. 68–74.)

Program Prerequisites: Evidence of satisfactory background in 1) Educational Statistics, A S 153, or equivalent, 2) human growth and development, and 3) social and cultural foundations.

Other Requirements: The student must have on file 1) an autobiography, and 2) transcripts of all college work.

Committee Review: Admission to the program is subject to review of all documentation and approval by a review committee comprised of the program faculty.

Students entering the program should go to the Graduate Programs Office in EdP 120 for appropriate admission forms and information. Students may apply during the fall and spring semesters. Applicants should check with the department office for deadlines; those seeking application should plan to submit all application materials the semester prior to intended enrollment in the program. Action shall be taken by the review committee on those applications which are complete.

Course Requirements:	*Units*
A S 220, 285 or 288, 298A or 299	10
A S 172, 174, 224, 226, 237	16
Electives: A S 185T, 221, 222, 227, 228, 230, 231, 289, 290, or other approved electives	4
Total	30

MASTER OF SCIENCE DEGREE IN COUNSELING

The Master of Science degree in counseling is a sixty (60) unit professional degree program designed for persons who desire to practice in the field of counseling. Options are available in: 1) career development counseling, and 2) marriage, family and child counseling. Persons completing this degree may qualify to work in agencies, community colleges, four-year colleges and universities, career development settings, marriage and family counseling, and related areas. Completion of the M.S. in counseling with an option in marriage, family, and child counseling may fulfill the educational requirements for the State of California Marriage, Family, and Child Counseling License.

Admission Requirements for Classified Standing

(See above: Requirements same as for M.A. in education, option in school counseling.)

Course Requirements: Under the direction of a graduate adviser, each student selects an option in career development counseling, or marriage, family, and child counseling, and develops and submits an individually designed program within the following framework:

	Units
Core Requirements:	29
A S 220, 298A or 299	(7)
A S 118, 174, 221, 224, 227, 228, 231	(22)
Option:	19–22
• Career Development Counseling: A S 222, 229, 232, 235, 238 (6 units)	(19)
• Marriage, Family and Child Counseling: A S 223, 229, 233, 236, 238 (6 units); S Wrk 271T	(22)
Electives: Select from A S 111, 112, 172, 180T, 185T, 222, 223, 225, 226, 229, 230, 232, 233, 234, 235, 236, 237, 253, 285, 288, 289, 290; Crim 139, 220, 221, 281; H S 124; CLS 180T; Psych 103, 132, 154, 166, 167, 169, 175, 178; S Wrk 122T, 210, 223, 224, 226, 227, 271T; and other approved courses. Substitutions may be approved by the coordinator of counselor education.	9–12
Total:	60

MASTER OF ARTS DEGREE IN SPECIAL EDUCATION

The Master of Arts Degree Program in Special Education offers specializations in learning handicapped, and severely handicapped for those interested in professional work with retarded children and with regular and exceptional children having specific learning disabilities.

Admission Requirements for Classified Standing

(School: See *General Admission Requirements,* pp. 68–74.)

Program Prerequisites: A S 111, 112, 115F (1 unit), 153, 163A, B, or T Ed 160B; 170 or 171; autobiography; interview with program coordinator; faculty review.

Course Requirements:	*Units*
A S 220 and 298C or 299	7
Area of specialization, required courses:	15–16
Learning Handicapped: A S 230, 242, 245, 248, 253	(16)
Severely Handicapped: A S 230, 241, 242, 253, 254	(15)
Approved Electives:	7–18
Total	30

Electives. Select from A S 115F, 230, 240, 242, 243, 244, 245, 246, 248, 249, 254, 255, 256, 285, 288, 289, 290, 295, 296; C D 164A or B.

COURSES

Note: Students must provide their own transportation to off-campus sites for student teaching, field work, and observation and defray any resulting personal expense.

Advanced Studies (A S)

111. Mainstreaming Exceptional Students (2). Introduction to identification of differentiating characteristics in exceptional students. Comprehensive review and analysis of contemporary practices in mainstreaming exceptional pupils. Introduction to federal and state legislative mandates pertinent to nondiscriminatory assessments, parental involvement and individualized education plans (IEPs). (Former A S 114)

112. Introduction to Teaching Exceptional Students (3). Prerequisite: A S 111. Analysis of issues in the educational classification of exceptional students and examination of contemporary practices in the design of special education programs. Introduction to instructional approaches and strategies for use with exceptional pupils and practice in the design of individualized education plans (IEPs). (2 seminar, 2 lab hours) (Former A S 116)

115F. Field Work in Special Education (1–3; max total 12). Prerequisite: permission of instructor. Supervised observation and participation in selected programs for exceptional children; educational planning, guidance, and counseling.

118. Counseling and Mental Health (3). Examination of the relationship between counseling and mental health with emphasis on current issues of adjustment in society. Explores psychopathology within the framework of the DSM-III.

153. Educational Statistics (3). Prerequisite: E.L.M. exam. Methods of describing, analyzing, and interpreting data; statistical inference, including "t" test, ANOVA, correlation and prediction, chi square, and simple research design. (Former Educ 153)

163A. Student Teaching: Severely Handicapped (1–8; max total 8). Prerequisite: admission to Special Education credential program. Directed observation, participation, and teaching in classes for the mentally retarded in public schools under supervision. Weekly conference with university supervisor.

163B. Student Teaching: Learning Handicapped (1–8; max total 8). Prerequisite: admission to Special Education credential program. Directed observation, participation and teaching in classes for the educationally handicapped in public schools under supervision. Weekly conference with university supervisor.

170. Introduction to the Learning Handicapped (3). Prerequisite: A S 111. Introduction to theories, programs, and methods of educating children with specific learning disabilities. (2 lecture, 2 lab hours)

171. Introduction to the Severely Handicapped Student (3). Prerequisite: A S 111. Introduction to behavioral and developmental characteristics, curriculum issues and strategies applicable to the education of children with severe handicapping conditions. (2 lecture, 2 lab hours)

172. Laws Relating to Children (3). Current and proposed legislation in parent-child relationships, adoption, and guardianship, education of the minor, marriage contract, child labor, juvenile delinquency, and child welfare programs.

174. Introduction to Counseling (3). (Same as Psych 174). An overview of basic counseling models and of the biological, social, and psychological factors that affect behavior over the life span. Includes a personal counseling experience.

180T. Topics in Special Education (1–3; 12 if no area is repeated). Prerequisite: Permission of instructor. Seminar covering special topics, as related to special education populations: aging, adolescent and adult handicaps, careers, child abuse, interpersonal skills, legislation, mainstreaming, or parenting. Additional topics may be selected.

185T. Topics in Counseling (1–3; 12 if no area repeated). Prerequisite: Permission of instructor. Seminar covering special topics relating to counseling: new developments in counseling techniques, special populations, and current research.

190. Independent Study (1–3; max see reference). See *Academic Placement—Independent Study,* pages 96–97.

GRADUATE COURSES

(See *Course Numbering System,* p. 133.)

220. Research in Education (3). Prerequisite: 15 units of education courses or equivalent. Seminar in research methodology; identification of educational research problems; use of library resources, data gathering and processing, writing a research report; applies to elementary and secondary teaching, early childhood, reading, administration, counseling, special education, and related fields. (Former Educ 220)

221. Seminar in Multicultural Aspects of Counseling (3). Prerequisite: A S 174 or R C 201, A S 224. Cognitive and experiential study of social and psychological variables which influence the cross-cultural counseling relationship. Culturally relevant models of counseling theory and practice will be

explored. Current research methods and findings will be presented. (2 seminar, 2 lab hours)

222. Seminar in Career Development Theory (3). Prerequisite: A S 174. Examination of career development theories and research for their implications in understanding career development generally and career counseling specifically.

223. Seminar in Theories of Marriage, Family and Child Counseling (3). Prerequisite:
A S 174. Study of theories, techniques, and methodology of counseling with families. Current research and methods will be presented.

224. Seminar in Counseling Techniques (3). Prerequisite: A S 174 or R C 201. Emphasis given to interviewing skills, philosophy, theory and methodology as applied to counseling. (2 seminar, 2 lab hours)

225. Seminar in Advanced Theories and Techniques in Counseling (3). Prerequisite: A S 224. Emphasis on philosophy, theory, and methodology as applied to Gestalt and behavioral approaches to counseling. (2 seminar, 2 lab hours)

226. Seminar in Organization of Counseling Services (3). Prerequisite: A S 224. Organization, administration, and evaluation of counseling programs.

227. Seminar in Tests in Counseling (3). Prerequisite: A S 153. Selection, administration, and evaluation of psychological tests and psychometric data for use in counseling settings. (Course fee for test materials, approximately $5 to $10) (2 seminar, 2 lab hours)

228. Seminar in Group Process (3). Prerequisite: A S 174 or R C 201. Theories and methods of interpersonal communication within groups, transferral of information, group leadership and membership, role perceptions, verbal and non-verbal interaction and group counseling. (2 seminar, 2 lab hours)

229. Seminar in Counseling the Older Adult (3). Prerequisite: A S 224. Study of counseling philosophy, theory, methodology and skills applicable to problems of the older adult. (2 seminar, 2 lab hours)

230. Seminar in Counseling of Exceptional Children and Their Parents (3). Theories and techniques in working with parents of exceptional children; emphasis placed on individual and group counseling skills with parents, case study, and current legislation. (2 seminar, 2 lab hours)

231. Practicum in Counseling (4; max total 8). Prerequisite: 12 units in counseling program, including A S 224. Supervised on-campus counseling experiences with selected clients. Experience in individual counseling, critiquing of tapes and typescripts, observations, and case report writing. Students must carry professional liability insurance. (2 seminar, 4 lab hours)

232. Seminar in Career Counseling: Methods and Materials (3). Prerequisites: A S 174, 222. Develop knowledge and skills necessary to facilitate career assessment, decision-making, and job-seeking activities of students and other clientele. (Course fee for test materials, approximately $5 to $10) (2 seminar, 2 lab hours)

233. Practicum in Marriage, Family, and Child Counseling (4; max total 8). Prerequisites: A S 223, 231 and permission of instructor. Supervised MFCC counseling experiences involving selected families, couples and/or children. Students must carry professional liability insurance.

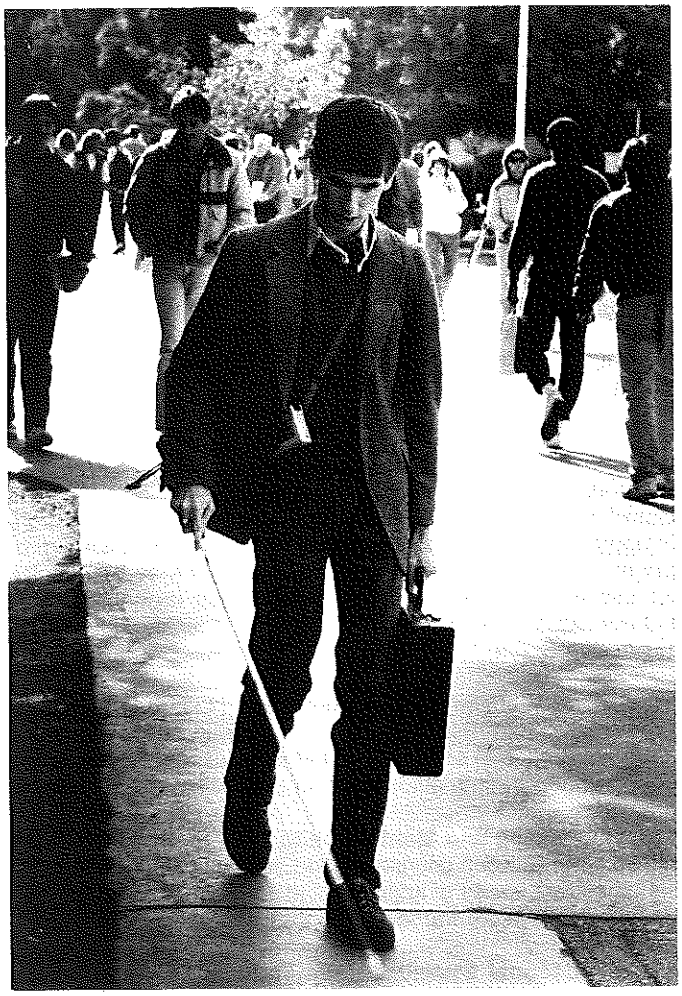
234. Practicum in Group Counseling (4; max total 8). Prerequisites: A S 228, 231, and permission of instructor. Supervised on-campus group counseling experience with selected small groups. Experience in group leadership and group counseling. (2 seminar, 4 lab hours)

235. Practicum in Career Development Counseling (4; max total 8). Prerequisites: A S 222, 231, and permission of instructor. Supervised counseling experiences in vocational career development.

236. Seminar in Professional Practices of Family Counseling (3). Prerequisites: A S 223, 224, and permission of instructor. Analysis of separation, divorce and relation dissolution, family law and legal issues in practice diagnosis of client and family disorders; family practice and third party payments. (2 seminar, 2 lab hours)

237. Field Work in School Counseling (4–8; max total 8). Prerequisite: 24 units in counseling program, including A S 224. Supervised practice in an elementary and/or secondary school. Students must carry professional liability insurance. (160 hours of field work required for 4 units of credit.) (Former A S 224FA)

238. Field Work in Professional Services Counseling (3–12; max total 12). Prerequisite: 40 units in counseling program, including A S 224 and 231. Designed for students wishing to do field work in professional counseling services, including, but not limited to, agencies, colleges, and universities, supervised placement. Students must carry professional liability insurance. (120 hours of field work required for 3 units of credit.) (Former A S 224FC)



240. Cognitive and Communicative Skills for the Severely Handicapped (3). Prerequisite: A S 111, 171. Seminar in early cognitive and communicative development. Curriculum approaches and instructional programs designed to address the educational needs of severely handicapped students. Review of selected curriculum and instructional materials. (2 seminar, 2 lab hours)

241. Psychomotor Skills for the Severely Handicapped (3). Prerequisite: A S 111, 171. Seminar in psychomotor development, curriculum design and instruction for severely handicapped, school-aged children. Review of adapted/prosthetic strategies for teaching motor, sensory, and perceptual skills. (2 seminar, 2 lab hours)

242. Seminar in Behavior Modification (3). Prerequisite: A S 111 or equivalent. Behavior modification principles, programs, and techniques employed in special education and clinical-prescriptive teaching. Emphasis on school and home applications. (2 seminar, 2 lab hours)

243. Motor, Sensory, and Perceptual Abilities (3). Prerequisite: A S 111, 170. Seminar in the special education of children who are educationally handicapped with psychomotor disabilities. Diagnostic-prescriptive programming and critiques required. (2 seminar, 2 lab hours)

244. Organization and Supervision of Special Education (3). Prerequisite: A S 111 or permission of instructor. Seminar in the organization, financing, housing, equipping, staffing, and supervision of the special education program; desirable educational provisions for each type of exceptionality; legal provisions for special education including curriculum development, in-service education, and teacher-pupil relationships.

245. Seminar in Identification and Evaluation of Exceptional Children (4). Prerequisite: A S 111, 153. Seminar and field work in the identification and evaluation of exceptional children. Review of testing techniques, evaluation of psychological reports, development of psychoeducational recommendations as a clinical process. Extensive independent child study and evaluation with appropriate diagnostic instruments. (Course fee for test materials, approximately $5 to $10) (2 seminar, 2 lab hours, 2 field work hours)

246. Language and Cognitive Abilities (3). Prerequisite: A S 111, 170, 243, 245. Seminar in the special education of children who are learning handicapped with language and cognitive disabilities. Diagnostic-prescriptive programming and critiques required. (2 seminar, 2 lab hours)

248. Social and Affective Education (3). Prerequisite: A S 111 or equivalent. Seminar. Development and remediation of social skills and affective abilities. Model programs for normal children and prescriptive interventions for those with social and personal behavior disorders. (2 seminar, 2 lab hours)

249. Practicum/Clinic: Career Education for the Handicapped (3–9; max total 9). Prerequisite: A S 253 and permission of instructor. Clinical experience in private and public agencies involved with vocational/career training for the handicapped work evaluation and job training programs supervised by university personnel. (2 lab hours and 1 hour outside preparation per unit)

253. Vocational/Career Education for the Handicapped (3). Prerequisite: A S 111 or permission of instructor. Seminar in the examination and application of vocational/career education and training for the handicapped; local, state, and federal models. Test materials fee (approximately $5–$10) (2 seminar, 2 lab hours)

254. Seminar in the Severely Handicapped Child (3). Prerequisite: A S 111, 112, 153, 171. Characteristics, identification procedures, training programs, legal, and administrative problems. Research in causation, prevention, and treatment. Counseling of parents.

255. Practicum in Special Education: Severely Handicapped (5). Prerequisite: A S 111, 112, 153, 171; A S 243, 245, 254 prior to and/or concurrent enrollment in A S 230, 242, 246, 253. Clinical experience in diagnosis and evaluation of the severely handicapped, prescriptive program development and management, including individual and group instruction. Experiences include data gathering, program planning, evaluation, and consultation with parents and professionals.

256. Practicum in Special Education: Learning Handicapped (5). Prerequisite: A S 111, 112, 153, 170; A S 243, 245, prior to and/or concurrent enrollment in A S 230, 242, 246, 248, 253. Clinical experience in diagnosis and evaluation of the learning handicapped, prescriptive program development, prescriptive instruction, and program management. Experience to include data gathering, program planning and execution, evaluation, and consultation.

261. Organization for Administration and Support of Education (3). Prerequisite: teaching experience. Interrelationships of federal, state, county, city, and district units in the administration and promotion of programs of education.

262. Seminar in School Principalship (3). Prerequisite: teaching experience; A S 261. 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. Seminar in Supervision for Improvement of Instruction (3). Prerequisite: teaching experience; T Ed 250 or 273; A S 261. Seminar for 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. Seminar in the Legal Aspects of Education (3). Prerequisite: teaching experience; A S 261. A case study approach in reviewing important court decisions, both state and federal, that have directly affected the public schools. Legal relationships in public education applied to federal, state, and local levels.

265. Seminar in School-Community Relations and Facilities (3). Prerequisite: A S 261. Seminar on interaction with community forces, news media, political agencies, and minority groups in policy development; decision-making based on factual data; and management of physical facilities. (Former A S 276)

266. Seminar in School Finance and Business Administration (3). Prerequisite: A S 261. Principles and practices of school finance and business administration; local, state, and federal responsibility for financial support of education.

267. Field Work in Administrative Services—Elementary School (3). Prerequisite: 9 units selected from: A S 261, 262, 263, 264, 266, 272, 275. Supervised administrative practice in an elementary school. Includes seminar discussions of field experiences and required research (120 hours required for 3 units credit). (Former A S 273A)

268. Field Work in Administrative Services—Secondary School (3). Prerequisite: 9 units selected from A S 261, 262, 263, 264, 266, 272, 275. Supervised administrative practice in a

secondary school. Includes seminar discussions of field experiences and required research (120 hours required for 3 units of credit). (Former A S 273B)

271. Seminar in School Plant Planning (3). Prerequisite: Permission of instructor. Emphasis on planning, design, and function of educational facilities so they are consistent with the educational goals of the school and school district.

272. Seminar in Advanced Curriculum Evaluation and Development (3). Nature and scope of curriculum development; administrative determiners of curriculum; influence of governmental agencies and organizations, foundations, business and industry, and power structures as curriculum determiners; international influence on curriculum development and curriculum evaluation at various levels of governmental operation.

274. Advanced School Finance and Business Services (3). Prerequisite: A S 266 or equivalent, permission of instructor. Primary emphasis is directed toward the acquisition of expertise in advanced planning and management of business and finance elements of public schools.

275. Seminar in Advance Techniques of Personnel Administration in Education (3). Prerequisite: A S 262, 264, 266. Advanced techniques of staff improvement inservice, staff participation in policy making, improvement of communication channels and methods of communication, economic and contractual relationships, and improvement of working conditions; work and responsibility of nonteaching staff members.

277. Computer Applications in Educational Administration (3). Prerequisite: A S 261, 266. Factors relating to assessment and implementation of computer applications to support educational programs and administrative operations in school districts, including: computer assisted instruction, student personnel, fiscal and property controls, personnel and related educational and business functions characteristic of school districts.

278T. Topics in Advanced Educational Administration (1–3). Prerequisite: permission of instructor. Seminar covering special topics relating to educational administration: new developments in educational administration, special populations, and current research.

279. Advanced Administration Field Work (2–8; max total 8). Prerequisite: employment in a position requiring an Administrative Services Credential and permission of instructor. Supervision of Professional Administrative Services Credential candidates in their place of employment. The type of assignment will depend on requirements of the university and will be individually developed in cooperation with candidate's employer. Includes seminar discussions of field experience and required research. (80 hours required for 2 units)

285. Seminar in Advanced Educational Psychology (3). Prerequisite: T Ed 130, 152; A S 174, or Psych 101. Seminar on the psychological foundations of education; nature and characteristics of development, learning process, forces which affect educational growth. (Former Educ 285)

288. Educational Measurement and Program Evaluation (3). Prerequisite: A S 153. Procedures and issues involved in the measurement and evaluation of educational programs; instrument development, testing, needs assessment, evaluation planning, etc. Applications in educational settings are emphasized.

289. Seminar in Advanced Educational Research (3). Prerequisites: A S 153 and 220; or permission of instructor. Emphasis on conceptualizing advanced educational research problems, analyzing data, and developing the methodology for thesis proposals.

290. Independent Study (1–3; max see reference). See *Academic Placement—Independent Study,* pages 96–97.

295. Seminar: The Special Education Resource Specialist (3). Prerequisite: GT, LH, or SH Credential; three years teaching experience or permission of instructor. To develop knowledge and skills in consultant services in identification and assessment, application of classroom management, procurement of appropriate resources and development of career and vocational plans for individuals with exceptional needs.

296. Practicum: The Special Education Resource Specialist (3; max total 6). Prerequisite: GT, LH, or SH Credential; three years teaching experience or permission of instructor. Field experiences in consulting, coordinating, implementing and evaluating individualized education plans. Designing and implementing staff development and in-service education; consulting and educating parents; utilizing personnel/agency resources.

298A. Project—Counseling (4). (See *Criteria for Thesis and Project,* pp. 467–468.) Prerequisite: advancement to candidacy for the master's degree; *B* average on 24 units of the master's program including A S 220. A project consists of a significant undertaking appropriate to counseling such as the development of a program for counseling service delivery, development of audio-visual materials or computer software for counselor education or service delivery. An approved proposal is required for enrollment. (Former Educ 298A)

298B. Project—Education (4). (See *Criteria for Thesis and Project,* pp. 467–468.) Prerequisite: advancement to candidacy for the master's degree; *B* average on 24 units of the master's program including A S 220. A project consists of a significant undertaking appropriate to education such as the development of curricula and instructional materials, studies of school law, finance, community relations, personnel, educational policy, and educational theory. An approved proposal is required for enrollment (Former Educ 298B)

298C. Project—Special Education (4). (See *Criteria for Thesis and Project,* pp. 467–468.) Prerequisite: advancement to candidacy for the master's degree; *B* average on 24 units of the master's program including A S 220. A project consists of a significant undertaking appropriate to special education such as the development of courses of study, instructional manuals, teachers guides, intervention programs, and computer software. An approved proposal is required for enrollment. (Former Educ 298C)

299. Thesis (4). (See *Criteria for Thesis and Project,* pp. 467–468.) Prerequisite: Advancement to candidacy for the master's degree, *B* average on 24 units of the master's program including A S 220. Preparation, completion, and submission of an acceptable thesis for the master's degree. See School of Education and Human Development's Graduate Programs Coordinator for school thesis guidelines. (Former Educ 299)

IN-SERVICE COURSES

(See *Course Numbering System,* p. 133.)

373. Instructional and Curriculum Problems and Practices (1–3; max total 12 if no topic repeated).

Education and Human Development (EHD)

Courses with a prefix "Education and Human Development" (EHD) are unique in that they have the following characteristics: educational emphasis is broader in definition with a focus outside of the traditional K–12 setting; educational emphasis is placed on the entire lifespan ranging from infants to the elderly; and educational emphasis is directed toward development and enhancement of the total human being.

Interdepartmental courses are applicable to a variety of student interests and needs. They are taken by students pursuing credentials and degrees within the field of education and human development, as well as by students seeking credentials and degrees in other schools.

Education and Human Development (EHD) courses have appeal to students from other disciplines and may be taken both by educators and non-educators. Furthermore, some EHD courses are taught in cooperation with other disciplines at CSU, Fresno and these course clusters can lead to special certificates.

Victims Services Certificate of Special Study

The School of Education and Human Development and the Department of Criminology are cooperatively sponsoring the Victim Services Certificate of Special Study Program.

The primary goal of the Victim Services Program is to provide appropriate educational experiences needed for acquiring knowledge and skills for working with victims within a criminological/human development framework. The content of the program is also very useful for individuals interested in pursuing a career in the area of behavioral sciences.

Students working toward a Victim Services Certificate of Special Study will have an opportunity to receive an interdisciplinary/interagency examination of victim services as they relate to: theoretical concepts, legal aspects, victim rights, causes of victimization, and services available to assist the victim. Furthermore, emphasis will be directed toward assisting the students in acquiring new perspectives and skills needed for working effectively with different types of victims.

Program Processes and Procedures

To attain a Victim Services Certificate, the candidate must progress through three distinct program phases: **1) Admission, 2) Completion of Courses, 3) Certificate authorization.** Each of these program phases is described below:

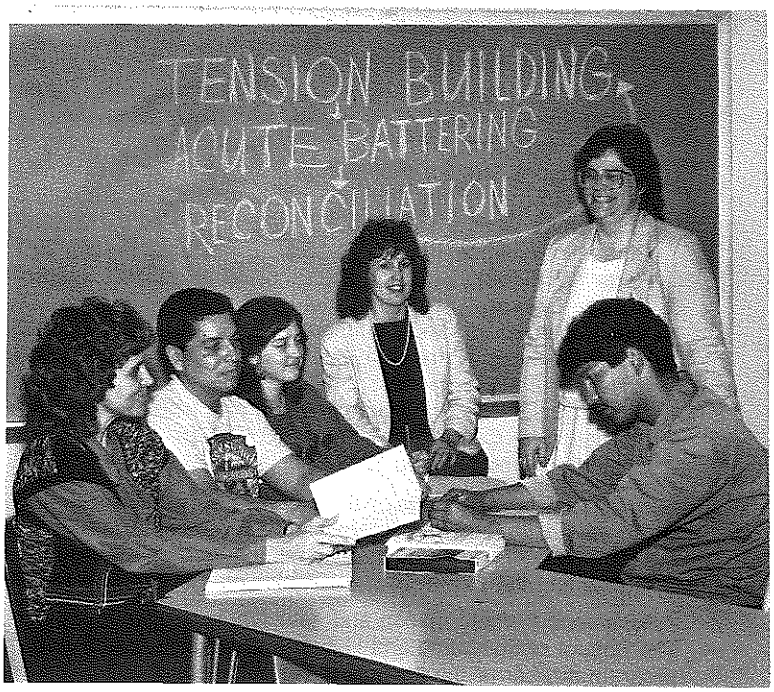
Admission: The following admission requirements (Items 1–3) must be met and the documentation returned to the S.O.E.H.D. admissions/records office (EDP 120) *in one complete packet:*

1. Verification of enrollment at CSUF (letter of acceptance, grade slip from previous semester, preregistration letter, or extension students identification card).
2. Completion of the "Victim Services Certificate Program Application" including required signatures.
3. A set of transcripts verifying completion of prior college/university coursework. These transcripts are needed to verify:
   a. Attainment of upper-division status (completion of 60 or more undergraduate units).

EDUCATION
Interdepartmental Programs and Courses

School of Education and Human Development
Homer Johnson, Dean
Ed./Psych. Bldg., Room 133
(209) 294-2623

Robert H. Monke, Assistant Dean
Ed./Psych. Bldg., Room 120
(209) 294-3084



b. Completion of at least one (1) general course in psychology, sociology, anthropology, health science, or child and family studies.

Completion of Program Courses:

1. Complete all approved courses that were identified on the Victim Service Program Application form.
2. Complete the "Application for the Victim Services Certificate" form obtained in EDP 120.

Certificate Authorization:

1. The S.O.E.H.D. credential analyst verifies that all coursework has been completed.
2. The certificate is signed and awarded.

Course Requirements: A minimum of twelve (12) units are required with three (3) units selected from each of the four emphasis areas: 1) theory, 2) victim issues, 3) service delivery, and 4) legal/social policy.

	Units
1. **Theory**	
Victimology (Crim 175)	3
2. **Victim Issues** (Select minimum of 3 units)	
Family Violence (Crim 140)	3
Children as Victims (EHD 107)	3
Domestic Violence (W S 116)	1
Rape (W S 108)	1
3. **Service Delivery** (Select minimum of 3 units)	
Victim Intervention and Counseling (EHD 108)	3
Victim Services (Crim 176)	3
Child Welfare (S Wrk 128)	3
4. **Legal/Social Policy** (Select minimum of 3 units)	
Education for Community Change (EHD 109)	3
Social Movements (Soc 122)	3

Field Experience: An additional 3-unit field experience in victim services (Crim 181: Internship in Corrections) is available to interested students. Enrollment can be arranged by contacting the Department of Criminology.

Advisement: For information and advisement, please contact The School of Education and Human Development certificate program adviser or the chair of the Department of Criminology.

COURSES

Education and Human Development (EHD)

101. Peace Education (1–3). An introduction to peaceful conflict resolution strategies for use in the home, school, community and international relations including educational models and programs for the prevention of nuclear war. A multidisciplinary approach with invited speakers and audiovisual presentations.

107. Children as Victims (3). Perspectives on child victimization will be developed through examination of several social phenomena: child abuse/neglect, divorce, media exploitation, war, and other catastrophes. Understanding the complexity of these problems will be gained by considering their psychological, familial, social, legal and cultural context of victimization. (Former Educ 180T section)

108. Victim Intervention and Counseling (3). Will focus on the coping process and on both the immediate and residual effects of victimization. It will also look at ways of counseling direct and indirect victims (families and friends of victims): hot lines, warm lines, stress reduction, support groups, short and long-term counseling.

109. Education for Community Change (3). The capacity of a society to insure individuals a safe environment and a high quality of life is dependent on its ability to respond to needs and make appropriate changes. Examples of specific mechanisms for effecting public policy will be explored. The course will include such activities as advocacy, planning strategies, legislative proposals, grant writing, grass roots organizing and public education efforts at the city, county and state levels.

EDUCATION
Graduate Programs

School of Education and Human Development
Homer Johnson, Dean
Ed./Psych. Bldg., Room 120
(209) 294-2623

Robert H. Monke, Graduate Programs Coordinator and Assistant Dean
Ed./Psych. Bldg., Room 120
(209) 294-3084

M.A. in Education
M.A. in Special Education
M.S. in Counseling



Master's Degree Programs

The School of Education and Human Development offers advanced and specialized preparation required for awarding a master's degree in three separate and unique areas of professional emphasis. These degree programs include:

1) Master of Arts degree in education with the following options: administration and supervision, bilingual/cross-cultural education, school counseling, early childhood education, curriculum and instruction, reading;
2) Master of Arts degree in special education;
3) Master of Science degree in counseling.

Master's degree programs can be pursued concurrently with fifth year (post-baccalaureate) teaching credential, specialist credential, or services credential programs. For information regarding the fifth year (clear) teaching credential program, contact the Fifth Year adviser in the School of Education and Human Development (EdP 111).

Some master's degree programs are designed to provide special preparation for employment in non-school settings such as the M.S. in counseling degree program that meets the academic requirements needed for the state authorized Marriage, Family, and Child Counseling License.

For information and advisement pertaining to School of Education and Human Development master's degree programs, please consult the appropriate department and program coordinator:

M.A. in Education

- Administration and Supervision (see Department of Advanced Studies/coordinator of Administrative Services Program)
- Bilingual/Cross-Cultural (see Department of Teacher Education/coordinator of Bilingual/Cross-Cultural Education)
- School Counseling (see Department of Advanced Studies/coordinator of Counselor Education)
- Curriculum and Instruction (see Department of Teacher Education/coordinator of Curriculum and Instruction)
- Early Childhood Education (see Department of Teacher Education/coordinator of Early Childhood Education)
- Reading (see Department of Teacher Education/coordinator of Reading)

M.A. in Special Education—(see Department of Advanced Studies/coordinator of Special Education Program)

M.S. in Counseling—(see Department of Advanced Studies/coordinator of Counselor Education)

- Career Development Counseling
- Marriage, Family, and Child Counseling

General Admission Requirements for Classified Standing

In addition to making application for admission to the university through the CSU, Fresno Admissions Office, the student should consult the School of Education and Human Development graduate programs coordinator: 1) for program information, 2) for School of Education and Human Development graduate programs admission forms, 3) for any specific program application forms, and 4) for assignment to an appropriate adviser.

All students planning to complete master's degree programs within the School of Education and Human Development are

required to complete the following minimum admission requirements:

1) Completion of the Application for Admission to the School of Education and Human Development, Graduate Programs (EdP 120).
2) Obtain three letters of recommendation from instructors, work supervisors, or other persons in a position to make an evaluation of the candidate.
3) Obtain the minimum score required on the Graduate Record Examination—General Aptitude Test.
4) Complete an autobiography.
5) If a foreign student, obtain the minimum score required on the Test of English as a Foreign Language (TOEFL). The School of Education and Human Development also retains the option to require the foreign student to obtain additional preparation if English usage skills are judged to be inadequate.
6) Obtain the minimum score required on the Upper Division Writing Examination (Ryan Reading and Writing Examination) or satisfactory completion of English 160W/Writing Workshop with a grade of *B* or better.
7) Obtain a minimum undergraduate G.P.A. of 2.75 overall or on the last 60 undergraduate units.

Individual Program Requirements

Complete any additional requirements unique to each degree and program within the degree (refer to M.A. programs in education, and special education and the M.S. program in counseling). See graduate programs offered through the Department of Advanced Studies and the Department of Teacher Education.

Advancement to Candidacy and Completion of the Master's Degree

For information regarding Advancement to Candidacy and procedures needed to complete the master's degree, please contact the School of Education and Human Development graduate programs coordinator, located in EdP, Room 120.

The School of Education and Human Development Graduate Office maintains a record center for all students who are working toward a master's degree in the School of Education and Human Development. It also maintains liaison between the Division of Graduate Studies and Research and departments in the School of Education and Human Development offering master's degeee programs.

In order to ensure selection of courses that will be acceptable on a master's degree program, candidates should consult with the appropriate program coordinator.

EDUCATION
Teacher Education

School of Education and Human Development
Department of Teacher Education
Carl R. Stutzman, Chair
Ed./Psych. Bldg., Room 125
(209) 294-2316

M.A. in Education
Options in:
Curriculum and Instruction
Bilingual/Cross-Cultural
Early Childhood Education
Reading
Credentials in:
Multiple Subject
Single Subject
Early Childhood Specialist
Reading Specialist

The primary mission of the Department of Teacher Education is to prepare knowledgeable and professionally competent teachers for employment in public and private educational settings. Program focus ranges from working with pre-school children to young adults at the senior high school level. Programs offered by the Department of Teacher Education are identified within two major categories: teaching credential programs and master's degree programs.

Credential Programs

Basic Teaching Credentials

A basic teaching credential may be earned in conjunction with a baccalaureate degree (preliminary credential) or following completion of a fifth year course of study (clear credential). The two basic teaching credentials are: 1) the Multiple Subject Credential and 2) the Single Subject Credential.

The ***Multiple Subject Credential*** holder is authorized to teach in self-contained classrooms from kindergarten through grade twelve. Most holders of the Multiple Subject Credential teach in elementary school settings. Programs available include: 1) Multiple Subject Credential (General), 2) Multiple Subject Credential—Bilingual Cross-Cultural Emphasis, and 3) Multiple Subject Credential—Early Childhood Education Emphasis.

The ***Single Subject Credential*** holder is authorized to teach in the subject area of the credential in departmentalized classrooms typically found in middle school and senior high school settings. This credential is offered in: Agriculture, Art, Business, English, English-Speech, English-Drama, Foreign Languages (French, German, and Spanish), Health Science, Home Economics, Industrial Arts, Life Science, Mathematics, Music, Physical Education, Physical Science, and Social Science.

Specialist Teaching Credentials

The specialist teaching credential represents a year of post-baccalaureate study in an area of teaching specialization. The specialist credential may be earned by a holder of a Multiple Subject Credential or a Single Subject Credential. The Department of Teacher Education offers specialist credentials in Early Childhood Education and Reading. Specialist credentials also are available in Agriculture (see the *School of Agriculture,* pp. 145–146), Special Education—Learning Handicapped and Severely Handicapped (see the *Department of Advanced Studies,* pp. 261–262), and Special Education—Communication Handicapped (see the *Department of Communicative Disorders,* pp. 242–243).

Master's Degree Programs

The Department of Teacher Education offers advanced and specialized study directed toward the attainment of the Master of Arts degree in education. Completion of a master's degree signifies that the holder is prepared to provide professional leadership in an area of specialization. Most candidates for the master's degree have three or more years of successful teaching experience. The Master of Arts degree in education is comprised of six (6) different program options. Those offered through the Department of Teacher Education include: 1) Bilingual/Cross-Cultural Education, 2) Curriculum and Instruction, 3) Early Childhood Education, and 4) Reading.



Those offered through the Department of Advanced Studies include: 1) Administration and 2) School Counseling.

Faculty and Facilities

The faculty of the Department of Teacher Education represents a wide range of experience and specialization. Students are encouraged to meet frequently with their professors and advisers to discuss their progress and concerns. Individual attention is the concern of the faculty and support staff of the department.

Campus facilities that support credential and degree programs include the Henry Madden Library, including the Curriculum Library and Children's Literature Section, Educational Learning Laboratory, Reading Clinic, and Computer Labs. Opportunities are also available for educational experiences with students and faculty from other majors through use of the CSU, Fresno Interdisciplinary Clinic.

Off-campus facilities include the elementary, middle, and high schools in the university service area. The School of Education and Human Development maintains close working

relationships with school districts that provide sites that are used for student teaching experiences for credential candidates. University supervisors work closely with cooperating teachers to assure high quality environments for student teachers.

Career Opportunities

California State University, Fresno is located in the center of a large urban/industrial and agricultural regional service area. This unique geographical position allows for ready access to large metropolitan educational institutions as well as to numerous less populated school districts in the predominantly rural Central Valley.

Recent statistical reports provide evidence that the area population is continuing to increase along with the number of school aged children. This pattern of growth along with anticipated attrition from the teaching profession provides considerable evidence of a growing demand for classroom teachers, curriculum specialists, and other positions that are directly or indirectly related to the field of education.

Teacher candidates are provided expert assistance from the campus *Career Development and Employment Services* as they prepare for entrance into the teaching profession. Assistance in preparing placement files, preparing for job interviews, and searching for suitable employment is readily available to each candidate.

Faculty

Bonnie L. Dutton, *Coordinator of Multiple Subject Credential program*
Office Phone: (209) 294-4446
Jolyne S. Daughtry, *Coordinator of Single Subject Credential Program/Coordinator of Student Teaching*
Office Phone: (209) 294-4445
Cecilio Orozco, *Coordinator of Bilingual/Cross-Cultural Education Emphasis*
Office Phone: (209) 294-2631
Doris Smith, *Coordinator of Early Childhood Education Emphasis and Specialist Credential program*
Office Phone: (209) 294-2185
Penelope A. Dyer, *Coordinator of Reading Specialist Credential program*
Office Phone: (209) 294-2568
Charlene K. Smith, *Professional Fifth Year Credential Adviser*
Office Phone: (209) 294-4381

Shareen Abramson
George E. Avery
Mario L. M. Baca
Leonard H. Bathurst
Jacques S. Benninga
Robert D. Brenner
Jolyne S. Daughtry
Bonnie L. Dutton
Penelope A. Dyer
Berta Gonzalez
Margaret G. Kelly
Alexander H. Lark
Sandra J. LeSourd
David P. Lopez
Timothy G. Morrison
Arne J. Nixon
Cecilio Orozco
Richard F. Osterberg
Theresa R. Perez
Sanford W. Reitman
Lester J. Roth
Ivan H. Rowe
Robert D. Segura
Charlene K. Smith
Doris O. Smith
Bernice A. Stone
Carl R. Stutzman
David E. Tanner
Atilano A. Valencia

Credential Programs

The teacher education department offers alternative state-approved programs leading to two basic credentials, the Multiple Subject Credential (primarily for prospective elementary school teachers), and the Single Subject Credential (primarily for prospective secondary school teachers). In addition to the general Multiple Subject Program, approved special emphasis credential programs leading to a Multiple Subject Credential currently include Bilingual/Cross-Cultural Education and Early Childhood Education.

State Admission Requirements

California Administrative Code Section 41100 mandates that for admission to a teaching credential program, the student must be assessed in terms of the following criteria:

Scholarship. The candidate shall have earned at the college level a grade point average that falls within the upper 50 percent of undergraduate students in the candidate's discipline division on the campus.

Prerequisite Courses and Field Experiences. The candidate shall have successfully completed a supervised early field experience (T Ed 50), and other prerequisite courses and experiences prescribed by the campus.

Professional Aptitude. The candidate shall demonstrate suitable aptitude for teaching in the public schools. Aptitude will be assessed through interviews, letters of recommendation, and a written statement of professional goals or philosophy.

Physical Fitness. The candidate shall satisfy the standards of physical fitness required by the State Credentialing Agency.

Fundamental Skills. The candidate shall demonstrate proficiency in fundamental skills in written and spoken English, reading, and mathematics.

Personality and Character. The candidate shall demonstrate personality and character traits that satisfy the standards of the teaching profession.

Admission Exceptions. If a candidate has not met one or more admission requirements, but possesses compensating strengths in other required areas, he/she may be granted conditional admission which must be cleared prior to admission to student teaching. The number of exceptions granted each year shall not exceed 15 percent of the total number of candidates admitted during the previous year.

Multiple Subject Credential Programs

Holders of Multiple Subject Credentials are authorized to teach in self-contained classrooms commonly found in elementary schools. There are two types of Multiple Subject Credentials: the preliminary Multiple Subject Credential and the Clear Multiple Subject Credential (fifth year).

General Requirements for Initial Admission (Preliminary Multiple Subject Credential).

1. Attend a Multiple Subject Credential program orientation meeting.
2. Provide evidence that you have successfully completed T Ed 50/Introduction to Teaching or submit an approved course waiver.
3. Show evidence of passing the California Basic Educational Skills Test (CBEST) by presenting a CBEST Permanent Verification Card.

4. Complete an application to the credential program.
5. Verify admission to CSU, Fresno with a student I.D. card or a Notice of Admission.
6. Provide a complete set of transcripts of all prior college/university coursework. Transcripts are used to verify a G.P.A. that is in the top 50 percent of the applicant's major field of study or discipline.
7. Complete an Admission Interview Form and obtain interviews from two (2) Multiple Subject Credential faculty members.
8. Obtain a medical clearance at the University Health Center.
9. Obtain appropriate clearance to teach in a public school by presenting a valid California Teaching Credential or applying for a Certificate of Clearance.
10. Obtain two (2) completed *Recommendation for Admission to Teacher Education* forms written by instructors, supervisors, or other individuals in a position to recommend for admission into a teacher education program.

Required application materials and forms are available in the School of Education and Human Development's Admissions and Records Office (EdP, Room 120). All admission requirements (forms, documents, prerequisites) must be completed prior to enrollment in professional program courses.

Timelines for initial admission to the Multiple Subject Credential program are listed below:

Semester Enrolled	Application Requirements Completed
Summer	April 1
Fall	April 1
Spring	November 1

REQUIREMENTS FOR ADMISSION TO STUDENT TEACHING (Preliminary Multiple Subject Credential)

Multiple Subject Credential candidates must qualify for admission to two distinct levels of student teaching: 1) Initial Student Teaching (T Ed 110) and 2) Final Student Teaching (T Ed 160A, B, and C).

Requirements for Admission to Initial Student Teaching (T Ed 110)

1. Complete all admissions requirements and receive notification of initial admission to the program.
2. Students will take T Ed 130/Psychological Foundations of Education (3 units), T Ed 140/Cultural Foundations of Education (3 units), T Ed 150/Curriculum and Instruction in Elementary School (3 units), and T Ed 156/The Teaching of Reading (3 units) concurrently with Initial Student Teaching (T Ed 110). This is provided as a means to maximize the bridging of theory and practice. In certain circumstances because of work schedules and other obligations, students may take T Ed 130 and 140 prior to Initial Student Teaching. However, T Ed 150 and 156 must be taken concurrently with Initial Student Teaching.

Timelines for admission to Initial Student Teaching (T Ed 110):

Semester Enrolled	Application Requirements Completed
Fall	April 1
Spring	November 1

Requirements for Admission to Final Student Teaching (T Ed 160A, B, and C)

1. Successfully complete Initial Student Teaching (T Ed 110).
2. Demonstrate subject matter competence by:
   a. Completing an approved Liberal Studies waiver program or pass the National Teacher Examination (N.T.E.) Test of General Knowledge of the Core Battery.
   b. Receiving clearance from the program faculty that subject matter competency has been met.
3. Complete an approved program of professional preparation in a specific program option (See Program Option section) maintaining a G.P.A. of 3.00.
4. Develop a fifth-year program and have it approved by the School of Education and Human Development fifth-year adviser.
5. If admitted as an exception with conditions, satisfy all conditions specified.

Timelines for Admission to Final Student Teaching (T Ed 160A, B, and C) are listed below:

Semester Enrolled	Application Requirements Completed
Fall	February 29
Spring	September 30

Program Options

Preliminary Multiple Subject Credential programs include: Option I, General; Option II, Early Childhood Education Emphasis; Option III, Communicative Disorders; Option IV, Post-Baccalaureate Block Program; and Bilingual/Cross-Cultural Emphasis.

Option I: General. The Option I, General Multiple Subject Credential program is directed toward providing professional preparation required for teaching in self-contained educational settings (typically found in the elementary school).

Program Requirements

1. *Subject Matter Competency:* Demonstrate subject matter competence through completion of the Liberal Studies Waiver program *or* pass the N.T.E. Test of General Knowledge, and receive faculty certification of competence.
2. *Professional Preparation:*

	Units
T Ed 110	3
T Ed 120MA	3
T Ed 130	3
T Ed 140	3
T Ed 150	3
T Ed 156	3
T Ed 160	12
Total	30

3. *Completion of Bachelor's Degree:* California law requires a bachelor's degree in a subject area other than professional education.

Option II: Early Childhood Education Emphasis. The Early Childhood Education Emphasis program prepares students to teach in early childhood education settings. This block program with field work and student teaching in early childhood classrooms, preschool, kindergarten, primary and intermediate grades, enables the student to obtain a Multiple Subject Credential in a specific emphasis area. Students who elect to

complete T Ed 160 in two semesters sign up for T Ed 160A (6 units) and T Ed 160B (6 units). T Ed 160B must include two weeks of full-time student teaching.

Program Requirements

1. *Subject Matter Competency:* Demonstrate subject matter competence through completion of the Liberal Studies Waiver program *or* pass the N.T.E. Test of General Knowledge, and receive faculty certification of competence.
2. *Professional Preparation:*

	Units
T Ed 110	3
T Ed 120CM	2
T Ed 130	3
T Ed 140	3
T Ed 150	4
T Ed 156	3
T Ed 160	12
Total	30

3. *Completion of Bachelor's Degree:* California law requires a bachelor's degree in a subject area other than professional education.

Option III: Communicative Disorders. The Option III, Communicative Disorders program is designed for students who wish to prepare for specialization in special education in the area of communication handicapped children and youth.

Program Requirements

1. *Subject Matter Competency:* Complete an approved major in Communicative Disorders and pass the N.T.E. Test of General Knowledge, and receive faculty certification of competence.
2. *Professional Preparation:*

	Units
T Ed 110	3
T Ed 120MA	3
T Ed 130	3
T Ed 140	3
T Ed 150	3
T Ed 156	3
T Ed 160	12
Total	30

3. *Completion of Bachelor's Degree:* California law requires a bachelor's degree in a subject area other than professional education.

Option IV: Post-Baccalaureate Block Program. The Option IV program is designed to meet the needs of the re-entry student who has earned a bachelor's degree, has extensive work experience, and wishes to return to the university to obtain a Multiple Subject Credential to teach in an elementary school. Students selecting this option register in a block of courses taught by a team of instructors. Candidates participate in classes or field assignments throughout a two-semester course of study. They also are required to student teach in various school settings which provide a variety of classroom experiences.

Program Requirements

1. *Subject Matter Competency:* Completion of a bachelor's degree with a major in a subject area other than professional education, pass the N.T.E. Test of General Knowledge, and receive faculty certification of competence.
2. *Professional Preparation:*

	Units
T Ed 110	3
T Ed 120MA	3
T Ed 130	3
T Ed 140	3
T Ed 150	3
T Ed 156	3
T Ed 160	12
Total	30

Bilingual/Cross-Cultural Emphasis. The Bilingual/Cross-Cultural Emphasis program is designed to prepare students to teach in bilingual cross-cultural settings.

Program Requirements

1. *Subject Matter Competency:* Demonstrate subject matter competence by completing the Liberal Studies Waiver program, including the following courses: Area I (Ling 132 and 141); Area II (Span 118, 122, and 104); Area IV (CLS 116, 143, and 145), *or* pass the N.T.E. Test of General Knowledge, the Bilingual Certificate of Competence Test, and receive faculty certification of competence.
2. *Professional Preparation:*

	Units
T Ed 110	3
T Ed 120MA	3
T Ed 130	3
T Ed 138	3
T Ed 139	3
T Ed 140	3
T Ed 150	3
T Ed 156	3
T Ed 160	12
T Ed 180T (Spanish Storytelling)	3
Total	39

3. *Completion of Bachelor's Degree:* California law requires a bachelor's degree in a subject area other than professional education.

Clear Multiple Subject Credential Programs (Fifth Year)

The Clear Multiple Subject Credential is required for full authorization to teach in a self-contained classroom in the State of California. To obtain this credential, the candidate must meet the following requirements:

General Requirements (See *General Requirements for Initial Admission—Preliminary Multiple Subject Credential,* pp. 272–273.)

Requirements for Admission to Student Teaching (See *Requirements for Admission to Student Teaching—Preliminary Multiple Subject Credential,* p. 273.)

In addition to these requirements, the clear credential (fifth year) candidate must:

1) Complete an approved fifth year program containing 30 units of upper division/graduate credit taken after completion of all bachelor's degree requirements.
2) Include at least 30 units of professional education in the total five year credential program.
3) Complete a mainstreaming requirement (T Ed 162 or A S 111 or equivalent).
4) Complete a health education requirement (H S 120 or equivalent).
5) Complete the classroom computer application course (T Ed 134). **Required for a Clear Multiple Subject Credential after July 1, 1988.**

Time Restrictions: All requirements for a Clear Multiple Subject Credential must be completed within 5 years of the date of issuance of the preliminary credential.

Single Subject Credential Program

The Single Subject Credential authorizes the holder to teach in the subject area specified on the credential in departmentalized classrooms commonly found at middle schools, high schools and adult educational settings. The Department of Teacher Education offers the Single Subject Credential in cooperation with sixteen (16) other university academic departments. The cooperating departments are primarily responsible for developing subject matter competency, while the Department of Teacher Education offers required coursework in professional education.

The Single Subject coordinator in the teacher education department provides general advisement to Single Subject Credential candidates. Area Advisers (see below) provide academic advisement for credential candidates majoring in their respective departments, teach methods courses in their subject fields, assign and supervise student teachers, and act as official liaison between the subject matter departments and the Single Subject coordinator in the teacher education department.

Single Subject Majors and Advisers

Agriculture: R. Rogers
Art: H. Anderson
Business: R. Lacy
English: J. Hales
English—
Drama: G. Anderson
English—English as a Second Language:
D. Holmes
English—Speech:
G. Anderson
Foreign Language:
R. Freeman
Health Science: S. Sowby
Home Economics:
F. Harkins
Industrial Arts: K. Moshier
Life Science (Biology): C. Clay
Mathematics: A. Hiatt
Music: A. Huff
Physical Education:
M. Irvin, M. Mott
Physical Science (Chemistry):
R. Ciula
Physical Science (Physics):
D. Holmes
Social Science: J. Christensen

There are two types of Single Subject Credentials: 1) a Preliminary Single Subject Credential, and 2) a Clear Single Subject Credential (Fifth Year).

General Requirements for Initial Admission
(Preliminary Single Subject Credential)

1) Provide evidence that you have successfully completed T Ed 50/Introduction to Teaching or submit an approved course waiver.
2) Complete an application to the credential program.
3) Verify admission to CSU, Fresno with a student I.D. card or a Notice of Admission.
4) Provide a complete set of transcripts of all prior college/university coursework. Transcripts are used to verify a G.P.A. that is in the top 50 percent of the applicant's major field of study or discipline.
5) Complete an Admission Interview Form and obtain an interview from a Single Subject Credential faculty member and from the subject area academic adviser.
6) Obtain a medical clearance at the University Health Center.
7) Obtain appropriate clearance to teach in a public school by presenting a valid California Teaching Credential or applying for a Certificate of Clearance.
8) Show evidence of passing the California Basic Education Skills Test (CBEST) by presenting a CBEST Permanent Verification Card.
9) Obtain two (2) completed "Recommendation for Admission to Teacher Education" forms written by instructors, supervisors, or other individuals in a position to recommend for admission into a teacher education program.

REQUIREMENTS FOR ADMISSION TO STUDENT TEACHING **(Preliminary Single Subject Credential)**

A second admission step in the process of completing requirements for the Preliminary Single Subject Credential program is admission to student teaching.

Admission to Initial Student Teaching (T Ed 155A)

Authorization to begin student teaching requires that the candidate:

1) Receive initial admission to the Single Subject Credential program.
2) Successfully complete or be enrolled concurrently in T Ed 151, 152, and 159.
3) Develop a fifth year program and have it approved by the School of Education and Human Development Single Subject coordinator and the academic area adviser.
4) Maintain a 3.00 G.P.A. on all professional education courses.

Timelines for Admission to Initial Student Teaching (T Ed 155A) are listed below:

Semester Enrolled	Application Requirements Completed
Fall	April 1
Spring	November 1

Admission to Final Student Teaching (T Ed 155B)

Requirements for admission to final student teaching (T Ed 155B) include the following:

1) Successfully complete initial student teaching (T Ed 155A).
2) Demonstrate subject matter competence by:
   (a) Completing an approved subject matter waiver program (See single subject majors and advisers) *or* pass the National Teachers Examination—Subject Matter Examination.
   (b) Receive authorization from the academic area adviser that subject matter competence has been met.
3) Complete all prerequisite courses and maintain a 3.00 G.P.A. on professional education coursework.
4) If granted an "Exception" admission, satisfy all requirements specified when the exception was granted.

Timelines for Admission to Final Student Teaching (T Ed 155B) are listed below:

Semester Enrolled	Application Requirements Completed
Fall	February 28
Spring	September 30

PROGRAM REQUIREMENTS

1. *Subject Matter Competency:* Demonstrate subject matter competence, and complete approved subject matter waiver program or pass the N.T.E. Subject Matter Examination.
2. *Professional Preparation:*

	Units
T Ed 151	3
T Ed 152	3
T Ed 159	3
T Ed 161	3
T Ed 155A	5
T Ed 155B	10
T Ed 156S	3
Total	30

3. *Completion of Bachelor's Degree:* California law requires a bachelor's degree in a subject area other than professional education.

Clear Single Subject Credential Program (Fifth Year)

The Clear Single Subject Credential is required for full authorization to teach in departmentalized classrooms commonly found at the middle school, high school, and adult educational levels. To obtain this credential the candidate must meet the following admission requirements:

General Requirements (See *General Requirements for Initial Admission—Preliminary Single Subject Credential,* p. 275)

Requirements for Admission to Student Teaching (See *Requirements for Admission to Student Teaching—Single Subject Credential,* p. 275).

In addition to these requirements, the clear credential (fifth year) candidate must:

1) Complete an approved fifth year program containing 30 units of upper-division/graduate credit taken after completion of all bachelor's degree requirements.
2) Include at least 30 units of professional education in the total five year credential program.
3) Complete a mainstreaming requirement (T Ed 162 or A S 111 or equivalent).
4) Complete a health education requirement (H S 121 or equivalent).
5) Complete the classroom computer application course (T Ed 134). **Required for a Clear Multiple Subject Credential after July 1, 1988.**

Time Restrictions: All requirements for a Clear Single Subject Credential must be completed within 5 years of the date of issuance of the preliminary credential.

Specialist Credentials—Multiple Subject

Specialist Credentials may be earned by holders of Multiple Subject and Single Subject credentials. The specialist credential represents a year of post-baccalaureate study in an area of teaching specialization. Specialist credential programs offered through the Department of Teacher Education include: 1) Early Childhood Education and 2) Reading.

Early Childhood Education Specialist Credential

Admission Requirements: 1) Prerequisite: Completion of a Multiple Subject Credential or Single Subject Credential, 2) Completion of an Application for Admission to the Specialist Credential Program that must be approved by the program coordinator, 3) Attainment of Post-Baccalaureate Standing (Credential only) or Graduate Standing (Credential and Master's Degree).

Program

1. *Course Requirements:* *Units*
   T Ed 171, 231, 232, 241, 252, 271 18
2. *Electives:*
   Electives are selected from fields including special education, educational administration, bilingual education, and other fields as determined in consultation with the Early Childhood Education faculty adviser 12

   Total 30
3. *Experience:* Two (2) years of successful teaching experience in Early Childhood Education.

Courses taken in the Early Childhood Specialist Credential program may be used to satisfy part or all of the Clear Credential (fifth year) requirements provided prior approval is obtained from the fifth year adviser. Specialist Credential courses may also be used to meet part or all of the requirements for a master's degree. It is advised that application for the master's degree be completed at the same time the application for the Specialist Credential occurs (see the S.O.E.H.D. Admissions and Records Office—EdP, Room 120 for admission information). For information about all Early Childhood Education programs, contact the Early Childhood Education Program coordinator.

Reading Specialist Credential

Admission Requirements: 1) Prerequisite: Completion of a Multiple Subject Credential or Single Subject Credential, 2) Attain Graduate Standing, 3) Complete General Requirements for Admission to S.O.E.H.D. Graduate Programs.

Program

Course Requirements: *Units*
AS 220, 285 and (298B or 299) 10
T Ed 164A and 164B, (213 or 214), 215, 224, 244, 254, 278 24

Electives:
T Ed 120LA, 120ST, 138, 139, 143, 214, A S 111, 112, Ling 132, 136, 140T, 141, 146, 147, 148, Drama 137, Psych 126, or other electives selected in consultation with the faculty program adviser 5

Total 39

Completion of a Master's Degree

Experience: 1) Completion of a one semester supervised field experience (T Ed 254) after completion of the master's degree, and 2) three years of successful teaching experience at any grade level (K–12).

Courses taken in the Reading Specialist Credential program may be used to satisfy part or all of the Clear Credential (Fifth Year) requirements for either Multiple Subject or Single Subject credential, provided prior approval is obtained from the Fifth Year Adviser. See the S.O.E.H.D. Admissions and Records Office—EdP, Room 120 for admission information. For information about Reading Specialist Credential contact the Reading Program coordinator.

Specialist Credential—Single Subject

Agriculture Specialist Credential

The Agriculture Specialist Credential is offered jointly by the School of Education and Human Development and the School of Agriculture and Home Economics. This credential authorizes candidates to teach vocational agriculture classes in the secondary school setting.

Admission Requirements: 1) Completion of a bachelor's degree

majoring in agriculture education, 2) Attainment of post-baccalaureate classified standing.

Program

1) Completion of all required courses in professional education (See *Program Requirements—Single Subject Credential,* p. 275.)
2) Completion of an approved fifth year program of 30 post-baccalaureate units.
3) Completion of a mainstreaming requirement (T Ed 162 or A S 111)
4) Completion of a health education course (H S 121)

For additional information contact the School of Education and Human Development single subject coordinator and the program adviser in the School of Agriculture.

Mini Corps, and Bilingual Teacher Development Grant Programs. These programs are designed to help students and teachers preparing to work in bilingual classrooms obtain credentials. Stipends and grants are available.

Additional information may be obtained for Mini Corps, San Ramon 5, Room 223; Bilingual Teacher Development Grants, EdP, Room 111.

Bilingual Teacher Training Program

Additional information at the Educational Support Service Center, San Ramon 2, Room 45.

Master's Degree Programs

MASTER OF ARTS DEGREE IN EDUCATION—BILINGUAL/CROSS-CULTURAL EDUCATION

The Master of Arts degree in education with a concentration in bilingual/cross-cultural education provides advanced and specialized professional preparation required for positions of leadership in the field of bilingual/cross-cultural education applicable in public schools and related educational institutional settings. Emphasis is directed toward planning, developing, managing, and assessing all of the elements of bilingual/cross-cultural educational programs.

Admission Requirements for Classified Standing

School: See *General Admission Requirements in the Education—Graduate Programs section,* pages 269–270.

Program: Prerequisites: (1) 15 units in Education coursework including T Ed 138 and 139, and (2) completion of a Bilingual/Cross-Cultural Education Credential (Spanish/English) *or* attainment of a minimum of a level 3 proficiency on the Foreign Service Institutes Examination.

Course Requirements: *Units*

A S 220, (285 or 288), (298B or 299)	10
T Ed 261, 262, 263, A S 261	15

Electives:

Select one (1) course from T Ed 136, 282, 286; Ling 241; Span 220; T Ed 213, 274, 284	3
Independent Study T Ed 290	2
Total	30

MASTER OF ARTS DEGREE IN EDUCATION—CURRICULUM AND INSTRUCTION

The Master of Arts degree in education with a concentration in curriculum and instruction is designed to provide professional and specialized preparation for the candidate interested in acquiring knowledge and skills essential for the design and development of curriculum related instructional practices. In addition to basic foundations, the student will become knowledgeable and skilled in a unique area of specialization within education curriculum and instruction. Students may use the program to meet fifth year credential requirements for the basic teaching credential.

> **"Learning time management techniques helped me get more studying done in a shorter period of time."**
>
> *— Sophomore, Education*

Admission Requirements for Classified Standing

School: See *General Admission Requirements in the Education—Graduate Programs* section, pages 269–270.

Program: Prerequisites: 15 units in professional education coursework including A S 153; completion of prerequisites required for enrollment in advanced coursework in the area of specialization.

Course Requirements: *Units*

A S 220, (285 or 288), (298B or 299)	10
T Ed 250 or A S 272, T Ed 275	6
T Ed 272, 274, 275, 282, 284, 286	3–6

Electives:

Select courses from the School of Education and Human Development or from a special subject area with consultation and approval of the program adviser	8–11
Total	30

MASTER OF ARTS DEGREE IN EDUCATION—EARLY CHILDHOOD EDUCATION

The Master of Arts degree in education with a concentration in early childhood education offers specialized preparation for a wide variety of positions for personnel who work in educational settings with children from birth through the primary grades. The program is designed to meet individual needs of candidates with different experiential and educational backgrounds and varied career objectives. Students may use the program to meet fifth year credential requirements for the basic teaching credential.

Admission Requirements for Classified Standing

School: See *General Admission Requirements in the Education—Graduate Programs* section, pages 269–270.

Program: Prerequisites: A S 153 and 12 additional units in Education or Child Development and an adequate background for advanced work in the interest field.

Course Requirements: *Units*

A S 220, (285 or 288), 298B or 299)	10
T Ed 171, 231, 232, 241, 252, 271	18
Approved Electives	2
Total	30

MASTER OF ARTS DEGREE IN EDUCATION—READING

The Master of Arts degree program in education with a concentration in reading is designed to provide professional and specialized preparation for classroom and resource teachers and consultants; diagnosticians, and supervisors in reading

clinics, schools, and community colleges. It enables graduates to do consulting and editing for publishing companies and to pursue advanced graduate study in universities offering the doctoral degree.

Admission Requirements for Classified Standing

School: See *General Admission Requirements in the Education—Graduate Programs* section, pages 269–270.

Program: Prerequisites: 15 units in professional education coursework including A S 153; possession of a basic teaching credential.

Course Requirements:	*Units*
A S 220 (285 or 288) and (298B or 299)	10
T Ed 164A or 164B, (213 or 214 or 215), 224, 244, 278	15
Approved electives	5
Total	30

COURSES

Note: Students must provide their own transportation to off-campus sites for classes, student teaching, practica and field activities and defray any resulting personal expense.

Teacher Education (T Ed)

AR. Reading Skills (1–2). Designed to improve reading abilities. Emphasis on improving vocabulary, comprehension, and flexibility in reading rate. Lecture-discussion approach with directed reading. *CR/NC* grading; not applicable to baccalaureate degree requirements. (Former Educ A)

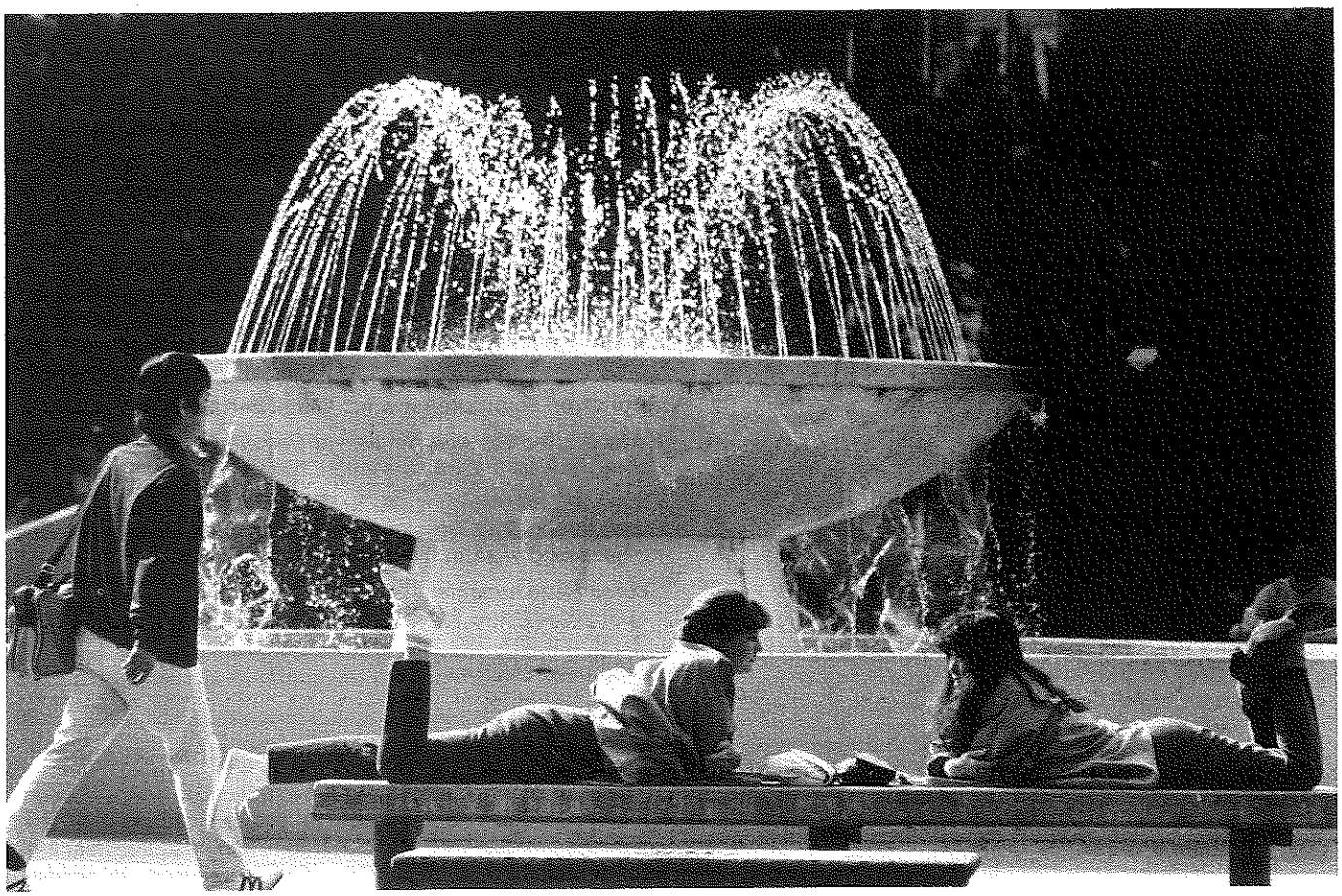
001R. College Planning Skills (2). Seminar in skills, techniques and strategies designed to address the educational needs of those students who may be experiencing difficulty in their academic and personal adjustment to college life. *CR/NC* grading; not applicable to baccalaureate degree requirements. (Former Educ 001)

50. Introduction to Teaching (2). Orientation to role of the teacher in public schools; observation of classroom arrangements and variety of instructional approaches in elementary, middle, and/or high school grades.

101. Practicum in Tutoring (1–3). Skills in tutoring individuals and small groups. Study habits, problem solving, writing and test-taking skills. Field work in tutoring. Not applicable for public school credentials. (Former Educ 101)

110. Introduction to Student Teaching in Elementary School (1–3; max total 3). Orientation to problems and practices in elementary teaching; observation and involvement in selected, supervised activities in multigrade, multicultural classrooms. Minimum of 45 minutes per day per unit, with additional conference periods, observations and visitations by arrangement.

120. Problems in Education (2–3; repeatable with different topics). Study in depth of various areas in education including children's literature (CL), classroom organization, management,



and mainstreaming (CM), curriculum (CU), kindergarten (KG), language arts (LA), mathematics (MA), nursery school (NS), science (SC), social studies (SS), storytelling (ST).

122F. Field Work in Outdoor Education (1–2; max total 2). Prerequisite: T Ed 130 or T Ed 152; permission of instructor. Practice at camp with responsibilities of counseling, camp leadership, curriculum planning and evaluation; utilization of resource people from several disciplines. (Former Educ 122F)

122L. Field Work in Language Development (3–6; max total 6). Prerequisite: T Ed 120 LA, 136, 139; Ling 132, 134, 141. In addition, students wishing to enroll must hold a valid basic teaching credential. Field experience in classrooms with 10 or more Non-English Proficient (NEP) or Limited-English Proficient (LEP) students. Supervised teaching activities having language development emphasis. Conferences, observations and visitations by arrangement.

130. Psychological Foundations of Education (3). Not open to students with credit in T Ed 152. Prerequisite: Admission to the Multiple Subject Credential Program; Psych 10. Facts, ideas, and principles fundamental to an understanding of educational procedures in teaching and learning and to the growth and development of children.

134. Educational Applications of Microcomputers (3). Introduction to educational computing. Explores the computer as tutor, as a clerical tool, and as a means to developing problem-solving and critical thinking skills through student control of computer activities. (Former T Ed 180T section)

135. Audio-Visual Education (2). Evaluation, selection, and utilization of various types of contemporary instructional materials, systems, and equipment. Laboratory experiences in the operation of equipment and materials design. (Former Educ 135)

136. Multicultural Education (3). Helps teachers cope effectively with diverse student needs in a plural society. Considers ethnic, socio-economic, sex, religious, other subcultural differences and problems of curriculum and instruction in multi-group classrooms. (Former Educ 136)

137. Creative Dramatics (2) (See Drama 137)

138. Teaching the Linguistically Different (3). In-depth study of principles and problems of new bilingual and bicultural modes in the education of the culturally and linguistically different child of Hispanic descent in the U.S.A. Contrasting linguistic, cultural, learning styles, including classroom implications. (Former Educ 138)

139. Bilingual/Cross-Cultural Education (3). Prerequisite: T Ed 138 or permission of instructor. Methods and materials for bilingual/cross-cultural classrooms. A practical look at language arts methodologies for English and other languages; teaching subject matter in two languages to bilinguals; teacher-pupil interaction strategies; and new approaches for teaching Non-English Proficient (NEP) and Limited-English Proficient (LEP) students in public schools.

140. Cultural Foundations of Education (3). Not open to students with credit in T Ed 151. Prerequisite: Admission to the Multiple Subject Credential Program. Functions of education in America's multicultural society; role of school and teacher; impact of social conflict and interaction on the school's function; relationship between school and community.

147. Early Childhood Curriculum for Handicapped Children (3). Modifications in either mainstreamed or special settings to help teachers adapt the early education curriculum to meet the needs of young handicapped children. Course includes teaching techniques, criteria for selection of appropriate materials, and provisions for adapting physical classroom environment.

150. Curriculum and Instruction in Elementary Schools (3–4). Prerequisite: Admission to the Multiple Subjects Credential program, T Ed 130 and 140; or concurrent enrollment. Students in Option II must enroll for 4 units. Current conceptions of curriculum and instructional resources in the elementary school; methods of teaching. (3 lecture or 3 lecture and 2 lab hours)

151. Social Foundations of Education (3). Not open to students with credit in T Ed 140. Prerequisite: Admission to the Single Subject Credential Program. Scope and function of secondary schools; social, historical and philosophical influences; curriculum, recent trends and issues.

152. Psychological Foundations of Education (3). Not open to students with credit in T Ed 130. Prerequisite: Psych 10; admission to Single Subject Credential program. Educational psychology; growth and development, learning, personality and self concepts of adolescents; implications for learning and teaching.

155A. Student Teaching in Secondary School (5). Prerequisite: Admission to the Single Subject Credential program; T Ed 151, 152, and 159 must be taken prior to or concurrent with 155A. Student teaching in middle school under clinical supervision; assignment requires three hours per day, Monday through Friday.

155B. Student Teaching in Secondary School (5 or 10; max total 10). Prerequisite: Admission to student teaching; T Ed 155A, 161 (or concurrent); senior standing; approval of major department; completion of waiver program or passing of appropriate National Teachers Examination. Student teaching in a secondary school under clinical supervision; minimum 150 hours for each 5 units.

155C. Student Teaching in Secondary School (12). Not open to students with credit in T Ed 155B. Prerequisite: T Ed 155A, 161 (or concurrent); senior standing; approval of major department; completion of waiver program or passing of appropriate National Teachers Examination. Student teaching in a secondary school under clinical supervision; minimum 360 hours.

156. The Teaching of Reading (3). Prerequisite: Admission to the Multiple Subject or Single Subject Credential program; T Ed 130 or 152, and 140 or 151; or concurrent enrollment. Theories of reading; methods and materials for teaching the skills and process of reading; provision for individual differences (ethnic, socio-economic, dialectal); reading motivation activities; and reading evaluation procedures. (**Important:** *Multiple Subject Credential candidates register only for "M" sections; Single Subject Credential candidates register only for "S" sections.)*

157. Conservation of Natural Resources (3). (See Biol 157)

158. Communication and Learning (3). (See Spch 114)

159. Curriculum and Instruction (2–3). Prerequisite: T Ed 151 and 152 must be taken prior to or concurrent with T Ed 159. Instructional planning, strategies, and evaluation in middle school and high school; classroom management. (Former Educ 157)

160A. Student Teaching in Elementary School (6). Prerequisite: Admission to the Multiple Subject Credential program;

completion of all requirements for admission to student teaching. Supervised teaching in public school classrooms; assignment requires a minimum of one half day, five days per week.

160B. Student Teaching in Elementary School (6). Prerequisite: Admission to the Multiple Subject Credential program; completion of all requirements for Admission to Student Teaching. Supervised teaching in public school classrooms; assignment requires a minimum of one-half day, five days per week. Assignment also requires two weeks of full-time teaching.

160C. Student Teaching in Elementary School (12). Prerequisite: Admission to a Multiple Subject Credential program; completion of all requirements for Admission to Student Teaching. Supervised teaching in public school classrooms; assignment is daily for full school day. Assignment also requires two weeks of full-time teaching.

161. Methods and Materials in Secondary Teaching (3). Prerequisite: T Ed 152, admission to credential program or teaching experience. A methods course in secondary school subjects. Instructional procedures, techniques, and resources for teaching; appraisal of instructional innovations; classroom organization and management; measurement and evaluative techniques. Some areas have labs.

162. Mainstreaming (2). Prerequisite: T Ed 130 or 152; 110 or 155A. Special education environment in academic and non-academic curriculum, organization of classroom, referral practices in mainstreaming, individual educational prescriptions, and non-discriminatory assessment. Interpretation of state and local guidelines.

164. Practicum: Diagnosis and Tutorial Reading for Grades K–6 (3). Supervised diagnosis and tutoring experience with an elementary school remedial reader. Six hours of additional testing is required throughout the semester. (2 lecture, 2 lab) (Former Educ 164)

164B. Practicum: Diagnosis and Tutorial Reading for Grades 7–12 (3). Supervised diagnosis and tutoring experience with a middle school or secondary school remedial reader. Six hours of additional testing time is required throughout the semester. (2 lecture, 2 lab)

166. Reading Improvement (2). A course to improve reading abilities. Emphasis placed on improving vocabulary, comprehension, and flexibility in reading skills. (Former Educ 166)

171. Principles of Early Childhood Education (3). A comprehensive study of the field of early childhood education, including principles of early childhood education, parent relations, use of community resources, and organization of programs in early childhood education.

180T. Topics in Education (1–3; max total 9). Issues and topics in educational foundations; curriculum and instruction; early childhood, elementary, middle school, and secondary education; pupil personnel services; supervision and administration; child abuse and computer literacy. (Former Educ 180T)

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

GRADUATE COURSES

(See *Course Numbering System,* p. 133.)

213. Teaching the Language Arts K–12 (3). Seminar in the study of the English language arts. Objectives, curriculum, materials, and research in oral and written communication; project required.

214. Literature for Children and Youth (3). Prerequisite: Admission to program or permission of instructor. Seminar in literature for children and youth; critical interpretation of juvenile literature; emphasis upon impact of changing social and cultural patterns in books for children and youth; project required.

215. Language Issues in Reading (3). Prerequisite: T Ed 156, and 164A or 164B. Seminar exploring cognitive development and language acquisition as related to oral and written communications from both social and historical perspectives. Study of the relationship between reading and writing processes. Examination of the special language needs relative to bilingual and bi-dialectal learners.

221. Early Childhood Education: Classroom Ecology and the Child with Special Needs (3). A study of classroom environment with a focus on the relationship, attitudes and actions of teachers, the child and his peers, parents and staff who work with the special child in the regular classroom.

224. Diagnosis and Correction of Reading Disabilities (3). Prerequisite: T Ed 156 and permission of instructor. Causes of reading disabilities; observation and interview procedures; diagnostic instruments; standard and informal tests; materials and methods of instruction. (2 lecture, 2 lab hours) (Former Educ 224)

231. Curriculum in Early Childhood Education (3). Prerequisite: T Ed 171; admission to Early Childhood Emphasis or Specialist program. Concepts underlying curriculum development for children eight years and younger. Teacher's role in planning, implementing, and assessing curriculum; development of teaching strategies in environmental settings to include nursery, kindergarten, and primary levels.

232. Reading and Language Arts in Early Childhood Education (3). Prerequisite: Admission to program or approval of instructor. Examines development of oral and written language skills in young children. Explores theories, curricula, and strategies for teaching language arts and beginning reading.

234. Practicum in Reading Disabilities (3). Prerequisite: T Ed 156, 224. Laboratory experiences in the diagnosis and correction of reading disability cases under supervision. (2 lecture, 2 lab hours) (Former Educ 234)

241. Field Work in Early Childhood Education (3). Prerequisite: admission to Early Childhood Emphasis or Specialist program. Supervised experiences in work with young children and their families in at least two different levels including pre-school, kindergarten, and primary. (Minimum of 135 hours)

244. Research in Reading Curriculum (3). Prerequisite: T Ed 224, 234, and permission of instructor. Study of selected curricula; planning curriculum in reading; effective ways of dealing with the functions and duties of reading specialists and consultants. (Former Educ 244)

250. Seminar in Curriculum (3). Prerequisite: teaching credential. Theory and practice of curriculum development, evalu-

ation, and revision. Study of contemporary problems and curricular approaches to meet societal needs. (Former Educ 250)

252. Mathematics and Science in Early Childhood Education (3). Prerequisite: Admission to program or permission of instructor. Theoretical study of mathematics and science knowledge acquisition for young children. Develop appropriate science and mathematics curriculum materials. Review of literature and related research.

254. Supervised Field Experiences in Reading (3). Prerequisite: T Ed 224, 244, and permission of instructor. Intensive varied supervised field experiences involving diagnosis and treatment of reading difficulties; development or refinement of reading programs; evaluation of reading instruction; application of interpersonal communications and group process skills. (Former Educ 254)

261. Social and Psychological Development in Bilingual/Cross-Cultural Education (3). Study of social and psychological factors affecting the development of students in bilingual/cross-cultural programs. Research pertaining to the social psychology of bilingual students will be examined.

262. Seminar in Teaching Reading in a Bilingual Setting (3). Study of theory and methodology of native language development, second language acquisition and reading for linguistic minority students. Demonstration of teaching oral language development and reading is required.

263. Seminar in Assessment Issues in Bilingual/Cross-Cultural Education (3). Study of the major issues in the assessment of linguistic minority children and evaluation of bilingual/cross-cultural education programs.

271. Comparative Cultures in Early Childhood (3). Ways in which culture affects personality, language and cognitive development. Similarities and differences in education and socialization in a variety of cultural settings are studied. Curricula for Multicultural education in ECE are included.

272. Instructional Planning and Evaluation (3). Principles and practices of instructional planning, assessment and testing of learning outcomes, performance appraisal and evaluation of teaching; test construction analysis, and grading.

273. Secondary School Curriculum (3). Prerequisite: T Ed 155B (may be taken concurrently). Seminar on concepts and principles of curriculum planning, evaluation of curriculum programs and processes, assessment and utilization of curriculum resources, and innovations and research in curriculum development.

274. Social Interaction in Teaching (3). Prerequisite: T Ed 155B (may be taken concurrently). Problems of social interaction between teachers, students and parents, classroom guidance, extracurricular activities, and mental hygiene of teachers.

275. Practicum in Curriculum Development (1–6; max total 6). Prerequisite: teaching credential. Study and application of contemporary research in curriculum development. (Former Educ 275)

278. Seminar in Reading Theories (3). Prerequisite: T Ed 156, and either 164A or 164B. Identification and investigation of current reading theories and application of theory to classrooms. Independent research review on a selected reading topic and reporting of findings.

282. Philosophy of Education (3). Seminar on philosophical issues in educational theory and practice and their historical backgrounds. Educational implications of current and historical systematic philosophical outlooks and ideological trends. (Former Educ 282)

284. Seminar in International Education (3). Analysis of historical, social and political forces which shape national education endeavor. Emerging international education efforts and organizations (Former Educ 284)

286. Social Issues in Education (3). Prerequisite: T Ed 140 or T Ed 151, or course in sociology or anthropology and permission of instructor. Seminar for analysis of effect on institutional and ideological trends and problems on the role and operation of the school in American society. (Former Educ 286)

287. Seminar in History of Educational Thought (3). Prerequisite: T Ed 282, 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. (Former Educ 287)

290. Independent Study (1–3; max see reference). (See *Academic Placement—Independent Study*, pp. 96–97.)

IN-SERVICE COURSES

(See *Course Numbering System*, p. 133.)

306. Foundations of Adult Education (3). Scope and function of adult education, curriculum principles and practices, instructional techniques and media, student and instructional evaluation; applicable on a B.S. degree in Vocational Education. (Former Educ 306)

316. Seminar in Adult Education (3). Prerequisite: T Ed 306. Community and occupational relationships, work experience, counseling and guidance, leadership development, community and cultural differences; applicable on a B.S. degree in Vocational Education. (Former Educ 306)

326. Independent Study in Adult Education (3). Prerequisite: T Ed 316. Individually prescribed assignments in terms of candidate's educational and occupational background and teaching field; applicable on a B.S. degree in Vocational Education. (Former Educ 326)

353. Curriculum Problems and Practices (1–3; max total 12 if no topic repeated) (Former Educ 353)

361. General Methods of Teaching (3).

363F. Field Work in Curriculum (1–3; max total 6, if no project repeated).

380T. Topics in Education (1–6; max total 12) (Former Educ 380T)

381. Planning and Organizing Outdoor Education (3).

383. Problems in Child Study (2; max total 12).

395. Supervision of Student Teachers (2; max total 4) Note: T Ed 306, 316, and 326 are equivalent to the CSU consortium courses D S 306, 316, and 326; they satisfy specified requirements for the Designated Subjects Credential for Adult and Vocational Education. (Former Educ 395)

ENGINEERING
Civil and Surveying Engineering

School of Engineering
Department of Civil and Surveying Engineering
Karl E. Longley, Chair
Engineering East Bldg., Room 126
(209) 294-2889

B.S. in Civil Engineering
B.S. in Surveying Engineering
M.S. in Engineering (Civil Engineering)



The Department of Civil and Surveying Engineering offers programs of study leading to the Bachelor of Science degrees in civil engineering and surveying engineering. Both programs are accredited by the Engineering Accreditation Commission of the Accreditation Board for Engineering and Technology which represents the major professional engineering groups in the United States, including the American Society of Civil Engineers, American Congress on Surveying & Mapping and American Society for Engineering Education.

Civil engineering includes the research, development, planning, design, construction and maintenance associated with urban development, water supply, energy generation and transmission, water treatment and disposal, and transportation. The civil engineer deals with the function and safety of such public facilities as buildings, bridges, dams, pipelines, powerplants, highways and harbors, and is concerned with the protection of the public against natural hazards of earthquakes, floods, landslides and fires.

The graduate curriculum leading to an M.S. in engineering (civil engineering) degree provides specialized training in the fields of structural engineering and applied mechanics, soil mechanics and foundation engineering, environmental engineering, hydrology and hydraulic engineering, and highway engineering to meet the challenges of advances of recent years in technology and the escalation of urban problems.

Surveying engineering includes the science of making measurements to determine the relative positions of points on or near the earth's surface (surveying) and the science of making accurate measurements from photographs or other types of imagery (photogrammetry). The surveying engineer applies his knowledge for locating land and water property boundaries, collecting terrain data for engineering planning, making measurements for guiding construction operations and accurately establishing horizontal and vertical control points for scientific and engineering works. Besides map making, photogrammetry is used for a wide variety of unusual measurements such as: topology of the human body, nondestructive testing of engineering materials, monitoring structural deformations and for architectural and anthropometric measurements.

Faculty and Facilities

The department has 14 full-time faculty whose teaching and research specialties cover every area of civil engineering and surveying engineering. Many faculty members are licensed as civil engineer or land surveyor and have a wide range of professional experience in engineering design, analysis, research and development, and project planning and management.

There are excellent laboratory facilities for testing of construction materials and for water quality analysis. The laboratory facilities in surveying engineering are unique in the nation.

Career Opportunities

Employment opportunities for civil engineers in industry, state and federal government agencies, remain at a high level as a result of increasing urban growth and land development, and the recent emphasis on the maintenance and repair of the nationwide highway system. Civil engineers are also in demand to meet the growing challenge of cleaning the environment.

Opportunities for specialists in surveying engineering continue to grow with rapid advancements in analytical photogrammetry, electronic surveying, and inertial and satellite positioning methods. Most graduates of this program have been employed by the federal and state government agencies, oil and gas and other private industry.

Many graduates have earned professional license as civil engineer or land surveyor within a few years of leaving school, and are in private practice.

Faculty

Karl E. Longley, *Chair*

Chandra S. Brahma
James K. Crossfield
Wayne P. Dominick
George P. Hanna
John Hatzopoulos
Mushtaq Hussain
Joseph Kao
Riadh Munjy
Fareed W. Nader
Walid Rimawi
Walter F. Rowland
Jankie N. Supersad
Mohamad Yousef

Bachelor of Science Degree (in Civil Engineering) Requirements

	Units
1. Major Requirements	75
A. Fundamental Requirements	(28)
C E 20	(3)
E E 70, 90	(5)
I E 160, 182W	(4)
M E 26, 31, 112, 116, 118L, 136	(16)
B. Advanced Requirements	(47)
C E 121, 121L, 123, 123L, 124, 130, 132, 133, 142, 142L, 150, 161, 180, 185	(30)
S E 11, 11L, 12, 12L	(6)
Approved Electives	(11)
Select from courses in one or more of the following groups with at least 6 units from the design course number which is in bold print. Selection of asterisked course requires the dean's prior approval.	
Environmental Water Quality: C E 140, 144, 145; Biol 133*	
Geotechnical: C E 125, 134	
Structures: C E 131, 135, 136, 137; M E 144	
Surveying: S E 23, 23L, 41	
Transportation: C E 140, 151, 152, 153; S E 41	
Water Resources: C E 140, 141, 143, 144	
Additional approved electives: C E 190, 191T, I E 161	
2. Additional Requirements	
Geol 1, Math 77, 81	12
3. Remaining General Education Requirements	50
Core: Engl 1; Spch 3, 5, 7, or 8; Math 75 and 76; Hist 11 or 12; Pl Si 2 or 101	(20)
Breadth: Chem 1A; Chem 8 or 1B; Phys 5A and 5B, 6 units from Divisions 4–6 (3 units each from two Divisions); 6 units from Division 8	(30)
Capstone: courses are double-counted with major: I E 160, C E 185, C E 180, I E 182W	(–)
Total	137

Note:

1. *CR/NC* grading is not permitted in the civil engineering major, or in mathematics, natural science, and physical science courses.
2. Since the civil engineering major curriculum is very demanding, many students, especially those not fully prepared in mathematics, chemistry and/or physics, will take 4½ or more years to graduate rather than the traditional 4 years. Students not fully prepared in mathematics and/or chemistry should consider taking Math 71 and 72 in lieu of Math 75, and Chem 2A–2B in lieu of Chem 1A. If needed, students also may go to the Developmental Learning Resource Center in the Keats Building and request free tutorial assistance.

> "The fact that there are a small number of women civil engineers in the field challenges me to set my standards high and to be more competitive"
>
> *— Senior, Civil Engineering*

Recommended Program

FIRST SEMESTER		Units
S E 11, L	Plane Surveying	3
Soc Sci (See [2])		3
E E 70	FORTRAN 77 Programming	2
Math 75	Mathematical Analysis I	4
Engl 1	Composition	3
Spch 3, 5, 7, or 8		3
		18

SECOND SEMESTER		
S E 12, L	Advanced Plane Surveying [4]	3
M E 26	Engineering Graphics	3
Math 76	Mathematical Analysis II	4
Phys 5A	Principles of Physics I	5
Hist 11/12	American History	3
		18

THIRD SEMESTER		
C E 20	Engineering Mechanics: Statics	3
Math 77	Mathematical Analysis III	4
Phys 5B	Principles of Physics II	5
Chem 1A	General Chem and Qual Analysis	5
		17

FOURTH SEMESTER		
M E 31	Engineering Materials	3
Math 81	Applied Analysis	4
Pl Sc 2/101	American Constitution	3
Chem 8	Elementary Organic Chemistry [1]	3
Geol 1	Physical Geology	4
		17

FIFTH SEMESTER		
C E 121, L	Mechanics of Materials	4
C E 150	Transportation Planning and Design	3
M E 112	Engineering Mechanics Dynamics	3
M E 116	Fluid Mechanics	3
M E 118	Fluid Mechanics Lab	1
I E 182W	Engineering Writing	2
		16

SIXTH SEMESTER		
C E 123, L	Soil Engineering	4
C E 130	Theory of Structures	3
C E 142, L	Water Supply and Wastewater	4
M E 136	Thermodynamics	3
Humanities (See [3])		3
		17

SEVENTH SEMESTER

C E 124	Concrete Laboratory	1
C E 132	Reinforced Concrete Design	3
C E 161	Construction Engr I	3
C E 185	Civil Engineering Practice	1
I E 160	Engineering Economy	2
Approved Electives		6
		16

EIGHTH SEMESTER

C E 133	Design of Steel Structures	3
C E 180	Senior Project	1
E E 90	Principles of Electrical Circuits	3
Approved Electives		5
Humanities (See [3])		3
Soc Sci (See [2])		3
		18

[1] or Chem 1B.
[2] Social Sciences: Select from Division 8.
[3] Humanities: Select one course each from any two of the Divisions 4, 5, and 6.
[4] Environmental Water Quality Students: With the dean's approval may substitute Bot 10 for S E 12L.

Master of Science Degree in Engineering (Civil) Requirements

(See also *Admission to Graduate Standing, Advancement to Candidacy, Program Requirements,* and *Criteria for Thesis and Project,* pp. 464–468.)

Admission. The requirements for graduate admission to California State University, Fresno must be met. To be admitted to the program, applicants should possess a Bachelor's Degree in civil engineering or field related to civil engineering from an institution accredited by the Accreditation Board for Engineering and Technology. To be admitted, students must have a 2.70 grade point average in the last 60 semester-units attempted, on the basis of 4.0 being A, or the approval of the Graduate Committee of the School of Engineering. If an applicant's preparation is deemed insufficient by the Graduate Committee of the School of Engineering, the applicant will be required to take additional courses which will be specified in writing to remove the deficiency. Such courses, taken as an unclassified student, are in addition to the minimum of 30 semester hours credit for the Master's Degree in engineering.

Continuation in the Program. Prior to their being admitted to classified standing, students will be required to take the Graduate Record Examination. The minimum grade considered passing is quantitative 450. The advanced portion of the examination for engineering is not required. The student, together with an adviser, will complete a contract program within his first twelve semester hours of coursework taken for graduate credit. This program must be approved by the Graduate Committee of the School of Engineering. Satisfactory progress towards completion of the contract program is a requirement for continuation in the program. Students must maintain a 3.0 average on all coursework attempted while enrolled as a graduate student. A minimum of twelve semester hours must be earned before the average will be determined.

Program

Each master's degree student will select, as early as possible during the first semester of attendance, and upon consulting with and securing the approval of the major field adviser, a program best suited to his/her interests and objectives.

An M.S. degree in engineering requires the completion of a program of study containing 30 units of the following requirements:

1. **Satisfaction of a credit-hour core program consisting of the following 3 courses:**

		Units
Engr 204	Engineering Planning & Operations	3
Engr 205	Computing in Engineering Analysis	3
Engr 206	Engineering Environmental Impact	3
Total		9

2. Plan A

(a)	200-series engineering courses	9–15
(b)	100-series engineering undergraduate elective courses	0–6
(c)	Outside of the School of Engineering—100 series upper-division and 200 series graduate courses in mathematics, statistics, management, business, geology, physics, chemistry, health sciences, biology, or other disciplines best suited to the student's graduate program as approved by the program adviser	0–6
(d)	Thesis 299	6
	Total	21

Under this plan the total units from (b) and (c) may not exceed 6 units.

Plan B

(a)	200-series engineering courses	12–18
(b)	100-series engineering undergraduate elective courses	0–6
(c)	Outside of the School of Engineering—100 series upper-division and 200 series graduate courses in mathematics, statistics, management, business, geology, physics, chemistry, health sciences, biology, or other disciplines best suited to the student's graduate program as approved by the program adviser	0–6
(d)	Project 298	3
	Total	21

Under this plan the total units from (b) and (c) may not exceed 6 units.

Plan C

(a)	200-series engineering courses	9–21
(b)	100-series engineering undergraduate elective courses	0–12
(c)	Outside of the School of Engineering—100 series upper-division and 200 series graduate courses in mathematics, statistics, management, business, geology, physics, chemistry, health sciences, biology, or other disciplines best suited to the student's graduate program as approved by the program adviser	0–6
(d)	Comprehensive Final Examination	–
	Total	21

Under this plan the total units from (b) and (c) may not exceed 12 units.

For the Civil Engineering Option

Undergraduate courses that may be used as electives:

M E 144 Advanced Mechanics of Materials (3)
I E 161 Legal Aspects of Engineering (2)
C E 125 Geotechnical Engineering Design (3)

C E 131 Intermediate Theory of Structures (3)
C E 134 Foundation Design (3)
C E 135 Reinforced and Prestressed Concrete Design (3)
C E 136 Design of Timber Structures (3)
C E 137 Seismic Analysis of Structures (3)
C E 140 Hydrology (3)
C E 141 Water Resources Engineering (3)
C E 143 Engineering Hydraulics (3)
C E 144 Design of Water Quality Control Processes (3)
C E 145 Unit Operations and Processes (3)
C E 151 Pavement of Drainage Design (3)
C E 153 Traffic Operations & Control (3)
C E 191T Topics in Civil Engineering (3)
S E 108 Geodesy (3)
S E 123 Photogrammetric Instrumentation (3)
S E 125 Advanced Photogrammetry (3)
S E 135 Advanced Survey Computations (3)
S E 140 Earth Resources Surveying (3)
S E 145 Electronic Surveying (3)
S E 147 Electronic Distance Measurements (3)
S E 171 Project Design (3)
S E 191T Topics in Surveying Engineering (1–3; maximum total 3)

Graduate Courses (Engr)

204. Engineering Planning and Operations (3)
205. Computing in Engineering Analysis (3)
206. Engineering Environmental Impact (3)
230. Advanced Theory of Structures (3)
232. Advanced Reinforced and Prestressed Concrete (3)
233. Advanced Steel and Timber Design (3)
234. Theory of Plates and Shells (3)
235. Finite Element Analysis (3)
240. Engineering Hydrology (3)
242. Water Resources Planning and Management (3)
245. Industrial Wastes Treatment and Disposal (3)
247. Solid and Hazardous Wastes Engineering (3)
290. Independent Study (1–3)
291T. Topics in Civil Engineering (3; maximum total 15)
298. Project (3)
299. Thesis (6)

COURSES

Civil Engineering (C E)

20. Engineering Mechanics: Statics (3). Prerequisite: Math 77 (or concurrently), Phys 5A. Analysis of force systems, equilibrium problems, section properties; graphic, algebraic, and vector methods of problem solution. (2 lecture, 2 lab hours) (Former Engr 20)

121. Mechanics of Materials (3). Prerequisite: C E 20. Application of principles of mechanics to find stresses and deformations in machine and structural members. (Former Engr 121)

121L. Mechanics of Materials Laboratory (1). Prerequisite: C E 121 (or concurrently). Application of principles and methods of testing to verify theory and determine limitations of principles of mechanics of materials. (3 lab hours) (Former Engr 121L)

123. Soil Engineering (3). Prerequisite: C E 121. Physical and mechanical properties of soil as an engineering material; studies and design applications in permeability, one and two dimensional flows, seepage through earth dams and coffer dams, porewater pressure and excess porewater pressure; compressibility, stress-strain relationships and strength characteristics; case histories.

123L. Soil Engineering Laboratory (1). Prerequisite: C E 121L, 123 (or concurrently). Experiments to illustrate and amplify the principles of soil mechanics. (3 lab hours; field trips required)

124. Concrete Laboratory (1). Prerequisite: C E 121L. Proportioning of concrete mixes; admixtures; workability tests; compressive, flexural, and tensile strength tests; reinforced concrete. (3 lab hours; field trips required)

125. Geotechnical Engineering Design (3). Prerequisite: C E 123. Theory and design of embankment and cut slopes, surcharging and sand drains, dewatering systems and ground control, excavation and support systems, field compaction and grouting systems; construction considerations and case histories. (Former C E 191T section)

127. Construction Soils and Foundation (3). Not open to civil engineering majors. Prerequisites: Upper level standing. Physical and mechanical properties of soil, construction applications of soils engineering design, field control during construction, field problems and remedial measures, and case histories. (Former C E 191T section)

130. Theory of Structures (3). Prerequisite: C E 121. Trusses and frames analyzed by algebraic and graphic procedures; influence lines and live loading analysis; rigid frames analyzed by slope deflection and moment distribution. Introduction to matrix methods.

131. Intermediate Theory of Structures (3). Prerequisite: C E 130. Analysis of statically indeterminate beams, trusses, and frames; column analogy; advanced topics in slope deflection and moment distribution; matrix methods.

132. Reinforced Concrete Design (3). Prerequisite: C E 130. Analysis and design of reinforced concrete structural elements using the working stress and the ultimate strength design methods. Introduction to prestressed concrete. (Field trip(s) required)

133. Design of Steel Structures (3). Prerequisite: C E 130. Design of steel members and systems for buildings. Design areas include: tension members, compression members, beams, beam-columns, connections and plate girders. (2 lecture, 3 lab hours)

134. Foundation Design (3). Prerequisite: C E 123, 132 (or concurrently). Theory and design of spread and continuous wall rectangular, cantilever, and trapezoidal footings; earth pressures and cantilever as well as gravity retaining walls; pile foundations and pile driving; construction considerations; load tests; subsurface investigations; and case histories.

135. Reinforced and Prestressed Concrete Design (3). Prerequisite: C E 132. Design of typical reinforced concrete and prestressed concrete structures. (2 lecture, 3 lab hours; field trip(s) required)

136. Design of Timber Structures (3). Prerequisite: C E 130. Design of timber members and systems for buildings. Design areas include: loads, properties of wood, tension members, beams, columns, beam-columns, connections, diaphragms, shear walls and glued laminated arches.

137. Seismic Analysis of Structures (3). Prerequisite: C E 130, M E 112. Analysis of response of structures to dynamic loads with emphasis on response to earthquake ground motion. Basic concepts in design of earthquake-resistant buildings. (Field trip(s) required)

140. Hydrology (3). Prerequisite: M E 116. The Hydrologic cycle, atmospheric conditions, precipitation, infiltration, ground water, soil moisture, evaporation, runoff, streamflow, hydrographs, flood routing, hydrologic frequency analyses and their effects in water resource planning and management.

141. Water Resources Engineering (3). Prerequisite: C E 142. Analysis and design of urban water distribution and sewerage systems and of other selected water resource projects. (Field trips required)

142. Water Supply and Wastewater Engineering (3). Prerequisite: M E 116. Introduction to water supply, urban water distribution, storm drainage, and sanitary sewer systems. Study of water purification methods and wastewater treatment processes.

142L. Water Quality Laboratory (1). Prerequisite: C E 142 (or concurrently). Study and analysis of the physical, chemical and biological characteristics of raw and waste waters. (3 lab hours; field trips required)

143. Engineering Hydraulics (3). Prerequisite: M E 116. Theory and analysis of pressure-conduit and open-channel flow systems. Applications to hydraulic structures and control works, hydraulic power conversion, sediment transport, and channel stabilization.

144. Design of Water Quality Control Processes (3). Prerequisite: C E 142 or senior-level chemical or biological science. The process and hydraulic design of physical, chemical and biological water purification and wastewater treatment facilities for water quality control. (Field trips required)

145. Unit Operations and Processes (3). Prerequisite: C E 142L. Analysis of the unit operations and unit processes used in the physical, chemical and biological control of raw and waste waters quality. (2 lecture, 3 lab hours)

150. Transportation Planning and Design (3). Prerequisite: S E 12. Transportation as a multimode system; functions, development, elements, and characteristics. Transportation planning; design of geometric elements of route and terminal. (2 lecture, 3 lab hours)

151. Pavement and Drainage Design (3). Prerequisite: C E 123 (or concurrently). Factors affecting drainage and load-bearing elements of transportation facilities. Capacity design of drainage facilities. Structural design of flexible and rigid highway and airfield pavements. Pavement overlays, recycling and management system.

152. Transportation Engineering Materials (2). Prerequisite: C E 123. Soil stabilization with bitumen, lime, and portland cement for pavement construction; properties of bituminous road materials; properties, design, and testing of bituminous paving mixtures for pavement construction. (1 lecture, 3 lab hours; field trips required)

153. Traffic Operations and Control (3). Prerequisite: C E 150 (or concurrently). Highway traffic characteristics and studies; comprehensive transportation planning; traffic regulation and control; environmental considerations; traffic engineering administration.

161. Construction Engineering I (3). Prerequisite: senior standing in civil engineering. Basics of civil engineering contracting, organization of construction firms, legal structures, project funding, cash flow, equipment costs, labor relations and safety.

170. Pollution and Society (3). Not open to civil engineering majors. A description of the natural environment. Identification of both manmade and natural environmental impacts. The incorporation of a rational process into environmental decision making. Case histories of specific environmental problems. (Field trips required)

180. Senior Project (1). Prerequisite: senior standing in civil engineering; approved subject; I E 182W (or concurrently). Study of a problem under supervision of a faculty member; final typewritten report required. (Individual project except by special permission.)

185. Civil Engineering Practice (1). Prerequisite: senior standing in Civil Engineering. Practice of Civil Engineering; opportunities in Civil Engineering; transition from student to professional engineer; engineering ethics. (Field trips required)

190. Independent Study (1–3; max see reference). See *Academic Placement—Independent Study,* pages 96–97.

191T. Topics in Civil Engineering (1–3; max total 6). Prerequisite: permission of instructor. Investigation of selected civil engineering subjects not in current courses.

193. Internship in Civil Engineering (2–4; max total 4). Prerequisite: permission of adviser. Engineering practice in a consulting, industrial or government work setting. Each cooperative internship period usually spans a summer–fall or spring–summer interval. This course cannot be used to meet graduation requirements.

GRADUATE COURSES *(Engr)*

(See *Course Numbering Systems,* p. 133.)

204. Engineering Planning and Operations (3). Planning, scheduling and allocation of resources for engineering processes, including long-range planning, work breakdown structures, network analysis, computer modeling and engineering communications.

205. Computing in Engineering Analysis (3). Prerequisite: Graduate status in engineering. Solution of engineering problems using digital computation. Modeling of engineering systems for numerical analysis.

206. Engineering Environmental Impact (3). Identification of environmental impacts due to engineering projects. The incorporation of environmental considerations into engineering design. Alternative solutions to engineering problems. Case histories of selected engineering projects. Special design problems are assigned relating to the student's field of interest.

220. Advanced Foundation Engineering (3). Prerequisite: Graduate standing. Design of cantilevered and anchored sheetpile walls; axial- and lateral-loaded pile groups; drilled piers; pile driving stresses and wave equation analysis; beams on elastic foundations; footings on expansive and non-uniform soils and on rock; and case histories. (Former 291T section)

230. Advanced Theory of Structures (3). Prerequisite: Graduate standing in engineering or permission of instructor. Analysis of indeterminate structures by force (flexibility) methods and by displacement (stiffness) methods; Matrix methods suitable for digital computer solutions. Virtual work, real and complementary energy. Classical structural theorems. Introduction to the finite element method.

232. Prestressed Concrete (3). Prerequisite: Graduate standing in engineering or permission of instructor. Properties of hardened concrete. Failure mechanisms, influence of load and environment history. Structural behavior and design of pre-

stressed concrete elements and systems: Continuous beams, frames, slabs. Partial prestress. (Field trips required)

233. Advanced Steel and Timber Design (3). Prerequisite: graduate standing. Material behavior and design of basic structural units. Topics in steel: inelastic buckling, lateral-torsion buckling, plate girders, composite design, plastic design. Topics in wood: glulam structural units, pole-type structures, structural diaphragms.

234. Theory of Plates and Shells (3). Prerequisite: Graduate standing in engineering or permission of instructor. Methods of calculating stresses and deformations in plates and shells used in engineering structures. Bending of circular and rectangular plates under various conditions. Membrane and flexural analysis of shells of revolution.

235. Finite Element Analysis (3). Prerequisite: Graduate standing in engineering or permission of instructor. Theoretical and conceptual bases for formulation of finite element representations in solid mechanics. Development of element stiffness matrices for plane stress and plane strain problems, bending of plates and deformation of shells.

240. Engineering Hydrology (3). Prerequisite: M E 116. Analysis of the physical and stochastic processes governing the occurrence and movement of water in its natural environment. Applications to hydraulic engineering practice.

242. Water Resources Planning and Management (3). Prerequisite: Graduate standing in engineering or permission of instructor. A study of the interrelations of engineering, economic, legal, political, administrative, ecological and social factors involved in the planning and management of water resources.

245. Industrial Wastes Treatment and Disposal (3). Prerequisite: Senior standing with C E 145 or graduate standing. The application of engineering process design to treatment and disposal of waterborne industrial wastes. Treatment and disposal alternatives are explored and recovery processes are emphasized.

247. Solid and Hazardous Wastes Engineering (3). Design of waste collection systems. Waste segregation and energy impact related to recovery and recycling practices. Identification, control, and environmental impact of hazardous wastes. Alternative final waste disposal methods. (Former Engr 291T section)

290. Independent Study (1–3; max total 3). Prerequisite: Graduate status in engineering. See *Independent Study,* pages 96–97.

291T. Topics in Engineering (3; max total 6). Prerequisite: Permission of instructor. Investigation of selected Engineering topics.

298. Project (3; max total 3). Prerequisite: Graduate status in engineering. See *Criteria For Thesis and Project,* pages 467–468. Independent investigation of advanced character such as analysis and/or design of special engineering systems or projects; critical review of state of art of special topics, as the culminating requirement for the master's degree. Abstract required.

299. Thesis (6; max total 6). Prerequisite: See *Criteria For Thesis and Project,* pages 467–468. Preparation, completion, and submission of an acceptable thesis for master's degree.

IN-SERVICE COURSES

(See *Course Numbering System,* p. 133.)

311. Professional Examination Review (2; may be repeated in different fields).

321. Professional Engineering Seminar (1–3; may be repeated in different fields).

Bachelor of Science Degree (in Surveying Engineering) Requirements

	Units
1. Major Requirements	79
A. Fundamental Requirements	(11)
E E 70	(2)
I E 160, 161, 182W	(6)
M E 26	(3)
B. Advanced Requirements	(68)
S E 11, 11L, 12, 12L, 21, 23, 23L, 34, 41, 41L, 50, 102, 102L, 108, 123, 125, 126, 135, 145, 147, 151, 159, 171, 180, 186	(56)
Approved Electives	(12)
Select from the following courses with at least 6 units from engineering courses: C E 20, 150, 161; Math 81; S E 100, 109, 140, 152, 161, 173, 190, 191T; Geog 105; C R P 100; B A 154; Fin 180, 181.	
2. Additional Requirements	8
Geol 1; Math 77	
3. Remaining General Education unit requirements	47
Core: Engl 1; Spch 7; Math 75 and 76; Hist 11 or 12; Pl Si 2 or 101	(20)
Breadth: Chem 1A; Bot 10; Phys 5A and 5B; 6 units from Division 4–6 (two Divisions); 3 units from Division 8	(27)
Capstone courses are double counted with major: I E 160, I E 161, S E 180, 186, I E 182W	(–)
Total	134

Notes:

1. *CR/NC* grading is not permitted in the surveying engineering major or in mathematics, natural science, and physical science courses.
2. Since the surveying engineering major curriculum is very demanding, many students, especially those not fully prepared in mathematics, chemistry and/or physics, will take 4½ or more years to graduate rather than the traditional 4 years. Students not fully prepared in mathematics and/or chemistry should consider taking Math 71 and 72 in lieu of Math 75, and Chem 2A–2B in lieu of Chem 1A. If needed, students also may go to the Developmental Learning Resource Center in the Keats Building and request free tutorial assistance.

Recommended Program

FIRST SEMESTER		Units
S E 11, L	Plane Surveying	3
Math 75	Mathematical Analysis I	4
Chem 1A	General Chem & Qual Analysis	5
S E 21	Photographic Processes	3
E E 70	FORTRAN 77 Programming	2
		17

SECOND SEMESTER		
S E 12, L	Advanced Plane Surveying	3
S E 23, L	Photogrammetry	3
Math 76	Mathematical Analysis II	4
Phys 5A	Principles of Physics I	5
Engl 1	English Composition	3
		18

THIRD SEMESTER

S E 34	Survey Computations	3
Math 77	Mathematical Analysis III	4
Phys 5B	Principles of Physics II	5
M E 26	Engineering Graphics	3
		15

FOURTH SEMESTER

S E 41, L	Route Surveying	3
S E 50	Land Surveying	3
Geol 1	Physical Geology	4
SE 123	Photogrammetric Instrumentation	3
Hist 11/12	American History	3
		16

FIFTH SEMESTER

S E 102, L	Geodetic Surveying	3
S E 108	Geodesy	3
S E 147	Surveying Instrumentation	3
I E 182W	Engineering Writing	2
Bot 10	Plant Biology	3
Spch 7	Persuasion	3
		17

SIXTH SEMESTER

S E 126	Computer Aided Mapping	3
S E 135	Advanced Survey Computations	3
S E 151	Boundary Control and Legal Principles	3
Approved Elective		3
I E 160	Engineering Economy	2
Pl Si 2/101	American Constitution	3
		17

SEVENTH SEMESTER

S E 125	Advanced Photogrammetry	3
S E 159	Subdivision Design	3
S E 186	Surveying Engineering Practice	1
Approved Elective		3
Humanities (See [2])		6
I E 161	Legal Aspects of Engineering	2
		18

EIGHTH SEMESTER

S E 145	Geopositioning	3
S E 171	Project Design	3
S E 180	Senior Project	1
Approved Electives		6
Soc Sci (See [1])		3
		16

(1) Social Sciences: Select from Division 8.
(2) Humanities: Select one course each from any two of the Divisions 4, 5 and 6.
(3) One of the courses selected from Divisions 4–8 must be upper division.

COURSES

Surveying Engineering (S E)

11. Plane Surveying (2). Prerequisite: Math 5. Familiarization with surveying instruments; calculations; stadia surveying. (Former S&P 11)

11L. Plane Surveying Laboratory (1). Prerequisite: S E 11 (or concurrently). Field practice in measurements of distance and use of level, transit, and tape in solution of practical problems. (3 lab hours; field trips required) (Former S&P 11L)

12. Advanced Plane Surveying (2). Prerequisite: S E 11L. Theory and computations covering land surveying; engineering mapping; introduction to route surveying. (Former S&P 12)

12L. Advanced Plane Surveying Laboratory (1). Prerequisite: S E 12 (or concurrently). Field practice in land surveying, mapping, earthwork and route layout. (3 lab hours; field trips required) (Former S&P 12L)

21. Photographic Processes in Engineering (3). Theory of photographic processes, optics, lenses, emulsions, and developers. Photographic systems in photogrammetry and remote sensing; digital image processing. (2 lecture, 3 lab hours) (Former S&P 21)

23. Photogrammetry (2). Prerequisite: S E 11, 23L (concurrently). Fundamental characteristics of metrical photography and photogrammetric equipment; extraction of metrical data from single and overlapping photographs; flight planning and control considerations for photogrammetric mapping; accuracy and economy. (Former S&P 23)

23L. Photogrammetry Laboratory (1). Prerequisite: S E 23 (concurrently). Application of radial line plots, mosaic design, modeling of flight plans, orientation and use of stereoplotters. (3 lab hours; field trips required) (Former S&P 23L)

34. Survey Computations (3). Prerequisite: S E 12L, Math 76, E E 70. Probability, error theory, adjustment of simple survey nets and matrix methods; digital computer solutions of surveying computation and adjustment problems. (Former S&P 34)

41. Route Surveying (2). Prerequisite: S E 12L. Computer programming. Computations and theory covering surveys for highway, irrigation, construction and other kinds of engineering projects. Includes computer solutions. (Field trips required) (Former S&P 41)

41L. Route Surveying Laboratory (1). Prerequisite: S E 41 (or concurrently). Survey for highway location, stakeout of roads and intersections from plans. (3 lab hours) (Former S&P 41L)

50. Land Surveying (3). Prerequisite: S E 11. The act of May 20, 1785. Detailed study of the United States Public Land Survey System instructions with special emphasis on California. Sectionalized land subdivision, corner restoration, and resurveys. (Field trips required)

100. Technology and Society (3). Prerequisite: CORE math, Engl 1, Junior standing. Technological developments and their effects on society; evaluation of technology writings; ecology and environment; future projections; selected examples. (Former S&P 100)

102. Geodetic Surveying (2). Prerequisite: S E 34, 108 (or concurrently). Triangulation, trilateration, and traverse; adjustment of geodetic figures, precise leveling; astronomy for azimuth; map projections and state plane coordinates. (2 lecture hours) (Former S&P 102)

102L. Geodetic Surveying Laboratory (1). Prerequisite: S E 102 (or concurrently). Field applications and practice with triangulation, trilateration, traverse, precise leveling, and astron-

omy for azimuth. (3 lab hours; field trips required) (Former S&P 102L)

108. Geodesy (3). Prerequisite: Math 77. Size and shape of the earth; three-dimensional coordinate systems; computations on the spheroid; introduction to gravity measurements; deviation of the vertical and Laplace stations. (Former S&P 108)

109. Surveying Astronomy (3). Prerequisite: S E 108. Celestial sphere, star and earth coordinates; altitude and hour-angle methods of Solar observation; astronomical and instrumental corrections to observations; time systems; determination of latitude, longitude, and azimuth. (2 lecture, 3 lab hours) (Former S&P 109)

123. Photogrammetric Instrumentation (3). Prerequisite: S E 23, 34 (or concurrently). Applications of theory of optics to photogrammetric and surveying instruments. Theory of stereo-orientation; theory of optical and optical-mechanical plotting instruments; calibration and maintenance of plotting instruments; mapping with stereo-plotting instruments, orthophoto mapping. (1 lecture, two 3-hour labs; field trips required) (Former S&P 123)

125. Advanced Photogrammetry (3). Prerequisite: S E 123, 135. Introduction to analytical photogrammetry; analog strip triangulation, independent model triangulation, block triangulation; analytical plotters. (2 lecture, 3 lab hours) (Former S&P 125)

126. Computer Aided Mapping (3). Prerequisite: S E 21, 123. Cartographic color separation, scribing, line and half-tone copy, single and multicolor photolithographic reproduction, digital terrain modeling. Computer map design. (2 lecture, 3 lab hours) (Former S&P 126)

135. Advanced Survey Computations (3). Prerequisite: S E 34, 102. Statistics, propagation of errors, advanced theory of least squares optimization algorithms. Computer programming for complex surveying and photogrammetric adjustment applications. Project design. (3 lecture hours) (Former S&P 135)

140. Earth Resources Surveying (3). Prerequisite: S E 125 (or concurrently). Extraction of quantitative data from aerial and space imagery for monitoring environment and management of earth resources. (Former S&P 140)

145. Geopositioning (3). Prerequisite: Phys 5B, S E 108, 135. Theory and applications of inertial surveying, satellite surveying, photogeodesy, VLBI and laser ranging, navigational aids. Processing, adjustments, project planning, and costs. (3 lecture hours; field trips required) (Former S&P 145)

147. Surveying Instrumentation (3). Prerequisite: Phys 5B, S E 34. Applications of theory of optics and electronics to surveying instruments. Testing, calibration, and maintenance of modern surveying equipment. (2 lecture, 3 lab hours) (Former S&P 147)

151. Boundary Control and Legal Principles (3). Prerequisite: S E 50. Legal principles that control the boundary location of real property. (Former S&P 151)

152. Surveying Systems (3). Prerequisite: S E 151. Concepts of property, land tenure, land ethics; property description and recording systems; water boundary systems, tidelands, the California Coastal Act, hydrographic surveys. (Former S&P 152)

159. Subdivision Design (3). Prerequisite: S E 126, 151. Subdivision map act, local subdivision regulations, title search, zoning study. Tentative and final subdivision layout, map drafting, computerized subdivision design, and drafting; environmental impact study. (2 lecture, 3 hour lab; field trips required) (Former S&P 159)

161. Data Collector Interfacing (3). Prerequisite: S E 11, E E 70. Introduction to programming in BASIC for data collectors; file system generation, manipulation, and transfer; microcomputer interface to data collector, digital theodolite, mono/stereo comparator, analytical plotter, and digitizer/plotter.

171. Project Design (3). Prerequisite: Senior standing. Design of control, boundary location and photogrammetric systems. Evaluation of design requirements, economic, and social considerations. Case Studies.

173. The Multipurpose Cadastre (3). Existing and proposed land record information systems. Optional system organization and mechanisms for change. Government, institutional and technological issues. The geodetic framework and cadastral overlays. Environmental, resource and regulatory applications and limitations. (Former S E 191T section)

180. Senior Project (1). Prerequisite: senior standing in Surveying Engineering; approved subject; I E 182W (or concurrently). Study of a problem under supervision of a faculty member; final typewritten report required. (Individual project except by special permission.) (Former S&P 180)

186. Surveying Engineering Practice (1). Prerequisite: Senior standing in surveying engineering. Introduction to contract law; professional registration, organizations, conduct and ethics. (Field trips required) (Former S&P 186)

190. Independent Study (1–3; max see reference). See *Academic Placement—Independent Study,* pages 96–97.

191T. Topics in Surveying Engineering (1–3; max total 6). Prerequisite: permission of instructor. Investigation of selected surveying engineering subjects not in current courses.

193. Internship in Surveying Engineering (2–4; max total 4). Prerequisite: permission of adviser. Engineering practice in a consulting, industrial or government work setting. Each cooperative internship period usually spans a summer–fall or spring–summer interval. This course cannot be used to meet graduation requirements. Report will be required of the student at the termination of each implemented experience.

ENGINEERING
Edwards Air Force Base Program

School of Engineering
Elden K. Shaw, Dean
Engineering East Bldg., Room 122
(209) 294-2603

Edwards Air Force Base
Richard C. Lathrop, Coordinator
Building 2453, Edwards A.F.B.
(805) 258-5936



California State University, Fresno in cooperation with the Air Force Flight Test Center's Education Services Branch, operates a master's degree program with options in electrical and mechanical engineering at Edwards A.F.B., CA. All course work, examinations, and degree requirements may be completed on the Base. Course credit is on-campus degree credit, and may be transferred where regular degree credit is accepted, or to another CSU campus. Although sponsored by the Air Force, the program and courses are open to all qualified personnel in the area, without regard to employment affiliation. Courses are offered during off-duty hours at Desert High School, Edwards A.F.B.

Program Requirements. The program consists of a common core (12 units), a set of required courses within the option (6 units), and approved elective courses (12 units), for a total of 30 units (semester hours) of course work. There is no requirement for a thesis. Up to nine semester hours of satisfactory graduate credit may be transferred into the program from other institutions.

The Graduate Record Examination (G.R.E.) Aptitude Test is required of all students prior to advancement to candidate status. The Advanced Test in Engineering is *not* required. The G.R.E. is administered several times per year at Edwards A.F.B. A G.R.E. information booklet and application forms are available in the resident coordinator's office.

All students must complete an oral or written comprehensive examination before graduation. This examination will stress the material in the required major courses.

Faculty. All faculty are selected from the Fresno campus, from other CSU campuses and from among qualified engineers on the Base.

Admission to the Program

Admission to the University: Requirements for admission to California State University, Fresno, are in accordance with *Title 5,* Chapter 1, Subchapter 3 of the California Administrative Code.

Admission to Graduate Standing: Students who apply for the program will be placed in one of the following categories:

I. **Graduate Standing, Classified.** Students with, (a) an undergraduate degree in an appropriate engineering discipline from an ABET accredited program (b) an undergraduate grade point average of 3.0 (c) a minimum G.R.E. quantitative score of 450, are eligible for classified (degree status) Graduate Standing. This constitutes full admission to the graduate program.

II. **Graduate Standing, Conditionally Classified.** Students from non-ABET accredited engineering programs, or with degrees in physical science or mathematics or a different engineering discipline, and who have not met the requirements of category I, will be classed as Conditionally Classified Graduate Standing. Upon satisfactory completion of any noted deficiency they will then be advanced to Classified Standing.

Degree candidacy: The following requirements must be met prior to advancement to candidacy:

1. Classified graduate standing.
2. Completion at CSU, Fresno of at least 9 units of the proposed program with a 3.0 average on all completed work appearing on the program.

3. A minimum grade point average of 3.0 on all upper-division and graduate course work from the date of embarking on the first course of the proposed master's degree program.
4. Departmental recommendation for advancement to candidacy.
5. Satisfactory completion of the Graduate Writing Skills Requirement.

Non-degree students: Students with a bachelor's degree may take graduate courses through extension (concurrent with regular students) for extension credit or audit. Prior approval of the resident coordinator is required.

Curricula

Core Courses (Common to Both Programs):

Engr 101—Applied Engr Analysis I (3)
Engr 102—Applied Engr Analysis II (3)
Engr 205—Applications of Numerical Analysis (3)
Engr 210—Linear Control Systems (3)

Mechanical Engineering Required Courses:

M E 220—Compressible Fluids (3)
M E 230—Aircraft Stability and Control (3)

Mechanical Engineering Electives:

Engr 212—Advanced Control Systems (3)
M E 221—Incompressible Fluids (3)
M E 223—Propulsion (3)
M E 225—Heat Transfer (3)
M E 227—Advanced Thermodynamics (3)
M E 229—Advanced Gas Dynamics (3)
M E 231—Structural Dynamics (3)
M E 232—Advanced Aircraft Stability and Control (3)

Electrical Engineering Required Courses:

E E 241—Applied Electromagnetics (3)
E E 245—Communications Engineering (3)

Electrical Engineering Electives:

Engr 212—Advanced Control Systems (3)
E E 243—Logic Design & Switching Theory (3)
E E 247—Modern Semiconductor Devices (3)
E E 249—Adv. Communications Engineering (3)
E E 251—Antennas and Propagation (3)
E E 253—Adv. Logic Design & Sw. Theory (3)
E E 255—Digital Signal Processing (3)
E E 257—Introduction to Lasers (3)
E E 259—Radar System Design (3)

Note: All courses carry three semester hours of credit.

Financial Information

Tuition and Fees: Tuition is $125* per semester hour, or $375* per three unit course. Payment is due at the time of registration, and prior to the first class session. There is no provision for deferred tuition payment in state institutions. There is a one-time fee of $35* for admission to the program and a $20 graduation fee*. Tuition and fees should be paid by check or money order made out to "CSU, Fresno."

Refund Policy: Withdrawals prior to:

First Class Meeting.....100%
25 percent of Course Time.....65%
No Refunds Thereafter.....0%

Tuition Assistance: Eligible military personnel may apply for tuition assistance (T.A.) which pays 75 percent of tuition cost. The student pays the remaining 25 percent at the time of registration. Officers (but not enlisted personnel) incur a two year non-cumulative service commitment following use of T.A.

Civilian Personnel: Government civilian employees may be eligible to have tuition paid by their government agency, if it can be shown that the course content is work related. Also, many industrial firms have programs to reimburse employees for tuition paid for courses successfully completed. Contact your education development officer or training office for details.

G.I. Benefits: Eligible veterans and active duty people with more than 180 days in service may apply for educational benefits. Those with service prior to Jan. 1, 1977, receive benefits under the old G.I. Bill, which reimburses the full tuition cost. Those entering service after Jan. 1, 1977, may be eligible under the new G.I. Bill, which is a contributory plan. Application for V.A. educational benefits may be made in the office of the resident coordinator at the time of registration. V.A. forms are processed through the Fresno campus Veterans Office.

Textbooks: Textbooks normally are available from the instructor at the first class meeting. In most cases, the cost of textbooks is not reimbursed by the government. Students should be prepared to pay by check. Most engineering textbooks are in the $55 price range.

Enrollment and Registration

Enrollment in the Program may be accomplished in the office of the CSU, Fresno Edwards coordinator. It is not necessary to visit the Fresno campus. Students desiring to enroll should contact the Edwards coordinator for a counseling appointment. Registration for individual courses generally is accomplished during the week prior to the start of classes. Dates and times for registration are announced by flyers and in the various Base media.

For further details, contact:

Dr. Richard C. Lathrop
CSU, Fresno Resident Coordinator
Building 2453
Edwards A.F.B., CA 93523

Mailing address from on Base:

6510 ABG/DPE/CSUF
Edwards A.F.B.

Mailing Address from off Base:

P.O. Box 53
Edwards, CA 93523

Telephone: (805) 258-5936
Autovon: 527-2713

* (Fees subject to change upon approval.)

COURSES

Engineering (Engr)

101. Applied Engineering Analysis I (3). A course covering selected topics in mathematical analysis, with emphasis on applications to engineering problems. Ordinary differential equations, the LaPlace transformation, matrices and determinants, Fourier series and integrals, partial differential equations.

102. Applied Engineering Analysis II (3). A course covering selected topics in mathematical analysis with emphasis on applications to engineering problems. Vector Analysis, line and surface integrals, complex variables and integrals, conformal mapping, series, residues, potential theory, special functions, probability and statistics.

205. Computing in Engineering Analysis (3). Prerequisite: Graduate status in engineering. Solution of engineering problems using digital computation. Modeling of engineering systems for numerical analysis.

210. Linear Control Systems (3). A first-year graduate course covering the analysis, synthesis, and performance of linear control systems. Partial fraction expansion, Routh's criterion, the impulse function. Basic servo characteristics and types, block diagrams, transfer functions. A detailed treatment of the root locus method for analysis and synthesis. Frequency response, logarithmic and polar plots, Nyquist's criterion, stability characteristics, phase margin and gain margin.

212. Advanced Control Systems (3). Describing function analysis of nonlinear control systems; phase-plane analysis; Liapunov stability analysis; discrete-time systems; z-transform method; linear stochastic systems; application of statistical design principles; optimal and adaptive control systems; digital control systems.

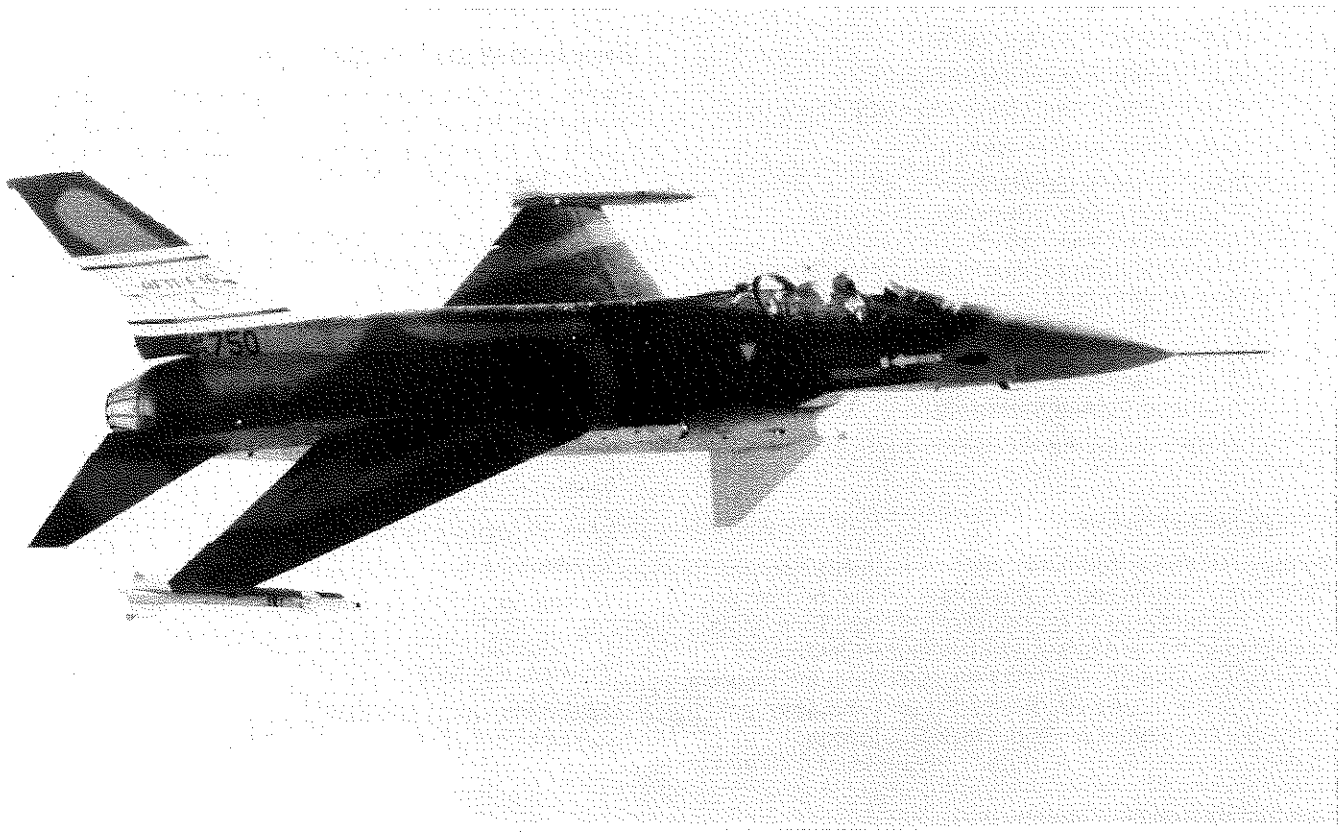
Electrical Engineering (E E)

241. Applied Electromagnetics (3). Electrostatic field boundary conditions, energy relations, and forces; multidimensional potential problems; magnetic field boundary conditions, scalar and vector potentials, and magnetization; Maxwell's equations for stationary and moving media; energy, force, and momentum in an electromagnetic field; plane waves; waves near metallic boundaries; inhomogeneous wave equation.

243. Logic Design and Switching Theory (3). Minimum complexity combinational networks; multiple-level networks; threshold gate networks; multivalued gate networks; combinatorial network failures; minimum complexity sequential networks; asynchronous sequential networks; sequential network failures; linear and iterative networks.

245. Communications Engineering (3). Basic modulation concepts; statistical properties of signals; transmission systems optimization against noise; digital transmission and modulation methods; attenuation and phase distortion in analog and digital systems; intermodulation distortion; random multipath channels; intersystem interference.

247. Modern Semiconductor Devices (3). Crystal structures and elastic constants; lattice energy and vibrations; thermal and dielectric properties of solids; ferroelectric and magnetic properties of crystals; free electron model of metals; quantum statistics distributions; band theory; semiconductor crystals; superconductivity; photoconductivity and luminescence; dislocations.



249. Advanced Communication Engineering (3). The measure of information; noiseless coding; models of communication channels; channel capacity; discrete memoryless channels; error correcting codes; information sources; discrete channels with memory; continuous channels.

251. Antennas and Propagation (3). Wave equation, plane waves, metallic boundary conditions; wave equation for the potentials and radiation fields; relativistic kinematics and the Lorentz transformation; covariant formulation of electrodynamics; radiation from a moving charge; scattering and dispersion; Hamiltonian formulation of Maxwell's equations.

253. Advanced Logic Design and Switching Theory (3). Fault detection and elimination of static and dynamic hazards in logic circuits; threshold logic systems; universal logic modules; cellular logic; multirail cascades; harmonic analysis techniques applied to logic design, programmed logic; statistics in digital design; computer-aided programming for logic design.

255. Digital Signal Processing (3). Discrete-time signals; Fourier transforms; random discrete-time signals; filtered random signals; correlation functions; power-spectral-density estimation; cross-spectral estimates; detection of signals in noise; estimation of signals in noise; recursive estimation of time-varying signals.

257. Introduction to Lasers (3). Resonant interaction of radiation and matter; anisotropic properties of media; transmission media; stimulated emission, population-inversion techniques; papamagnetic-material, gaseous-phase, and semiconductor lasers; external modulation and control; spatial and temporal coherence; fundamental measurements and measurement techniques for materials.

259. Radar System Design (3). The nature and history of radar, the radar equation, PRF and range considerations, CW and FM radars. MTI and pulse-Doppler radars, tracking radars. Radar power generation, antenna types and design considerations, receivers, detection of signals in noise, extraction of information from radar signals, propagation of radar wave, the effects of clutter, weather and interference. Examples of radar system engineering and design.

Mechanical Engineering (M E)

220. Compressible Fluids (3). Review of the foundations of fluid mechanics and thermodynamics. The velocity of sound, mach number and angle, differences between incompressible, subsonic, and supersonic flow. Isentropic flow, working charts and tables, choking, operation of nozzles. Normal shock waves, ducts, shock tube analysis. Fanno and Rayleigh analysis, oblique shock waves, the Prandtl-Meyer equation. Lift and drag on bodies in supersonic flow. Method of characteristics.

221. Incompressible Fluids (3). The kinematics of liquids and gases, the La Grangian and Eulerian methods, streak lines, stream tubes. Geometry of the vector field, stokes, and Gauss's theorems, acceleration of a fluid particle, homogeneous fluids and the equation of continuity. Integration of Eutor's equation, Bernoulli's equation. Potential motion and potential functions, source and sink potentials, the stream function. Vortex theory, surfaces of discontinuity.

223. Propulsion (3). A first year graduate course covering the mechanics and thermodynamics of propulsion. Thermodynamics of fluid flow and engines, boundary layer theory, subsonic and supersonic inlets, combustors, compressors, turbines, inlet

> "It is important to develop a professional attitude, and become involved in student chapters of professional societies."
>
> *— Professor, Engineering*

distortion, fuel controls, noise reduction, rocket propulsion. Selected topics in advanced engine technology will also be covered.

225. Heat Transfer (3). Conduction, convection, and radiation. One and two dimensional steady-state conduction, LaPlace's equation, numerical techniques. Transient heat transfer. Heisler charts, multiple-dimensional systems, boundary layers, Reynold's analogy. Forced and natural convection radiation heat transfer, Kirchoff's and Wien's laws, radiation shields.

227. Advanced Thermodynamics (3). Review of classical thermodynamics, Maxwell relations, equations of state, nonideal gases, experimental methods. The molecular theory of gases, Clausius and Van der Waals equations of state, velocity distribution. LaGrange's method, the principle of equipartition. Maxwell-Boltzmann statistics, micro and macro-states. Quantum statistics based on the Bose-Einstein, Maxwell-Boltzmann, and Fermi-Dirac statistics.

229. Advanced Gas Dynamics (3). Review of supersonic flow. Vibrational and chemical rate processes, nonequilibrium chemical rate equations, rate equations for dissociation and recombination. Flow with vibrational or chemical nonequilibrium. Nonequilibrium kinetic theory; evaluation of collision cross-sections. Flow with translational nonequilibrium. Radiative transfer in gases, and approximate solutions of the equation of radiative transfer.

230. Aircraft Stability and Control (3). A first-year graduate course covering analytical tools, system theory, reference frames, and transformations, equations of unsteady motion, longitudinal aerodynamics, lateral aerodynamics, stability of steady flight, and response to control actuation. All stability derivatives will be discussed in detail, and examples and problems based on actual airplanes will be used.

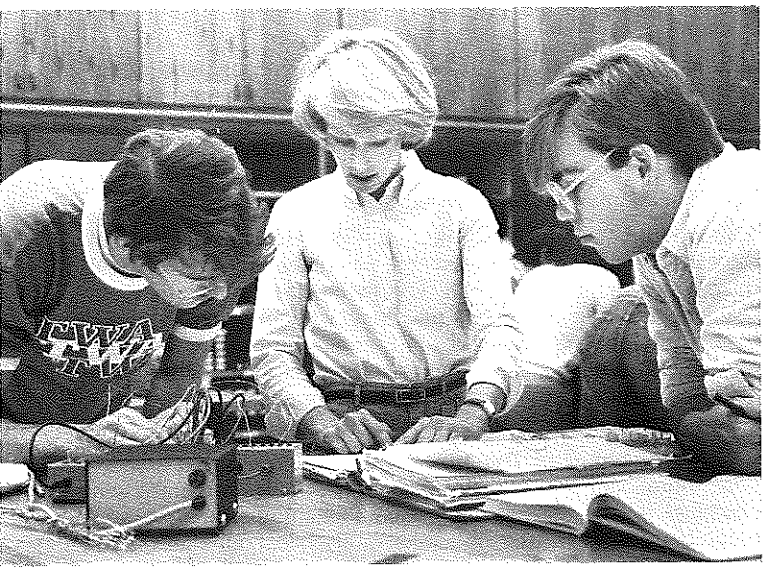
231. Structural Dynamics (3). Review of the principles of mechanics, virtual work, generalized force, potential energy, conservative systems, stability. Elastic beams and frames, plates, and shells. Von Karman theory, shear deformation, geometry and equilibrium of shells. The theory of vibrations, undamped and damped systems, orthogonality properties. Vibrations of aircraft structures, coupling with the aerodynamic equations, flutter.

232. Advanced Aircraft Stability and Control (3). Validity of small disturbance theory, nonlinear equations of motion, steady state and dynamic stability and control of elastic airplanes. Frequency response methods, response to turbulence. Automatic flight control analysis and design, the human pilot in the control loop, stability augmentation, digital flight control systems, state vector methods.

ENGINEERING
Electrical Engineering

School of Engineering
Department of Electrical Engineering
Chung K. Liu, Chair
Engineering East Bldg., Room 218
(209) 294-2726

B.S. in Electrical Engineering



The Electrical Engineering Program prepares the graduate for professional practice or graduate studies in several areas of concentration. By the appropriate choice of electives, the student may emphasize the following areas of specialization:

a. Electronics and communications
b. Computer engineering and digital systems
c. Power systems and energy conversion

In collaboration with his adviser, the student also has freedom to tailor the elective sequence to meet the needs of a specific career objective. The Electrical Engineering Program is accredited by the Engineering Accreditation Commission of the Accreditation Board for Engineering and Technology, which represents the major professional engineering groups in the United States.

The electrical engineering graduate is qualified for employment in a broad spectrum of activities in the field of engineering. The discipline of electrical engineering deals with energy, controls, devices, and information in electrical form. This dynamic field of contemporary technology encompasses activities such as the conversion and control of energy, the application of physical electronics phenomena in devices, circuits, and systems; the design and characterization of electronic and optical communication and electromagnetic systems; the development and application of computers; and the automation and control of industrial processes and man-made interactions.

Electrical engineers design and develop electronic circuits, equipment, and systems in the areas of *electromagnetics* (antennas; radar, radio, and television systems), *communications and control* (telephone systems, satellite communications; laser and optical fiber communications; aircraft and missile guidance systems), *computers and digital systems* (computers, microprocessors, and microcomputers; automated manufacturing; robots; artificial intelligence), *physical electronics and optics* (transistors; integrated circuits; optical display devices; lasers; optical fibers), *power systems and energy conversion* (hydro, thermal, nuclear, solar electric power generation; analysis and synthesis of power transmission and distribution systems; on-line power control and dispatch centers), and *bioelectronics* (sensory aids for the physically handicapped; biomedical instruments for clinical applications).

Faculty and Facilities

The faculty of the electrical engineering department is comprised of academically well-qualified engineers who have a wide range of teaching and industrial experience. Their backgrounds include significant research accomplishments, engineering teaching experience, consulting work, and related engineering experience.

Excellent facilities are housed in the Engineering East Building. Modern laboratories include a new microcomputer laboratory, microprocessor and digital systems laboratory, electronics laboratories, and an excellent power systems laboratory. In addition, the department has a minicomputer, and a terminal room which accesses the main campus computer. A new solid state device and integrated circuits laboratory is planned. The department has an excellent microwave and communications laboratory complete with shielded measurement rooms and r-f filters built into the walls.

Career Opportunities

According to a recent report by the American Electronics Association, a severe shortage of electrical and computer engineers is projected for the next several years. The explosive pace with which new developments in optical communications, microelectronics, computers, radar, microwave communications, and innovative alternative energy sources are evolving should assure a solid growth pattern for electrical and computer engineers into the foreseeable future.

Organizations

Student chapters of the Institute of Electrical and Electronic Engineers and Eta Kappa Nu (the national honor society for Electrical Engineers) are active in the department. The Engineering School, of course, has chapters of Tau Beta Pi, the Society of Women Engineers, and the Society of Hispanic Engineers.

CO-OP Program

The electrical engineering department participates in the Cooperative Educational Program which allows students to integrate planned industrial experiences into their academic programs. Students interested in this program should contact the department chair of electrical engineering and the campus co-op coordinator.

Faculty

Chung K. Liu, *Chair*

Albert Heaney
Medhat Ibrahim
Samuel Y. Liao
Larry D. Owens
Joseph C. Plunkett
Robert D. Regier
Elden K. Shaw
Cheng Sun

Bachelor of Science Degree (in Electrical Engineering) Requirements

	Units
1. Major Requirements	75
A. Fundamental Requirements:	(25)
C E 20	(3)
E E 70, 90, 90L	(6)
I E 160, 182W	(4)
M E 26, 112, 136, and 31 or 116	(12)
B. Advanced Requirements	(50)
E E 1, 85, 85L, 114, 116, 119, 119L, 121, 121L, 124, 126, 128, 128L, 136, 136L, 138, 138L, 155, 180	(40)
Approved Electives	(10)
Select from the following courses and include at least one laboratory course from E E 183A, B, C, D:	
(a) Electronics and Communications: E E 134, 140, 144, 162, 166, 168, 171, 176, 183A, 183C.	
(b) Computer Engineering and Digital Systems: E E 106*, 107, 132, 173, 174, 183B.	
(c) Power Systems and Energy Conversion: E E 151, 152, 153, 183D.	
2. Additional Requirements:	11
Math 77, 81, Math Electives (select from Math 107, 121, 124, 128, 181, or 182).	
3. Remaining General Education Unit Requirements:	50
Core: Engl 1; Spch 3, 5, 7, or 8; Math 75 and 76; Hist 11 or 12; Pl Si 2 or 101	(20)
Breadth: Chem 1A; Chem 8 or 1B; Phys 5A and 5B, 6 units Divisions 4–6 (two Divisions); 6 units Division 8	(30)
Capstone courses are double-counted with major: I E 160, E E 180, I E 182W	(–)
Total	136

* E E 106 is an engineering science course. All other approved electives are engineering design courses.

Notes:

1. *CR/NC* grading is not permitted in the electrical engineering major or in mathematics and physical science courses.
2. Electrical engineering majors might consider a math minor (see faculty adviser for details).
3. Since the electrical engineering major curriculum is very demanding, many students, especially those not fully prepared in mathematics, chemistry and/or physics, will take 4½ or more years to graduate rather than the traditional 4 years. Students not fully prepared in mathematics and/or chemistry should consider taking Math 71 and 72 in lieu of Math 75, and Chem 2A–2B in lieu of Chem 1A. If needed, students also may go to the Developmental Learning Resource Center in the Keats Building and request free tutorial assistance.

> "In college, taking the first step to seek help is the most difficult step of all."
>
> — *Sophomore, Education*

Recommended Program

FIRST SEMESTER		Units
Math 75	Mathematical Analysis I	4
Chem 1A	General Chem and Qualitative Analysis	5
E E 1	Intro to Electrical Engineering	1
E E 70	FORTRAN 77 Programming	2
Engl 1	Composition	3
		15

SECOND SEMESTER		
Math 76	Mathematical Analysis II	4
Phys 5A	Principles of Physics I	5
Chem 8	[1] Elementary Organic Chemistry	3
M E 26	Engineering Graphics	3
Humanities (See [3])		3
		18

THIRD SEMESTER		
Math 77	Mathematical Analysis III	4
Phys 5B	Principles of Physics II	5
E E 85,L	Digital Logic Design	3
C E 20	Engineering Mechanics Statics	3
History 11 or 12		3
		18

FOURTH SEMESTER		
Math 81	Applied Analysis	4
E E 90,L	Principles of Electrical Circuits	4
E E 116	Intro to Computer Engineering	3
M E 112	Engineering Mechanics: Dynamics	3
Pl Si 2 or 101		3
		17

FIFTH SEMESTER		
Mathematics Elective [4]		3
E E 124	Linear Electric Circuit and Sys Analysis	3
E E 126	Electromagnetic Theory and Appl I	3
E E 128,L	Electronics I	4
I E 182W	Engineering Writing	2
M E 31 or M E 116 **		3
		18

SIXTH SEMESTER		
E E 114	Physical Electronics	3
E E 119,L	Principles of Computer Architect Design	3
E E 121,L	Electromech Sys and Energy Conversion	4
E E 136,L	Electromagnetic Theory and Appl II	4
E E 138,L	Electronics II	4
		18

SEVENTH SEMESTER		
I E 160	Engineering Economy	2
M E 136	Thermodynamics	3

Approved Electives	6
Spch 3, 5, 7, or 8	3
Social Sciences [2]	3
	17

EIGHTH SEMESTER

E E 155 Control Systems	3
E E 180 Senior Project [5]	2
Humanities [3]	3
Approved Elective	4
Social Sciences [2]	3
	15

** M E 116 is for students in power option.
[1] *Or* Chem 1B.
[2] Social Sciences: Select from Division 8.
[3] Humanities: Select one course each from any two of the Division 4, 5, 6.
[4] Mathematics Electives: Select from Math 107, 121, 124, 128, 181, or 182.
[5] With approval by the student's academic adviser and the department chair, approved electives except E E 106 may be substituted for E E 180, Senior Project.

COURSES

Electrical Engineering (E E)

Students may be expected to purchase supplementary materials for senior projects and special topic laboratory and activity classes.

1. Introduction to Electrical Engineering (1). The electrical engineering profession and its career opportunities; engineering methods of experimentation; electronic components and calculators, fundamental concepts of engineering problem solving. Dimensional analysis, exponentials, logarithmic relations and time constants. Engineering ethics and professionalism.

70. FORTRAN 77 Programming (2). Prerequisite: Algebra, trigonometry. Flow-charting, program structure, computation and arithmetic functions, input-output, transfer of control, looping, subscripted variables, subprograms, file processing, printer plotting techniques, terminal and batch processing procedures. (Former Engr 70)

85. Digital Logic Design (2). Prerequisite: Phys 5B (or concurrently). Boolean algebra and number systems. Logic gates and combinatorial logic circuits. MSI integrated circuit realizations of logic circuits. Flipflops, multivibrators and counters. Introduction to sequential circuits.

85L. Digital Logic Design Laboratory (1). Prerequisite: E E 85 (concurrently). Experiments on logic gates, Karnaugh maps, multiplexors, decoders, latches and flipflops, counters and shift registers; design of state machines.

90. Principles of Electrical Circuits (3). Prerequisite: E E 70, Phys 5B, Math 81 (or concurrently). Direct-current circuit analysis; circuit theorems; transient phenomena in RLC circuits; phasor concept; sinusoidal steady-state response; power and RMS calculations in single-phase and polyphase alternating-current circuits; principles of electrical instruments; computer solutions. (Former E E 110, Engr 90, 110)

90L. Principles of Electrical Circuits Laboratory (1). Prerequisite: E E 90 (or concurrently). Experiments on direct- and alternating-current circuits, including single-phase and polyphase systems. Use of electrical instruments, development of laboratory techniques, and verification of basic principles. (3 lab hours) (Former E E 110L, Engr 90L, 110L)

106. Switching Theory and Automata (3). Prerequisite: Phys 2B or Phys 5B. Axiomatic development of Boolean Algebra; switching functions; Quine-McCluskey minimization; finite state machines; push-down automata, and Turing machines. State assignments; binary sequential circuits. Applications to coding and decoding. Regular expressions and context free language acceptors.

107. Digital Data Handling (3). Prerequisite: E E 70, E E 85, E E 124. Data acquisition by computers; digital-analog conversion; data structures and processing algorithms. Symbol manipulation; sampled-data systems, fast Fourier Transforms, digital filtering, Z-Transforms, special purpose signal processors.

114. Physical Electronics (3). Prerequisite: Phys 5B. Electronic structure of metals, semiconductors, and insulators; energy band structure, modern semiconductor devices such as P-n junction semiconductors, bipolar and field-effect transistors, integrated and charge-transfer devices.

116. Introduction to Computer Engineering (3). Prerequisite: E E 85. Introduction to the organization and structure of a microcomputer. Assembly language and PASCAL programming of the computer. Input/output programming. Engineering applications.

119. Principles of Computer Architecture (2). Prerequisite: E E 85. Structural organization and hardware architecture of digital computer systems; number systems and binary representation of data; binary arithmetic; hardware/software tradeoffs; comparisons of mainframe, minicomputer and microprocessor architectures. Introduction to microcomputers. (Former E E 133)

119L. Principles of Computer Architecture Design Laboratory (1). Prerequisite: E E 119 (concurrently). Experiments on computer architecture and peripheral equipment; laboratory synthesis of combination and sequential logic circuits; use a small digital computer for on-line and real-time measurement, control, and computation. (Former E E 133)

121. Electromechanical Systems and Energy Conversion (3). Prerequisite: E E 90, 90L. Principles of direct- and alternating-current machinery and other energy-conversion devices and associated apparatus.

121L. Electromechanical Systems and Energy Conversion Laboratory (1). Prerequisite: E E 121 (concurrently). Experiments and computations on direct- and alternating-current machinery and on other energy-conversion devices and associated apparatus. (3 lab hours)

124. Linear Electric Circuit and Systems Analysis (3). Prerequisite: E E 90, 90L. Operational analysis of discrete and continuous linear circuits and systems: Z-transforms, Laplace and Fourier transforms; Fourier series; state-space representations, computer-aided solutions.

126. Electromagnetic Theory and Applications I (3). Prerequisite: E E 90 (or concurrently). Electrostatics; boundary value problems; magnetostatics; time-varying fields; Maxwell's equations.

128. Electronics I (3). Prerequisite: E E 90 (or concurrently). Characteristics and properties of solid state devices; theory and analysis of electronic circuits; power supply design; device and circuit models; single and multi-stage amplifier analysis and design; feedback amplifiers; computer solutions as appropriate.

128L. Electronics I Laboratory (1). Prerequisite: E E 128 (or concurrently). Experiments on static and dynamic characteristics of solid state devices and electronic circuits; computer solutions as appropriate. (3 lab hours)

132. Design of Digital Systems (3). Prerequisite: E E 119, E E 116. Design of Digital Systems utilizing microprocessors; application of assembly programming language to input/output

programming, interrupts and traps, DMA and memory management. (Former E E 175).

134. Communication Engineering (3). Prerequisite: E E 124. Mathematical modeling of signals and noise; information theory; analog and digital communication theory; radar and satellite system and link design; system noise temperature modeling; project design to pre-established specifications.

136. Electromagnetic Theory and Applications II (3). Prerequisite: E E 126. Plane wave propagation and reflection; transmission of electromagnetic energy over wires at power and communication frequencies; waveguide; antenna analysis and design; methods for computer solution.

136L. Electromagnetic Theory and Applications Laboratory (1). E E 136 concurrently. Experiments on the transmission of electromagnetic energy through wires, wave guides, and space; filters and antennas; impedance matching; cross-over networks; location of faults on lines. (3 lab hours)

138. Electronics II (3). Prerequisite: E E 124, 128, 128L. Analysis and design of high frequency and power amplifiers; dc and operational amplifiers; LC and crystal oscillators, modulators and demodulators for communications; active filters. Emphasis on modern design methods including applications of active integrated circuits.

138L. Electronics II Laboratory (1). E E 138 concurrently. Design oriented experiments to study the characteristics, limitations, and design tradeoffs of circuits from E E 138. Emphasis on circuit and system design to meet pre-established specifications. Design project included; computer solutions as appropriate. (3 lab hours)

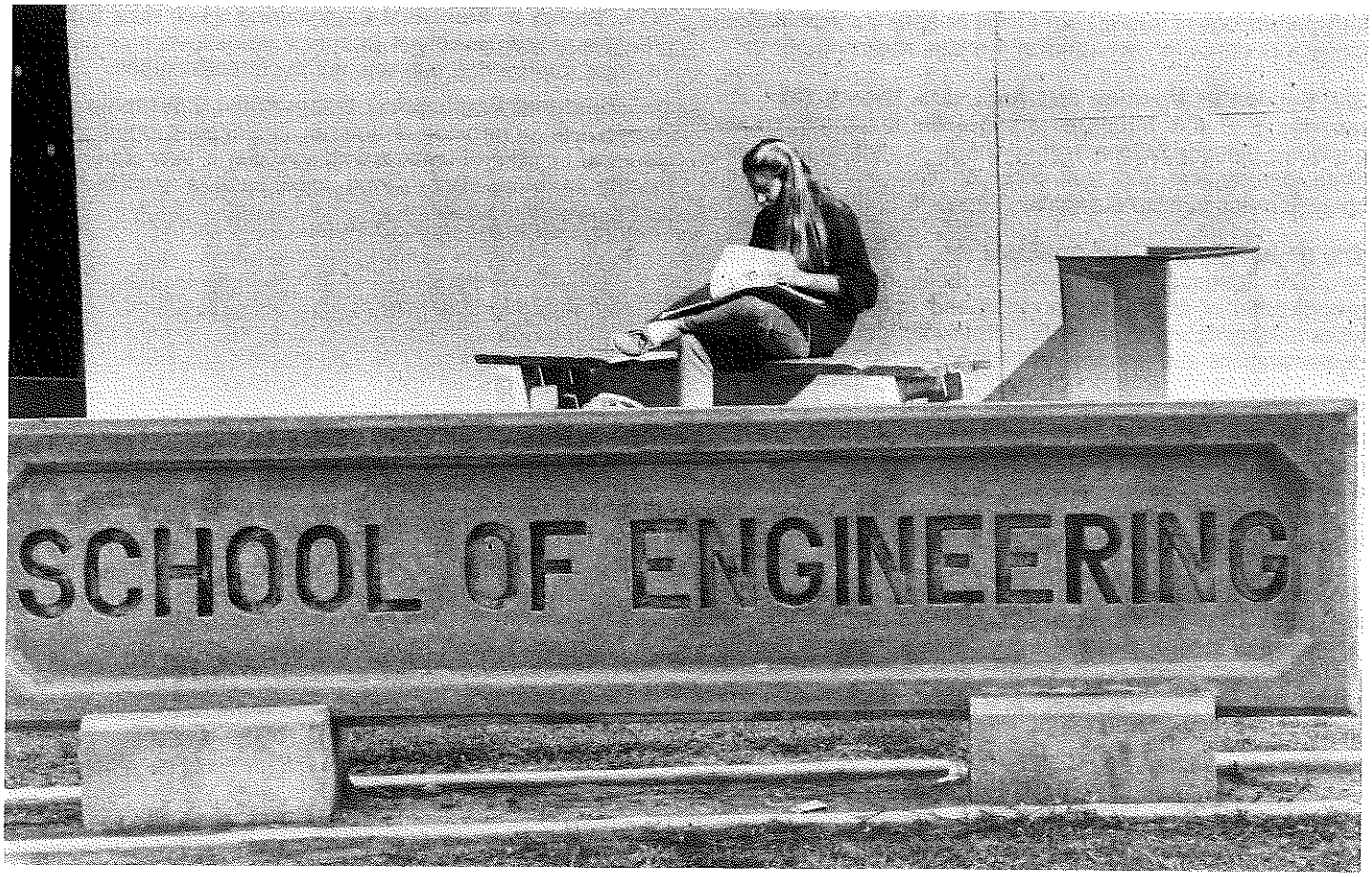
140. VLSI Circuit and System Design (3). Prerequisite: E E 85, 114, 124 (or concurrently), 128, 128L. Design and analysis of LSI/VLSI chips, circuits, and systems; logic and mask designs for bipolar, MOS, and CMOS logic families; ROM and RAM memories; CAD/CAM, full-custom, and semi-custom design approaches; IC layout rules.

144. Integrated Circuit Design and Fabrication (3). Prerequisite: E E 114. Diffusion and ion implantation processes in silicon device fabrication; the planar process; CVD methodology in GaAs devices; design layout rules; impurity profile shaping, measurement, and its relationship to device performance; laboratory measurement and characterization techniques for IC's; laboratory demonstrations.

151. Electrical Power Systems (3). Prerequisite: E E 121, 121L (or concurrently). Power system networks and equipment, steady-state operation, short-circuit analysis, power system stability analysis by digital computation, synchronous generator excitation and governor systems, system load representation, numerical analysis techniques.

152. Symmetrical Components and Short Circuit Analysis (3). Prerequisite: E E 121, 121L (or concurrently). Theory of symmetrical components and their use in power systems analysis; sequence impedances of system components; applications in fault calculations.

153. Electromechanical Energy Conversion Machines and Devices (3). Prerequisite: E E 121, 121L (or concurrently). Processes of electromechanical energy conversion, modeling of rotating machines, computer-aided steady state analysis of



direct-current and alternating-current machines; special purpose devices; single-phase induction machines, linear machines; stepper motors; solid state motor control. Emphasis on current development and design procedures.

155. Control Systems (3). Prerequisite: E E 124. Analysis, design, and synthesis of linear control systems; modeling, performance evaluation, frequency response, and stability.

162. Analog Integrated Circuits and Applications (3). Prerequisite: E E 138. Analysis of monolithic operational amplifiers; case studies; Widlar and Wilson current sources; linear and nonlinear applications; multipliers, phase-lock loops, phase detectors; higher order active filters; all-pass equalizers; D/A and A/D converters; oscillators, function generators; mixers, modulators, regulators; system design.

166. Microwave Devices and Circuits Design (3). Prerequisite: E E 136. Microwave theory and techniques: slow-wave structures, S parameters, and microwave devices including klystrons, reflex klystrons, traveling-wave tubes, magnetrons and gyrotrons.

168. Microwave Amplifier and Oscillator Design (3). Prerequisite: E E 136. Small-signal and large-signal amplifier designs such as high-gain, high-power, low-noise, narrowband and broadband amplifiers; microwave oscillator designs such as high-power, broadband, Gunn-diode and IMPATT oscillator designs; power combining and dividing techniques; reflection amplifier design and microwave measurements. (Former E E 191T section)

171. Quantum Electronics (3). Prerequisite: E E 126. Review of wave properties; cavity mode theory; radiation laws; theory and morphology of lasers; laser and fiber-optic communications; designs of optical communication systems and components.

172. Sequential Machine and Automata Theory (3). Prerequisite: E E 106. Structure of sequential machines; covers; partitions; decompositions, and synthesis of multiple machines. State identification and fault detection experiments; memory characteristics of finite automata. (Former E E 104)

173. Digital Controls and Robotics (3). Prerequisite: E E 85, 121, 124. Introduction to digital controls; development and classification of robots; components and operation of robots, types of sensors; vision sensors; artificial intelligence; classroom demonstrations and practice with a robot.

174. Comparative Microcomputer Architecture (2). Prerequisite: E E 119. A study of architectural features of several representative microcomputers including instruction set, addressing modes, interrupts DMA and bus structures. Case studies of contemporary microprocessors such as Motorola 68000, Zilog Z8000, and Intel 8086. (Former E E 120)

176. Computer-Aided Circuit Design (3). Prerequisite: E E 124, 128, 128L. Digital computer methods in analysis and simulation of lumped parameter circuits: topological and matrix representation; modeling; time and frequency domain algorithms, optimization; worst-case and statistical analysis; use of problem oriented programs for circuit design. Introduction to system design.

180. Senior Project (2). Prerequisite: senior standing in electrical engineering, I E 182W (or concurrently), approved subject. Study of a problem under supervision of faculty member; final typewritten report required. (Individual project except by special permission)

183A. Electronic Circuits and Electrical Networks Laboratory (1). Prerequisite: E E 124, 138, 138L. Signal measurement and analysis techniques for communication networks; discrete, hybrid, and integrated electronic circuit design and testing; analog and digital filter realization; computer-aided analysis and design of circuits and networks. (3 lab hours)

183B. Digital Devices and Systems Laboratory (1). Prerequisite: E E 128, E E 85. Logic circuit measurement techniques; logic device characterization; combinational and sequential network realization; design, testing, and evaluation of digital subsystems for computation, memory, display, communications, etc.; interfacing to mini- and microcomputers for on-line real-time applications. (3 lab hours)

183C. Physical Electronics and Electromagnetics Laboratory (1). Prerequisite: E E 114, 128, 128L, 136, 136L. Solid state device design and characterization; rf component design with stripline and microstrip techniques; electromagnetic signal analysis; noise reduction techniques; antenna pattern measurements; radiation field and static electricity hazard determination; laser system design. (3 lab hours)

183D. Electrical Power and Control Systems Laboratory (1). Prerequisite: E E 121, 121L, 155 (or concurrently). Measurement of characteristics and testing of power systems, computer-aided design and simulation of power and control systems; design and testing of feedback control systems; parametric study of control system implementation. (3 lab hours)

190. Independent Study (1–3; max see reference). See *Academic Placement—Independent Study,* pages 96–97.

191T. Topics in Electrical Engineering (1–3; max total 6). Prerequisite: permission of instructor. Investigation of selected electrical engineering subjects not in current courses.

195. Electrical Engineering Cooperative Internship (3–4). Prerequisite: permission of adviser. Engineering practice in an industrial or governmental installation over a period of about 7 months duration. Each period must span a summer–fall or spring–summer interval.

ENGINEERING
Mechanical and Industrial Engineering

School of Engineering
Department of Mechanical and Industrial Engineering
Delbert E. Robison, Chair
Engineering West Bldg., Room 109
(209) 294-2368

B.S. in Mechanical Engineering
B.S. in Industrial Engineering

The Department of Mechanical and Industrial Engineering offers a Bachelor of Science degree in engineering (mechanical engineering or industrial engineering major). Both of these programs are accredited by the Engineering Accreditation Commission of the Accreditation Board for Engineering and Technology.

The objectives of the Mechanical and Industrial Engineering programs are: **(1)** to provide qualified students the opportunity to acquire quality education in either the mechanical or industrial engineering options of sufficient depth and breadth that upon graduating with a bachelor's degree in either option, the student can enter a profession in industry or government as a qualified engineer capable of making independent contributions with a minimum of supervision, or can enter a graduate program in engineering at a university of his/her choice without qualification other than the general admission requirements; **(2)** to provide opportunities for reentry of practicing engineers to enroll in refresher courses or for non-engineering graduates to earn a second degree; **(3)** to provide the graduate with sufficient general education that he/she can take his/her place in the community as a responsible citizen, sensitive to community needs, and capable of providing leadership in community affairs; **(4)** to provide the graduate with the technical background, self-assurance, and motivation to continue life-long learning and self-development in the engineering profession, the physical and social sciences, and the humanities.

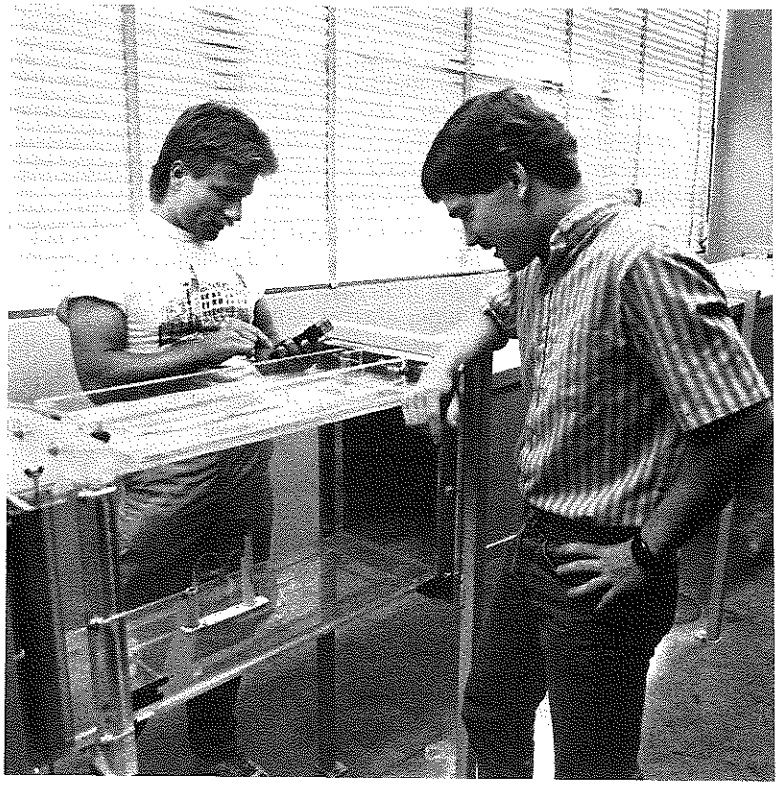
Faculty and Facilities

The mechanical and industrial engineering curricula are designed to give the student a firm understanding of the applications and practice as well as the principles and science of engineering. In addition to high academic qualifications, most of the faculty have had distinguished careers in industry and are able to help the student develop self-confidence as well as professional skill in defining and solving engineering problems.

Laboratory courses that emphasize the operation and use of instruments and the experimental approach are required in the mechanical and industrial engineering curricula. The department has laboratories equipped with electronic data acquisition systems and test apparatus which enable engineering students to study the effects of different parameters on the operation and performance of energy fluid-flow, air-conditioning, and heat-power systems.

Industrial engineering students gain valuable practical experience through laboratories and cooperative industrial projects. State-of-the-art computer systems in conjunction with advanced robotic equipment are used in an engineering laboratory environment to enrich the industrial engineering students' learning experience. Laboratory courses emphasize such subjects as computer assisted manufacturing, computer assisted design, material handling, plant layout, and human factors engineering. Students gain additional practical experience by using the facilities and equipment of local industries in association with cooperative engineering projects.

The faculty recognize the importance of the use of computers for design and manufacturing and have developed courses for the instruction of computer aided engineering.



Career Opportunities

The career outlook for engineers is very favorable at this time and is expected to continue into the indefinite future. Mechanical and industrial engineers are highly sought by the high-technology industries because of their technical versatility and adaptability to a broad range of engineering activities. Opportunities exist in aerospace, conventional and alternative-energy power production, manufacturing and fabrication, machine and tool design, public transportation systems, electronics, and a host of other industries which rely on engineers for concept formulation, component and systems design, and technical management.

Faculty

Delbert E. Robison, *Chair*

Joseph R. Battenburg
Shyhming Chang
Karen L. Frair
Lester C. Frair
McRae Jarrett
Dennis C. Kuzma
Prakash T. Mahajan
Satya D. Mahanty
James D. Matheny
William W. Peng

Mechanical Engineering Program

Mechanical engineering has two major stems, energy and machine design. Both embody application of the physical sciences and technology in their research, production, operation, organization, and economic aspects to the design and development of processes, machines, systems, and facilities. The energy disciplines focus on the conversion of energy primarily in chemical, thermal, or mechanical form for the production, transmission, and utilization of power. Machine design focuses on the material, applied mechanics, mechanism, structural, and manufacturing aspects of producing tools, machinery, and other manufactured goods.

Mechanical engineers are especially concerned with the thermal, fluid flow, and energy conversion processes connected with the production of power from fossil and nuclear fuels, and from solar, biomass, and other alternative-energy sources . . . with heating, ventilation, refrigeration, cryogenic, and environmental systems for the control of humidity, temperature, and air cleanliness . . . with propulsion and vehicles for land, water, and space transportation, including space vehicles, air-cushion and hydrofoil vehicles, tractors, trucks, and high-speed magnetically powered trains . . . with power components such as internal combustion engines, gas and steam turbines, rockets, turbojets, and fuel cells . . . with fluid-flow machinery such as pumps, fans, blowers, compressors, and valves . . . and with material handling and food processing equipment including hydraulic lifts, machine tools, and mechanical, pneumatic, and hydraulic conveyor systems.

Bachelor of Science Degree (in Mechanical Engineering) Requirements

	Units
1. Major Requirements	80
A. Fundamental Requirements	(33)
M E 26, 31, 112, 116, 118, 136	(16)
C E 20, 121	(6)
E E 70, 90, 90L	(6)
I E 90, 182W	(5)
B. Advanced Requirements	(47)
M E 117, 131, 131L, 134, 140, 144, 154, 156, 157, 164, 166, 180	(29)
E E 121, 121L	(4)
I E 160, 161	(4)
Approved Electives	(10)
Select at least 5 units from Group A and 5 units from Group B.	
Group A (Engineering Science): E E 155, 173; I E 110; M E 137, 142, 145, 146, 147.	
Group B (Design): M E 143, 151, 155, 162; I E 145, 155	
2. Additional Requirements	
Math 77, 81	8
3. Remaining General Education Requirements	47
Core: Engl 1; Spch 3, 5, 7, or 8; Math 75 and 76; Hist 11 or 12, Pl Si 2 or 101	(20)
Breadth: Chem 1A; Chem 8 or 1B; Phys 5A and 5B; 6 units from Divisions 4–6 (two Divisions); 3 units from Division 8	(27)
Capstone courses are double-counted with major: I E 160, 161, 182W; M E 180	(–)
Total	135

Notes:

1. *CR/NC* grading is not permitted in the mechanical engineering major or in mathematics and physical science courses.
2. Mechanical engineering majors might consider a math, physics, or business minor.
3. Since the mechanical engineering major curriculum is very demanding, many students, especially those not fully prepared in mathematics, chemistry and/or physics, will take 4½ or more years to graduate rather than the traditional 4 years. Students not fully prepared in mathematics and/or chemistry should consider taking Math 71 and 72 in lieu of Math 75, and Chem 2A–2B in lieu of Chem 1A. If needed, students also may go to the Developmental Learning Resource Center in the Keats Building and request free tutorial assistance.

Recommended Program

FIRST SEMESTER		Units
E E 70	FORTRAN 77 Programming	2
Math 75	Mathematical Analysis I	4
Chem 1A	General Chem and Qual Analysis	5
Engl 1	Composition	3
Humanities (See [2])		3
		17

SECOND SEMESTER		
M E 26	Engineering Graphics	3
Math 76	Mathematical Analysis II	4
Chem 8	Elementary Organic Chemistry [5]	3
Phys 5A	Principles of Physics I	5
Humanities (See [2])		3
		18

THIRD SEMESTER		
M E 31	Engineering Materials	3
Hist 11/12	American History	3
Math 77	Mathematical Analysis III	4
Phys 5B	Principles of Physics II	5
Soc Sci (See [3])		3
		18

FOURTH SEMESTER		
I E 90	Manufacturing Processes	3
C E 20	Engineering Mechanics: Statics	3
E E 90, L	Principles of Electrical Circuits	4
Math 81	Applied Analysis	4
Pl Sci 2	American Gov't and Institutions	3
		17

FIFTH SEMESTER		
M E 112	Engineering Mechanics: Dynamics	3
M E 136	Thermodynamics	3
M E 140	Mechanical Engineering Analysis	3

C E 121	Mechanics of Materials	3
I E 182W	Engineering Writing	2
Speech 3, 5, 7, or 8		3
		17

SIXTH SEMESTER

M E 131, L	Advanced Engineering Materials	3
M E 134	Dynamics in Machine Design	3
M E 116	Fluid Mechanics	3
M E 117	Instrumentation and Fluid Lab	1
M E 144	Advanced Mechanics of Materials	3
E E 121, L	Electro. Systems and Energy Conv	4
		17

SEVENTH SEMESTER

M E 118	Fluid Mechanics Lab	1
M E 154	Design of Machine Elements	3
M E 156	Adv Thermo-Fluid Mechanics	3
M E 180	Senior Project [4]	2
I E 160	Engineering Economy	2
App Elect (See [1])		5
		16

EIGHTH SEMESTER

M E 157	Adv Thermo-Fluid Mechanics	2
M E 164	Machine Design	3
M E 166	Energy Systems Design	3
I E 161	Legal Aspects of Engineering	2
App Elect (See [1])		5
		15

[1] Approved Electives: Select at least 5 units from Group *A* and 5 units from Group *B*.
[2] Humanities: Select from Divisions 4, 5, or 6 (courses from two different divisions must ultimately be selected).
[3] Social Sciences: Select from Division 8.
[4] With approval by the student's academic adviser and the Department Chair, any Group B elective may be substituted for M E 180, Senior Project.
[5] *Or* Chem 1B.

COURSES

Mechanical Engineering (M E)

26. Engineering Graphics (3). Prerequisite (or concurrently): Math 75, E E 70. Principles of orthographic projection, dimensioning, and descriptive geometry. Applications to the solution of engineering problems including the use of interactive computer graphics. (2–3-hour lecture labs) (Former Engr 26)

31. Engineering Materials (3). Prerequisite (or concurrently): Chem 8, Phys 5A. Fundamental nature and properties of engineering materials; structure of matter and its effect on mechanical, electrical, magnetic, and thermal properties. (Former Engr 31)

112. Engineering Mechanics: Dynamics (3). Prerequisite: C E 20. Development of principles of kinematics and kinetics in engineering. (Former Engr 112)

116. Fluid Mechanics (3). Prerequisite: Chem 1A, M E 112 (or concurrently). Fundamentals of fluid mechanics as applied to engineering problems. (Former Engr 116)

117. Instrumentation Laboratory (1). Prerequisite: E E 70, M E 116 (or concurrently). Study of instrumentation and experimental methods; applications; fluid mechanics laboratory; computer-aided data acquisition. (1–3-hour lab)

118. Fluid Mechanics Laboratory (1). Prerequisite: M E 116 (or concurrently). Applications of experimental methods used in engineering practice to fluid systems. (One 3-hour lab) (Former Engr 116L, M E 116L)

131. Advanced Engineering Materials (2). Prerequisite: M E 31, I E 90, C E 121. Applications of the principles of materials science to the study of the mechanical behavior of metallic, polymeric, ceramic, and composite materials. Effects of stress and environmental variables.

131L. Advanced Engineering Materials Laboratory (1). Prerequisite: M E 131 (or concurrently). Application of experimental methods related to mechanical metallurgy; study of strengthening mechanisms in metals; fatigue; creep; recrystallization. (3 lab hours)

134. Dynamics in Machine Design (3). Prerequisite: M E 26, 112, C E 121 (or concurrently), Math 81. Analytical and graphical solutions to design problems in machinery. Mechanisms, dynamic forces, vibrations. Both closed- and open-ended homework problems.

136. Thermodynamics (3). Prerequisite: Chem 8, M E 112 (or concurrently). Fundamentals of thermodynamics, and heat transfer as applied to engineering problems. (Former Engr 136)

137. Turbomachinery (3). Prerequisite: M E 117, 118, and 136. Applications of fluid mechanics and thermodynamics and rotor-fluid energy interchange. Steady flow problems of pumps, compressors, and turbines with incompressible and compressible fluids. Both closed- and open-ended homework problems.

140. Mechanical Engineering Analysis (3). Prerequisite: Math 81, E E 70, M E 112 (or concurrently), and M E 136 (or concurrently). Development of the finite element method of engineering analysis; specific applications to heat flow, fluid flow, vibrations in mechanical systems, and stresses in mechanical component design using appropriate numerical techniques and the digital computer.

142. Mechanical Vibration (3). Prerequisite: M E 112, C E 121. Mathematical and physical basis of vibration theory with applications to engineering; design; transient and steady state phenomena; distributed and lumped parameters; coupled systems; computer solutions.

143. Mechanical Design Laboratory (2). Prerequisite: C E 121, M E 134. Application of theory and techniques of experimental stress analysis to the design of mechanical structures. Designing and testing a mechanical device or structure and the submittal of a technical report of the results. (1 lecture, 3 lab hours)

144. Advanced Mechanics of Materials (3). Prerequisite: C E 121, E E 70, Math 81. Advanced topics in mechanics of materials. (Former Engr 122)

145. Heat and Mass Transfer (3). Prerequisite: E E 70, Math 81, M E 116, 136. Analytical, numerical, and electrical analogy methods are used to solve a variety of heat transfer and mass transfer problems. Advanced topics in radiation, boundary layer flow, and heat exchanger design. (Former M E 191T section)

146. Air Conditioning (3). Prerequisite: M E 116, 136. Theory and practice in air conditioning including psychrometrics, load estimating, heating and cooling systems, fluid design and controls.

147. Air Conditioning Laboratory (1). Prerequisite: M E 146 (or concurrently). Practical laboratory work with commercial type units; test of components of air conditioning systems. (3 lab hours) (Former M E 146L)

151. Materials in Engineering Design (2). Prerequisite: M E 131. Evaluation of design requirements, economic considerations. Techniques for selecting suitable materials for specific applications; optimization. Case studies.

154. Design of Machine Elements (3). Prerequisite: M E 134, 144; I E 90. Application of theory and practice to the design of machine elements and components. Individual and team-type open-ended problems with classroom discussion of the principles involved in the designs. The use of Engineering's computers to solve complex problems is encouraged.

155. Elements of Systems Design (3). Prerequisite: M E 134, Senior Standing. Introduction to the concepts and practice of the design of engineering systems. Students are required to complete preliminary designs of specified engineering systems. Experience in design is gained through setting specifications, innovation, design optimization, and social and economic aspects. (Former M E 191T section)

156. Advanced Thermodynamics—Fluid Mechanics (3). Prerequisite: M E 116, 136. Advanced topics in thermodynamics, fluid mechanics, and heat transfer as applied to engineering problems.

157. Advanced Thermodynamics—Fluid Mechanics Laboratory (2). Prerequisite: M E 117, 118, 156 (or concurrently). Applications of advanced experimental methods used in engineering practice to thermo-fluid systems. (One 1-hour lecture; one 3-hour lab) (Former M E 136L and M E 156L)

162. Computer-Aided Design (3). Prerequisite: E E 70, Math 81. Application of computer in engineering design. Introduction to computer graphics/design systems and high level graphic languages compatible to BASIC and FORTRAN. Survey of typical commercial graphic/design software packages. Introduction to design optimization with applications interesting to mechanical engineers. (Former M E 191T section)

164. Machine Design (3). Prerequisite: M E 116, 136, 154; I E 182W, 160 (or concurrently). Open-ended design problems with related theory as needed. This course integrates the material of the prerequisite courses into final designs. (two 3-hour lecture-labs)

166. Energy Systems Design (3). Prerequisite: M E 156 (or concurrently). Design and performance characteristics of power generating systems—conversion of energy from primary sources; processes and machinery for extracting, upgrading and synthesizing fuels; utilization and storage.

180. Senior Project (2). Prerequisite: senior standing in mechanical engineering, approved subject, I E 182W (or concurrently). Study of a problem under supervision of a faculty member; final typewritten report required. (Individual project except by special permission)

190. Independent Study (1–3; max see reference). See *Academic Placement—Independent Study,* pages 96–97.

191T. Topics in Mechanical Engineering (1–3; max total 6). Prerequisite: permission of instructor. Investigation of selected mechanical engineering subjects not in current courses.

193. Mechanical Engineering Cooperative Internship (2–4). Prerequisite: permission of adviser. Engineering practice in an industrial or government installation. Each cooperative internship period usually spans a summer–fall or spring–summer interval. This course cannot be used to meet graduation requirements.

Industrial Engineering Program

Industrial engineering deals with the design, improvement, and installation of integrated systems of people, materials, equipment, and energy. It draws upon specialized knowledge and skill in the mathematical, physical, and social sciences together with the principles and methods of engineering analysis and design to specify, predict, and evaluate the results to be obtained from such systems.

The industrial engineering faculty are committed to providing all students the advanced technology background necessary for success and growth in their selected professions. A program of study is offered to all students through a carefully designed curriculum which includes engineering analyses for the design of man-machine systems, optimization of industrial systems, and the scientific management of engineering activities. Specialized training is available in the use of modern engineering tools and techniques such as computer assisted design (CAD), computer assisted manufacturing (CAM), and ergonomic (human factors) engineering.

Bachelor of Science Degree (in Industrial Engineering) Requirements

Units

1. Major Requirements 74
   - A. Fundamental Requirements ..... (35)
     - I E 75, 90, 182W ..... (6)
     - C E 20, 121, 121L ..... (7)
     - E E 70, 90, 90L ..... (6)
     - M E 26, 31, 112, 116, 118, 136 ..... (16)
   - B. Advanced Requirements ..... (39)
     - I E 110, 111, 113, 114, 115, 125, 130, 160, 161, 180 ..... (27)
     - E E 121 (or 128) ..... (3)
     - Approved Electives ..... (9)
     - Select at least one course from each of the following groups:
     - Group A (Engineering Science): I E 112, 120; M E 144
     - Group B (Design): I E 145, 148, 155; M E 134, 162
     - Group C (Administrative Science): Mgmt 104, 106; Psych 176
2. Additional Requirements
   - Math 77, 81 8
3. Remaining General Education Requirements 50
   - *Core:* Engl 1; Spch 3, 5, 7 or 8; Math 75 and 76; Hist 11 or 12; Pl Si 2 or 101 ..... (20)

Breadth: Chem 1A; Chem 8 or 1B; Phys 5A and 5B; 6 units Divisions 4–6 (two Divisions); Econ 1A, 1B Division 8 ..... (30)
Capstone course are double-counted with major: I E 125, 160, 180, 182W ..... (–)
Total 132

Notes:

1. *CR/NC* grading is not permitted in the industrial engineering major or in mathematics and physical science courses.
2. Industrial engineering majors might consider a math or business minor.
3. Since the industrial engineering major curriculum is very demanding, many students, especially those not fully prepared in mathematics, chemistry and/or physics, will take 4½ or more years to graduate rather than the traditional 4 years. Students not fully prepared in mathematics and/or chemistry should consider taking Math 71 and 72 in lieu of Math 75, and Chem 2A–2B in lieu of Chem 1A. If needed, students also may go to the Developmental Learning Resource Center in the Keats Building and request free tutorial assistance.

Recommended Program

FIRST SEMESTER

		Units
E E 70	FORTRAN 77 Programming	2
I E 75	Introduction to Industrial Engineering	1
Math 75	Mathematical Analysis I	4
Chem 1A	Gen Chem & Qual Anal	5
Hist 11/12	American History	3
		15

SECOND SEMESTER

M E 26	Engineering Graphics	3
Engl 1	Composition	3
Math 76	Mathematical Analysis II	4
Chem 8	Elementary Organic Chemistry [4]	3
Phys 5A	Principles of Physics I	5
		18

THIRD SEMESTER

C E 20	Engineering Mechanics: Statics	3
M E 31	Engineering Materials	3
Math 77	Mathematical Analysis III	4
Phys 5B	Principles of Physics II	5
Econ 1A	Principles of Economics	3
		18

FOURTH SEMESTER

I E 90	Manufacturing Processes	3
Math 81	Applied Analysis	4
Pl Si 2	American Govt and Institutions	3
Speech 3, 5, 7, or 8		3
Econ 1B	Principles of Economics	3
		16

FIFTH SEMESTER

I E 110	Statistical Analysis in Engineering	3
I E 111	Work Measurement	3
M E 112	Engineering Mechanics: Dynamics	3
M E 116	Fluid Mechanics	3
M E 118	Fluid Mechanics Lab	1
I E 160	Engineering Economy	2
I E 182W	Engineering Writing	2
		17

> "At CSUF, the senior professors are teaching at the undergraduate level, where guidance and development are so vital."
>
> — *Professor, Engineering*

SIXTH SEMESTER

I E 113	Operations Analysis	3
I E 115	Quality Control & Reliability Engr	3
E E 90, L	Principles of Electrical Circuits	4
C E 121, L	Mechanics of Materials	4
M E 136	Thermodynamics	3
		17

SEVENTH SEMESTER

I E 114	Facilities Engineering	3
I E 130	Production and Inventory Control	3
E E 121	Electromechanical Sys & Energy Conv [5]	3
Approved Electives (See [1])		3
Humanities (See [2])		3
		15

EIGHTH SEMESTER

I E 125	Hum Fact in Engr & Design	3
I E 161	Legal Aspects of Engineering	2
I E 180	Senior Project [3]	2
Approved Electives (See [1])		6
Humanities (See [2])		3
		16

[1] Approved Electives: Select at least one course from each of the three groups.
[2] Humanities: Select from Division 4, 5, or 6. (Courses from two different divisions must ultimately be selected).
[3] With approval by the student's academic adviser and the department chair, any Group B elective may be substituted for I E 180, Senior Project.
[4] *Or* Chem 1B.
[5] *Or* E E 128.

COURSES

Industrial Engineering (I E)

75. Introduction to Industrial Engineering (1). An overview of the field of Industrial Engineering. Brief discussion of plant layout, work measurement, engineering economy, quality control, production control, human factors, and operations research. A brief survey of the current status of Industrial Engineering. (Field trips required)

90. Manufacturing Processes (3). Prerequisites: M E 26, 31. Processing techniques, including casting, welding, forming, and machining; capabilities and limitations of these techniques. (Field trips required) (Former M E 11)

110. Statistical Analysis in Engineering (3). Prerequisite: Math 76. Fundamentals of probability and statistics. Applications of statistical methods to engineering problems.

111. Work Measurement (3). General approach to the design process; application of design process to problem solving. Methods evaluation techniques; motion and time study, work sampling, and simulation. (2 lecture, 3 lab hours; field trips required)

112. Statistical Design of Experiments (3). Prerequisite: I E 110, E E 70. Analysis of variance; regression and correlation; analysis of covariance; randomized blocks and Latin squares; design of experiments; response surface analysis and determination of optimum conditions.

113. Operations Analysis (3). Prerequisite: I E 110, E E 70, Math 81. Application of quantitative and numerical techniques for analysis of complex operational problems.

114. Facilities Engineering (3). Value analysis, materials handling, packaging, layout of facilities, safety, location of facilities.

115. Quality Control and Reliability Engineering (3). Prerequisite: I E 110. Fundamentals of statistical quality control and reliability engineering. Sampling plans. Control charts. Reliability techniques. (Former I E 110B)

118. Principles of Safety Engineering (3). Prerequisite: junior standing. Principles of Safety Engineering with emphasis directed to industrial situations. Selected topics include: materials handling, machine guarding, lighting, noise, ventilation, personal protective equipment, instrumentation, plant inspection, accident investigation.

120. Systems Safety Engineering (3). Prerequisite: I E 110. Principles of system safety engineering. Selected topics include: human factors engineering, key system interfaces, logic trees, fault and risk tree analyses, hazard identification and analysis, safety review system trees, statistical analysis, product safety.

125. Human Factors in Engineering and Design (3). Fundamental issues in human performance, perceptual-motor processes, information processing. Anthropometry, workplace design and layout, arrangement of system components. Controls and displays. Work physiology. Industrial biomechanics, hand tool design. Environmental physiology, effects of noise, vibration, heat and illumination on human performance.

130. Production and Inventory Control (3). Prerequisite: I E 113. Fundamental concepts of production and inventory planning, analysis and control; inventory and production costs; analysis of variations in demands, availability of supplies and optimum production schedules; use of computer simulation techniques; case studies.

145. Design of Automated Systems (3). Prerequisite: Senior standing. Production operations and automation strategies, automated flow lines, flow line balancing, numerical control; fundamentals of CAD/CAM; group technology; economics of automatic process control and robotics applications. Integration of engineering experience to solve open-ended design problems. (Plant visits required.)

148. Simulation of Industrial Systems (3). Prerequisite: I E 130. Application of discrete-event simulation techniques for the solution of complex industrial problems; use of various computer simulation languages; review of Monte Carlo processes and digital simulation of continuous processes.

155. Design and Applications of Robotic Systems (3). Prerequisites: E E 70, I E 90, Senior Standing. Introduction to the use of robotics for industrial automation. Components and operation of robot systems; programming of robots; robot implementation and industrial applications of robots. (Former I E 191T section)

160. Engineering Economy (2). Prerequisite: upper-division standing in engineering. Importance of economic analyses of problems in engineering and in management decision making; interest, depreciation, income tax, classification of costs, break-even and minimum cost points, economic comparisons of alternatives, economy of replacement. (Former Engr 160)

161. Legal Aspects of Engineering (2). Prerequisite: Senior standing in engineering. Development of law, canons of ethics, torts, principles of contracts, contracting procedure and specifications, property, negotiable instruments, sales, agency and patents; preparation of reports. (Former Engr 161)

180. Senior Project (2). Prerequisite: senior standing in industrial engineering, approved subject, I E 182W (or concurrently). Study of a problem under supervision of a faculty member; final typewritten report required. (Individual project except by special permission)

182W. Engineering Writing (2). Prerequisite: Engl 1. Preparation of applications, forms, letters, reports, and specifications. Meets the Upper Division Writing Skills requirement for graduation. (Former Engr 182W)

190. Independent Study (1–3; max see reference). See *Academic Placement—Independent Study,* pages 96–97.

191T. Topics in Industrial Engineering (1–3; max total 6). Prerequisite: permission of instructor. Investigation of selected industrial engineering subjects not in current courses.

193. Industrial Engineering Cooperative Internship (2–4). Prerequisite: permission of adviser. Engineering practice in an industrial or government installation. Each cooperative internship period usually spans a summer–fall or spring–summer interval. This course cannot be used to meet graduation requirements.

English

School of Arts and Humanities
Department of English
Roger Chittick, Chair
San Ramon 4, Room 212
(209) 294-2553

B.A. in English
Minor in English
M.A. in English
Options in:
Literature
Creative Writing
Composition
Credential Program

English is a general major or minor designed to give proficiency in skills that traditionally have been among the most highly prized by society: an ability to read with comprehension and critical judgment; to communicate accurately and clearly both orally and in writing; to grasp difficult ideas and think logically; to do research and organize materials; to make ethical and moral judgments from a historical and humanistic framework; and to appreciate literature and the arts.

The core of the English major consists of four basic kinds of courses in the upper division: literary history courses, literary genre courses, literary seminars, and writing courses. The masterpiece courses apply to the minor and meet General Education—Breadth, Division 4 requirements. The department also offers courses in folklore and folksong, methods of research, film, and women's studies.

The Single Subject Waiver Program for teaching credential candidates contains a number of specific prerequisites and special required courses, some of which are outside the Department of English. For specific program requirements, consult each semester with the credential coordinator.

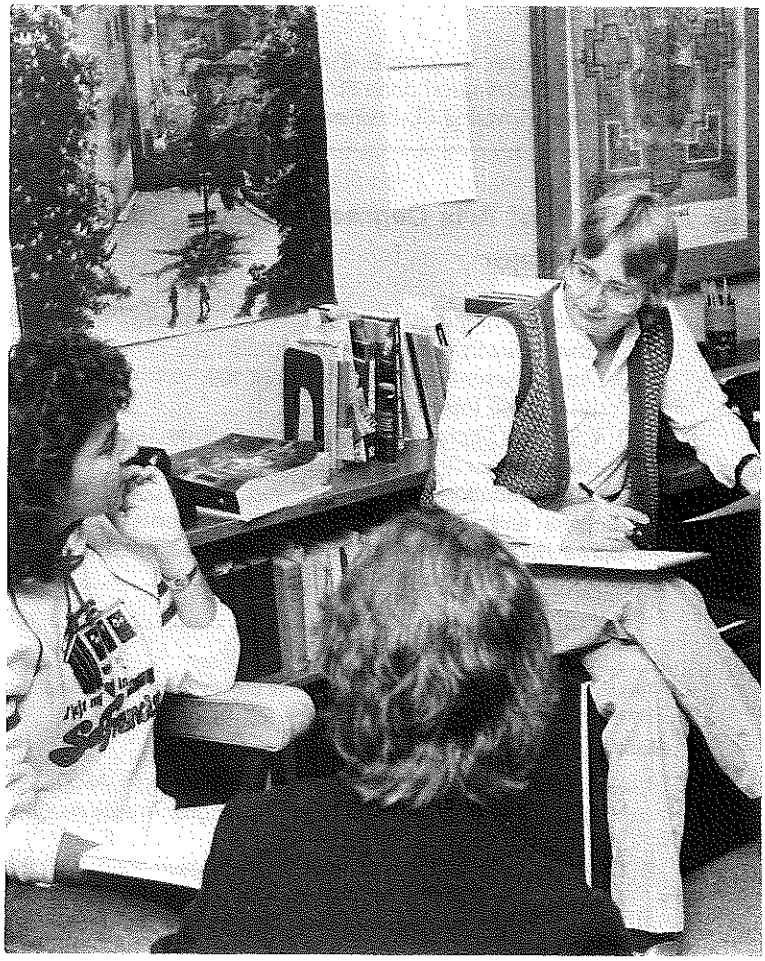
Faculty and Facilities

The English department consists of 28 full-time faculty whose teaching fields cover every area of literary studies and the humanities, including film and folklore. Most of the faculty have published books, textbooks, and articles in their disciplines, five have received outstanding teaching awards at the university, and one has received an outstanding teaching award for the entire CSU system. In addition, the faculty includes a number of part-time instructors, and the department operates an English writing lab staffed by tutors trained to work with students on an individual basis.

Career Opportunities

English has a broad application to a variety of vocations: teaching, law, journalism, editing and publishing, business management, data processing, public office, professional careers in writing, and many others. English majors and minors are being looked upon today with special favor by employers in professional and industrial fields because of their skills in writing and thinking, their ability to communicate clearly to others, and their general knowledge of people and experiences gained from the study of literature.

The English department maintains an Internship Program whereby our majors and minors, while working towards a degree, are placed in vocational positions requiring English skills. Job opportunities through this program include positions with such organizations as the American Cancer Society and Older Americans Organization, businesses such as computer software firms and publishers of national trade newsletters, and such various employers as local congressmen, assemblymen, charitable organizations, and arts centers.



Faculty

Roger D. Chittick, *Chair*

Linnea M. Aycock
Robert S. Billings
Gene Bluestein
Lok Cheng Chua
William H. Cowling
Jacqueline Doyle
Peter P. Everwine
Lillian Faderman
James E. Frey
John R. Hales, Jr.
Charles G. Hanzlicek
Francis A. Hart
Christi Henson
Philip Levine
Barry L. Logan
John J. McDermott
H. Ray McKnight
Robert M. O'Neil
Martin T. Paul
Jean E. Pickering
Stanley H. Poss
Joachim S. Ries
Judith A. Rosenthal
Joseph Satin
Kenneth A. Seib
Andrew M. Simmons
Walter H. Stuart
Michael G. Tate
Eugene E. Zumwalt

Graduate Adviser: Eugene E. Zumwalt
Credential Coordinator: John R. Hales, Jr.
Chair, Major Advising Committee: William H. Cowling

Bachelor of Arts Degree Requirements

English Major

	Units
1. Major requirements:	32
a) Lower-division requirement: Engl 20	(4)
b) Upper-division requirements: Engl 189, 193T, or 193T (if no topic repeated)	(8)
c) Approved upper-division English electives (see adviser)	(20)
2. General Education requirement:	54
3. Electives and remaining degree requirements (see *Degree Requirements,* pp. 98–101); may be used toward a dual major or minor:	38–42*
Total	124

* This figure takes into consideration the fact that English 20 may also be applied towards G.E.—BREADTH, Division 4.

Notes:

1. No course used to satisfy General Education CAPSTONE requirements may be used to satisfy English major requirements.
2. *CR/NC* grading is not permitted in the English major with the exception of 4 units total of Engl 175T and 186.
3. General Education and elective units may be used toward a dual major or minor (see *Dual Major,* p. 98 or departmental minor). Consult the appropriate department chair, program coordinator, or faculty adviser for further information.
4. Not more than 6 units by extension and correspondence courses may be applied toward the English major: correspondence courses may be applied only if they are acceptable for the major at the college where the course is offered.
5. English majors are advised to select a course in English history as one of their upper-division electives.
6. English majors considering eventual graduate degrees should consult the graduate adviser.

English Minor

Students in many vocational fields often realize that special skill in writing may be of great use in their future work—and such skill can best be obtained through an English minor. The English minor requires 20 units above English 1, at least 12 of which must be upper division, and 4 of these units must be from 189 or 193T/194T. English 160W does not apply to the English minor. Courses taken as *CR/NC* may not apply to the minor with the exception of 4 units total of 175T and 186.

	Units
English 189, 193T, or 194T	4
Other Upper Division English	8
Other English courses (not including English 1)	8
	20

Credential Program

Single Subject Waiver Program: English

(Literature/Composition option)

Prerequisites:

Engl 20 or equivalent (4)
Engl 41, 43, 44 or equivalent (4)

Core Courses (Choose the required number of units from each group):	31
Engl 182 (taken concurrently with T Ed 155A)	(1)
Engl 182 (taken concurrently with T Ed 155B)	(1)
Engl 189	(4)
Engl 193T or 194T	(4)
Ling 135	(3)
Ling 146	(3)
Engl 161 or 163 or 164	(4)
Engl 154 or 155	(4)
Engl 112, 113, 114, 115W, 116, 146, 147, 150, 151, 152, 153, 154, 155, 156, 167, 168T, 169T, 183T, 193T, 194T	(4)
Ling 132 or 138 or Spch 140 Drama 131	(3)
Breadth Courses (Choose the required number of units from each group):	15–17
Engl 76, 112, 113, 114, 115W, 116, 146, 147, 150, 151, 152, 153, 154, 155, 156, 161, 163, 164, 167, 168T, 169T, 183T, 193T, 194T, 250T, 261, 263, 265	(6–8)
Drama 22, 33, 34, 134A-B, 139, 185, 186; Hist 150, 151; Jour 124W; Ling 148; Phil 120; Spch 105, 108, 114, 140, 142, 162	(9)
Total	46–48

(*Note:* 28 upper-division units in English including Engl 189 and 193T or 194T are required for the B.A.)

Credential candidates should take one unit of Engl 182 concurrently with student teaching (T Ed 155B and one unit before beginning student teaching or concurrently with T Ed 155A.) T Ed 161 must be completed before beginning student teaching (T Ed 155B). It is normally offered only in the fall semester. For program planning consult the departmental coordinator for teacher education each semester.

Students fulfilling the competency requirement by taking the National Teachers Examination should obtain a description of additional requirements from the credential coordinator.

For credential programs with emphasis in speech, drama, and

English as a second language, see the listings under Speech Communication, Theatre Arts, and Linguistics.

Graduate Program

The Master of Arts program in English language and literature serves several categories of students: those teaching high school and community college; those anticipating doctoral studies; those studying creative or expository writing; and those simply interested in extending and intensifying the knowledge acquired in their undergraduate studies.

Admission to the Master of Arts program in English language and literature assumes preparation equivalent to an undergraduate major in English or a related field in the liberal arts. Courses which do not count toward the English major may not be used for the M.A. degree. To reach classified standing, both English and non-English majors must achieve a G.P.A. of 3.0 or better in their major and pass the verbal section of the G.R.E. with a score of 500 or better. (Foreign students must also score 600 or better on the TOEFL.) In addition, all candidates must submit a writing sample to the graduate committee, whose approval is necessary for admission to the program.

Consult the graduate adviser every semester for program planning.

(See also *Admission to Graduate Standing, Advancement to Candidacy, Program Requirements, Foreign Language Requirements,* and *Criteria for Thesis and Project,* pp. 464–468.)

Master of Arts Degree Requirements

Literature Option

Under the direction of a graduate adviser, each student prepares and submits a coherent program individually designed within the following framework:

Thesis Plan

	Units
English 250T	8
Other courses in English (see specific requirements)	4–8
English 299	2–6
	18
Approved electives in English or other fields	12
	30

Thesis Alternative Plan

English 250T	12
Other courses in English (see specific requirements)	6
English 298	2
	20
Approved electives in English or other fields	10
	30

Specific Requirements: The following areas must be covered by graduate or undergraduate courses (may be satisfied in undergraduate preparation): English literature (2 courses), American literature, world literature, Shakespeare, and Chaucer (1 course each).

In addition to the general Graduate Division requirements, advancement to candidacy requires a reading knowledge of one foreign language, to be demonstrated by examination; the completion of at least one graduate seminar (250T) with a grade of *B* or above; a score of 590 or better on the advanced section of the G.R.E.; and a review by the graduate committee of the work already completed.

An interdisciplinary major may be constructed in consultation with the graduate adviser in which up to 12 units may be taken in departments other than English when such a program demonstrates a coherent program of study.

Creative Writing Option

Under the direction of a graduate adviser, each student prepares and submits a coherent program individually designed with the following framework:

	Units
English 250T	8
English 261 and/or English 263	8
English 299	2
	18
Approved electives in English or other fields	12
	30

In addition to the general Graduate Division requirements, advancement to candidacy requires a reading knowledge of one foreign language, which may be demonstrated either by passing an examination or by submitting to the creative writing staff acceptable translations of foreign poetry and/or prose, and a review by the graduate committee of the work already completed.

Composition Option

Under the direction of a graduate adviser, each student prepares and submits a coherent program individually designed within the following framework:

	Units
English 164 or 265	4
English 265	8
English 250T	8
Linguistics	3–4
English 299	3
	26–27
Approved electives in English or other fields	3–4
	30

In addition to the general Graduate Division requirements, advancement to candidacy requires a reading knowledge of one foreign language, to be demonstrated by passing an examination, and a review by the graduate committee of the work already completed.

COURSES

English (Engl)

A. Fundamental Writing Skills (1–3; max total 3). All students enrolling in English A must have taken the CSU English Placement Test.

Instruction and supervised practice in fundamental problems of writing. Intended primarily for students who need more elementary composition work before attempting English 1 or more advanced courses. Must be taken for *CR/NC* grade only and is not applicable to the requirements for the baccalaureate degree. Concurrent enrollment in English ARL may be required.

ARL. Fundamental Writing Skills Lab (1–2; max total 2). Laboratory for students who need individualized writing assign-

ments and exercises. May be taken concurrently with English A. Must be taken for *CR/NC* grade only and is not applicable to the requirements for a baccalaureate degree.

1. Composition (3–4). Prerequisite: Any one of the following test scores or successful performance in English A; CSU English Placement Test, T151 or E8 or above; S.A.T.-Verbal, 510 or above; CSU English Equivalency Examination, satisfactory score; English Composition Examination of College Board Advanced Placement Program, 3, 4, or 5; A.C.T. English Usage Test, 23 or above; College Board Achievement Test in English Composition with essay, 600 or above.

Theory and practice of composition for students with college-level competence in written English. Themes, chiefly expository or analytical, including one paper based on an investigation of a selected topic. Concurrent enrollment in English 1L may be required.

(See *Credit by Examination* section for information on challenge to English 1, p. 96.)

1L. Writing Skills Lab (1). Laboratory for students who need individualized writing assignments. Must be taken for *CR/NC* grade only. May be taken concurrently with Engl 1.

2. Writing Workshop (1–4; max total 4). Practical assignments and individual coaching on specific writing problems. For selected students this workshop may be required to be taken concurrently with, or as prerequisite to, other courses.

3CR. Sentence Structure and Punctuation (2). An elementary study of the rules for constructing and punctuating written English sentences. Emphasis on sentence combining. *CR/NC* grading; not applicable to baccalaureate degree requirements.

20. Introduction to Literature (4). Prerequisite: Engl 1. Reading and close written analyses of short stories, novels, drama and poetry.

30. Masterpieces (4). Discussion and written analyses of widely influential poetic, dramatic, and fictional works by British, American, and world authors.

41. Poetry Writing (4). Prerequisite: Engl 20. Beginning workshop in the writing of poetry; appropriate reading and analyses.

43. Fiction Writing (4). Prerequisite: Engl 20. Beginning workshop in the writing of fiction; appropriate reading and analyses.

44. Prose Writing (4). Prerequisite: Engl 1. Beginning workshop in all forms of non-fiction prose writing; appropriate readings and analysis. Open to students in all fields who want to develop their writing.

50T. Studies in Literature (1–4; max total 8 if no topic repeated) (Same as W S 50T). Sections designated as emphasizing certain writers, types, or themes, (for example, Shakespeare, The Poem, Literature of Protest, Women in Novels). Appropriate readings and analyses.

76. Programs in Film Genres (2–3; max total 3). Not open to students with credit in English 176T. Film as literary form; viewing and analyses of selected examples from comedy, musical, horror, science fiction, and other genres.

100W. Writing Skills (1). Credit obtained only by passing Upper Division Writing Skills Examination and upon request. *CR/NC* grading only.

101. Masterpieces of World Literature (4). Discussion and written analyses of widely influential poetic, dramatic, and fictional works studied in translation. Not applicable to the English major.

102. Masterpieces of English Literature (4). Discussion and written analyses of widely influential poetic, dramatic, and fictional works by British authors. Not applicable to the English major.

103. Masterpieces of American Literature (4). Discussion and written analyses of widely influential poetic, dramatic, and fictional works by American authors. Not applicable to the English major.

112. World Literature: Ancient (4). Greek and Latin literature in translation. Discussion of major works of Greek and Latin literature such as Homer, Sophocles, Euripides, Aeschylus, Aristophanes, Alcaeus, Theocritus, Virgil, Ovid, Catullus, Lucretius, Juvenal. Course includes written analyses of various themes expressed in the individual work.

113. World Literature: Medieval and Renaissance (4). Discussion and written analyses of authors and works (in translation). Selections may include Dante, Rabelais, Cervantes, Murasaki, Boccaccio, the Petrarchan tradition, Tu Fu, Basho, troubadour poetry, epic, romance, fabliau. No morality plays, Lope de Vega, Erasmus, Montaigne, Castiglione. (Former Engl 113W)

114. World Literature: Modern (4). Major movements in world literature from the Renaissance to the present. Discussion and written analyses of works by such authors as Voltaire, Goethe, Dostoyevsky, Ibsen, Mann, Kafka, Dinesen, Mishima, Borges, Garcia Marquez, and Achebe. (Former Engl 114W)

115W. Literature of the New Testament (3) (See Phil 133W). Prerequisite: Engl 1. Meets Upper Division Writing Skills Requirement for graduation.

116. Literature of the Old Testament (4) (See Phil 134). (Former Engl 116W)

146. Beowulf to Malory (4). The literature of Medieval England, including the works of Malory and Chaucer; narrative poetry *(Beowulf, Piers Plowman, Sir Gawain and the Green Knight)*; drama; and lyric poetry. Discussion, lectures and written analyses (papers, tests).

147. Renaissance (4). Discussion and written analyses of works by selected playwrights (Webster, Dekker, Jonson) and poets (Spenser, Donne, Herbert, Marvell, Milton) from the 16th and 17th centuries.

150. The Age of Wit (4). Discussion and written analyses of British literature from 1660 to 1800. Major writers and topics include Dryden, Swift, Pope, Johnson, Restoration comedy, and the rise of the novel. The literature will be read in the context of political and intellectual history and the arts.

151. 19th Century Romantics (4). A study of the Romantic movement in England during the early decades of the 19th century. Authors to be read include Blake, Wordsworth, Coleridge, Byron, Shelley, and Keats. Written analyses on selected topics will be required. (Former Engl 151W)

152. Dickens to Hardy (4). Discussion and written analyses of 19th century English literature including poetry (Tennyson to Hopkins), the novel (Dickens to Hardy), the essay (Carlyle to Pater). Possible topics: Utilitarianism, Evangelicalism, Darwinism, the Pre-Raphaelites, the Decadents, the New Woman.

153. American Literature to Whitman (4). Discussion and close written analyses of major works and their backgrounds in

American literature to the Civil War. Includes Puritanism, Emerson, Thoreau, Hawthorne, Melville, Poe, and Whitman.

154. American Literature 1865 to WWI (4). Discussion and written analyses of major works and their cultural backgrounds within this period of change. Topics include the rise of realism and naturalism. Writers discussed include Whitman, Twain, Howells, James, Crane, Dickinson, and others.

155. 20th Century American Literature (4). Discussion and written analyses of selected poems, plays, and fiction from WWI to the present by such authors as Frost, Eliot, Anderson, Hemingway, O'Neill, Faulkner, Fitzgerald, Steinbeck, Stevens, Williams, and post-WWII writers.

156. 20th Century British Literature (4). Discussion and written analyses of selected poems, plays, and fiction from 1900 to the present by such authors as Forster, Yeats, Woolf, Lawrence, Joyce, Greene, Auden, Thomas, and post-WWII writers.

160W. Writing Workshop (4; max total 8). Prerequisite: Engl 1. Practical assignments in writing, directed according to each student's individual needs. May be elected as preparation for special composition requirements. Does not apply to the English major or minor. Meets the Upper Division Writing Skills Requirement for graduation.

161. Advanced Writing of Poetry (4; max total 8). Prerequisite: Engl 41. Intensive workshop in the writing of poetry; appropriate readings and analyses.

163. Advanced Writing of Fiction (4; max total 8). Prerequisite: Engl 43. Intensive workshop in the writing of fiction; appropriate readings and analyses.

164. Advanced Prose Writing (4; max total 8). Prerequisite: Engl 1. Workshop in all forms of non-fiction prose writing; appropriate readings and analyses. Designed for majors in all fields who want to develop their writing.

166. Technical Writing (4; max total 8). Prerequisite: Engl 1. Workshop in writing of specialized information. Designed for students interested in career-related writing skills.

167. Studies in Folklore and Folk Song (4). Discussion and written analyses of the oral and historical sources of folk tradition, including regional and ethnic styles gathered from primary and secondary materials.

168T. Women and Literature (4) (Same as W S 168T). Prerequisite: Engl 20. Discussion and written analysis of literature by and about women. Special emphasis on 19th and 20th Century authors including the Brontes, George Eliot, Emily Dickinson, Edith Wharton, Virginia Woolf, and contemporary writers.

169T. Forms of Literature (1–4; repeatable with different topics). Sections designated as emphasizing poetry, drama, novel, short story, perhaps limited to a specific period or subclass; for example, 18th Century English Novel, 20th Century British and American Poetry, Modern Short Stories, 20th Century Drama, Tragedy, Folklore, Mythology. Discussion and written analyses are required.

174. Popular Fiction (3). A survey of the major types of commercial fiction (detective/adventure, science fiction, horror, spy, Western, best sellers, etc.) covering the conventions and subtypes of these forms. Discussion; lectures on social background and literary technique; writing.



175T. Lectures in Literature (1–4; max total 8, in 175T and 176T, if no topic repeated). No more than 4 units total of 175T and 176T may apply to the English major. Lectures in a selected topic in literature or related fields by the regular faculty and/or visiting lecturers.

176T. Genre Film: Form and Function (1–4; max total 8 in 175T and 176T, if no topic repeated) (Same as W S 176T). Concurrent enrollment in English 76 not permitted. Discussion and close written analyses of selected topics, including such types as comedies, musicals, horror films, westerns, etc.

181. Research Methods (4). Prerequisite: English major. Introduction to research methods, documentation, biographical research, questions of authorship, problems of establishing accurate texts, historical bibliography, editing of texts, and the academic profession of English. Research assignments, reports, written examination.

182. English Workshop (1–4; max total 8). Seminar in composition and learning. Discussion and practical exercises concerning theory, evaluation, and improvement of language learning and composition.

183T. Seminar in Literature (1–4; max total 8). Prerequisite: appropriate upper-division literature course. Designed for students interested in in-depth study of a literary topic; recommended for liberal studies majors. Seminar in an aspect of literary history, type, period, movement, individual author. Reports and written analyses required.

185. English Internship Seminar (2). Seminar to be taken concurrently with English 186 during the first semester of enrollment in program. Group and individual analyses of writing done in internship assignments. Discussion of the rhetorical problems of writing for public agencies, magazines and journals, and private industry. Permission of instructor required.

186. Internship in English (2–6; max total 6). See also 185. Supervised work experience in public agencies and private industry to provide an opportunity to develop professional writing skills. Permission of instructor required. No more than 2 units may apply to the English major. *CR/NC* grade only.

189. Shakespeare (4) (Same as Drama 194). Reading and written analyses of the major works of Shakespeare.

190. Independent Study (1–3; max see reference). See *Academic Placement—Independent Study,* pages 96–97.

191T. Supervised Independent Reading (1–4; max total 4, if no topic repeated). Reading works from a literary period (for example, Beowulf to Marlowe, American Literature to Whitman, World Literature: Ancient and Medieval) and discussion in individual conferences.

192. Projects in English (1–4; max total 8). Not applicable to English major. Individual projects in problems related to teaching English composition and literature; for example, tutoring minority students, investigating the effectiveness of programs in English composition and literature, devising new approaches to teaching English.

193T. Seminar in Literary Studies (4; repeatable with different topics). No more than 12 units of 193T–194T may be applied to the English major. Sections designated by topic. Individual projects; reading, discussion, and writing of papers on individual writers (for example, Milton, D.H. Lawrence), short periods of literary history (for example, Romantic Poets, Modern Novel), literary themes and traditions (for example, Transcendental Vein in American Literature, Arthurian Tradition) literary criticism (for example, Problems in Modern Criticism, Archetype and Myth), and other special topics.

194T. Seminar in Women and Literature (4; repeatable with different topics) (Same as W S 194T). May be substituted for Engl 193T in the English major; no more than 12 units of Engl 193T–194T applicable to the major. Sections designated by topic. Individual projects; reading, discussion, and writing papers on individual women writers or some aspect of women in literature; for example, Doris Lessing, Myth and Archtypes of Women.

GRADUATE COURSES

(See *Course Numbering System,* p. 133.)

250T. Seminar in Literature (4; repeatable with different topics). Prerequisite: major or minor in English; permission of instructor. Seminar in an aspect of literary history, type, period, movement, or an individual author (for example, Fiction, Seventeenth Century Lyric Poetry, The Irish, Dickens).

261. Seminar: Writing Poetry (4; max total 12). Prerequisite: permission of instructor. Advanced individual projects in the writing of poetry.

263. Seminar: Writing Fiction (4; max total 12). Prerequisite: permission of instructor. Advanced individual projects in the writing of fiction.

265. Seminar: Expository Writing (4; max total 12). Prerequisite: permission of instructor. Advanced individual projects in expository writing.

280T. Seminar in Critical Theory (4; max total 12 if no topic repeated). Prerequisite: major or minor in English; permission of instructor. Seminar in literary criticism (for example, Literary Critics).

290. Independent Study (1–3; max see reference). See *Academic Placement—Independent Study,* pages 96–97.

291T. Supervised Independent Reading (1–4; max total 4 if no topic repeated). Reading works from a literary period (for example, More to Milton, 20th Century American Literature, World Literature, Renaissance-Modern), and discussion in individual conferences.

298. Project (2). Prerequisite: see *Criteria for Thesis and Project,* pages 467–468. Revising, amending, and editing of three original scholarly papers produced while enrolled in graduate seminars, with the goal of creating publishable journal articles. The student's committee must approve of the scope and quality of the papers. Abstract required.

299. Thesis (2–6; max total 6). Prerequisite: see *Criteria for Thesis and Project,* pages 467–468. Preparation, completion, and submission of an acceptable thesis for the master's degree.

IN-SERVICE COURSES

(See *Course Numbering System* p. 133.)

300. English Colloquium (2; max total 6).

Ethnic Studies

School of Social Sciences
Ethnic Studies Program
(Armenian Studies, Black Studies, Native-American Studies)
Robert S. Mikell, Coordinator
San Ramon 5, Room 131
(209) 294-2832

Minor in Ethnic Studies
Minor in Black Studies
Minor in Armenian Studies

The Ethnic Studies Program is an interdisciplinary curriculum that offers a broad course of study of the different ethnic groups in American society, with classes in Black Studies, Native-American Studies, and Armenian Studies. Students will find that some classes make use of various ethnic guest lecturers so that they may benefit from the multi-ethnic perspective imparted by a group of specialists. Whether for academic interest, personal knowledge, or professional training, students should find courses in the Ethnic Studies Program of special cultural enlightenment.

Students may minor in Ethnic Studies, Black Studies, and Armenian Studies. Many Ethnic Studies classes can be applied to the social science major and to general education requirements. Students in the helping professions such as criminology, social work, education, health sciences, nursing, recreation, and communicative disorders, should find ethnic studies courses of benefit to their future careers. For those students who wish to earn a bachelor's degree in one of the Ethnic Studies areas, a "Special Major" may be declared by combining one of these areas with a traditional discipline (i.e., Black Studies and Sociology).

Minor in Black Studies

Black Studies Program represents a relatively new field of study and research based on vigorously innovative educational processes. The courses offered are interdisciplinary in nature, and address themselves to problems that pertain to minorities in the American society. The program is structured to provide better service to the minority oriented student population at CSU, Fresno. This includes the historical contributions and the sociological, psychological and economic problems that confront Blacks in the American society.

This program establishes concepts and tools for the survival of Black people and presents to *all* university students the understanding of the uniqueness of minority heritage, culture and life styles.

The Black Studies Program philosophy and academic curriculum is developed through a special relationship (mutual understanding and cohesiveness) established between the communities, students and its faculty.

The Black Studies Program includes improved career counseling, cluster advising, experimentation and computer technology, curriculum development, increased use of mathematics offerings and science courses, professional education orientation and extended day, evening and Saturday courses.

The Black Studies Program sponsors and supports various student organizations (i.e., Black Students' Business Association, Pan-African Student Union, etc.) and the student campus newspaper, Uhuru Na Umoja. It also works in conjunction with the CSU, Fresno Black Alumni and Friends Association to sponsor various student activities.

The Center for Black Affairs is an ancillary unit housed within the Black Studies Program. The center is designed to serve as a focal point for the coordination of activities to improve the quality of service delivery and increase the opportunities available through the university.

Native-American Studies

Native-American Studies is a sub-discipline of Ethnic Studies, focusing on the indigenous cultures of ancient, historical and contemporary America. Native-American cultures include



American Indians and Arctic-Native people, as well as Native people of Northern Mexico. This program recognizes the artificiality of both the Canadian and the Mexican border, but is primarily concerned with people of the United States. The courses offer a distinctively American perspective that is crucial to an understanding of the historical and social processes that have led to the development of contemporary American society. Issues of colonization, Native rights, sovereignty, cultural integrity, civil rights, and current struggles will be discussed within an interdisciplinary framework. This program is intended to strengthen the position of Native-American individuals and communities in this region, as well as provide help to Native-American students and scholars. A second focus will be to introduce native cultures and issues to all students. Courses will include both the social sciences and the humanities, as well as specialized offerings in such fields as law and education.

Minor in Armenian Studies

California State University, Fresno, offers a wide variety of courses in Armenian Studies, including Armenian language, literature, history, art, film, the life writings of William Saroyan, and architecture, folk traditions, and contemporary issues affecting the Armenian diaspora. It has the only regularly taught program in Armenian art with specialized courses in painting, architecture, and the minor arts. In addition, the university offers a large number of courses in other disciplines related to Armenian Studies. Although CSU, Fresno does not currently offer a Bachelor's degree program in the field, by a careful selection of electives and requirements in various majors, a student can secure a useful background for the understanding of the history, art, film, and culture of one of the world's oldest people. A "Special Major" in Armenian Studies may be obtained with proper approval.

The minor offered in Armenian Studies can prepare a student for teaching in Armenian schools in the United States, for administrative positions in an ever-increasing number of Armenian cultural, social and benevolent organizations, or for graduate work in Armenian Studies.

The Armenian Studies Program also sponsors the Index of Armenian Art, a systematic card catalogue of individual works of Armenian art with which students have the opportunity to work. The Program sponsors and supports the Armenian Students Organization on campus and its newspaper *Armenian Action.* It also works closely with the Armenian Alumni Association of CSU, Fresno. For students who need financial aid, the Program provides a limited number of work-study possibilities, as well as scholarships for students with an interest in Armenian Studies: the Charles K. Pategian Scholarships and the Knights of Vartan Scholarship.

Career Opportunities

The minor in Ethnic Studies, Black Studies or Armenian Studies offers students an excellent opportunity to gain an academic background of the major minority groups in America. In the marketplace, students should find their academic credentials much more salable when one of these minors is combined with their chosen major.

Faculty

Robert S. Mikeli, *Coordinator, Ethnic Studies Program*

Dickran Kouymjian, *Coordinator, Armenian Studies*

James H. Rogers
Lily B. Small
Junious Williams

Ethnic Studies Minor

The minor in Ethnic Studies consists of 21 units, of which 9 must be upper division.

	Units
Eth S 1, 2, or 4	6
Approved electives in one of the areas listed below (Armenian Studies, Black Studies, Chicano-Latino Studies and Native-American)	9
Approved Armenian Studies, Black Studies, Chicano-Latino Studies and Native-American electives from one of the areas not used above	6
	21

A student intending to pursue a minor in Ethnic Studies should see the coordinator for assignment to a faculty adviser who will assist the student in planning his or her program.

Black Studies Minor

	Units
Eth S 1 or 2	3–6
Approved Black Studies career-oriented courses (upper division)	9
Approved Black Studies electives	6–9
	21

Note: For students interested in the general dimensions of the Black experience, the following courses are recommended:

Bl S 27, 36, 38, 130T, 135, 137, 140.

For students interested in the following careers, the following courses are recommended:

Education ..... Bl S 38, 42, 110, 124, 130T, 135
Performing Arts ... Bl S 20, 21, 22, 24, 27, 35, 121, 130T, 144, 189
Business ..... Bl S 38, 130T, 135, 136, 189, 190
Pre-Professional ..... Bl S 56, 130T, 135, 142, 144, 146, 189, 190 (Nursing, Criminology, Pre-law, etc.)
Writing ..... Bl S 15, 25, 127, 190
Social Sciences ..... Bl S 27, 38, 135, 140, 178, 189

These selected courses will also assist Black students to become "qualifiable" for entrance into those professions (professional and career oriented) opened by Affirmative Action Programs.

Armenian Studies Minor

	Units
Arm 1A–1B	8
Arm 2A or 2B or Arm S 120T or Arm S 121 or Arm S 123	3–4
Arm S 10, Hist 108A or 108B	6
Arm S 50T, or Arm S 190	3
	20–21

Asian-American Studies Minor

(See *Asian American Studies,* p. 194.)

COURSES

Ethnic Studies (Eth S)

1. Ethnic Experience (3). Comparative study of ethnic minorities in the United States, combining the perspectives of history, sociology, and psychology.

2. Ethnic Expression (3). Comparative study of the characteristic ways in which ethnic minorities in the United States think and feel about themselves and the world, as reflected in literature, art, and music.

4. American Poverty (3). Multi-ethnic and interdisciplinary perspective on poverty as a worldwide phenomenon, with emphasis on America; geographic analysis of migration to poverty areas such as urban ghettos and other minority areas; policy alternatives for dealing with poverty.

130T. Topics in Ethnic Studies (1–3; max total 6). In-depth research and writing on the past and contemporary situation of America's major ethnic minorities.

Black Studies (Bl S)

15. Basic Composition and Communication (3). Designed to help students express themselves concisely and clearly both in speech and writing; assist students to overcome difficulties in spelling, grammar, punctuation, sentence construction; investigate techniques and methods to develop term papers.

20. Black Drama (3). Discussion and interpretation of contemporary Black American drama. Selections include: Leroi Jones (Baraka); Lorraine Hansberry; Charles Fuller; Ed Bullings; James Baldwin and others.

21. & 121. Black Gospel Choir (1; max total 8). Performance of a variety of inspirational songs reflecting the Black cultural experience. Participation through rehearsals, activities, programs, and field trips.

22. Black Dialect (3). Linguistic course designed to explore the origin, impact, historical background, and problems created by Blacks in using the Black dialect derivative of English and the African language.

24. Black Music (3). The origin and evolution of Black American music from the perspective of social and cultural history. Emphasis on slave songs, gospel, jazz, rhythm and blues, and soul music.

25. Black Literature (3). Major authors, their works, themes and movements in Black literature in American from colonial times to the present.

27. The Black Image (3). Introduction to the social experience of Afro-Americans in American life and to various images of that experience which have developed historically.

35. Art and Music of Africa (3). Comprehensive study of African artistry and music.

36. Contemporary African Societies (3). Analysis of the cultural and political structure of some Black African nations; understanding the impact of colonialism in Africa; realizing the relationship of Black Americans to Africa.

38. Black American Sociology (3). Basic principles of sociology from the perspective of the Black experience.

42. Ethnic Psychology (3). Introduction to psychology as an empirical science; biological and social basis of behavior; evaluation of concepts or general psychology and personality theories; emphasis on perception, learning, motivation and intelligence; applicability to behavioral patterns of Black Americans.

56. The Black Family (3). This course deals with the origin, development and adaptations the Black family has created to sustain itself as a viable institution. Emphasis is on problems encountered and created by the American society and how the Black family handles these adversities.

110. The Educational System and the Black Community (3). The effects of the educational system on Blacks. Analysis of the economical, sociological, and political foundations of education as they are related to Black Americans.

124. The Black Experience in Children's Literature (3). A survey of selected material: Children's books, tapes, cassettes; dealing with the Black experience in children's literature.

127. Black Creative Writers Workshop (3). An intensive, reading and writing workshop in the Black American experience. Selections and discussions from major literary artists, including: Hughes, Baldwin, Giovanni, Brooks, Ellison, Angelou, Gaines, and others. Students will be required to write expository essays analyzing literature, poems, and short stories.

129. Black Literary Classics (3). An intensive analysis of selected classical narratives in Black American literature and culture.

130T. Topics in Black Studies (1–3; max total 9). Major social problems confronting Blacks in America today; emphasis on welfare, education, legal systems, religious institutions, and economic institutions; effect on the Black segment of the population.

135. American Black Ghettos (3). Analysis of the various lifestyles and cultural patterns of the large Black ghettos of America.

136. Black Business Economic Development in the United States (3). Introduction to Black business enterprises with special emphasis on the analysis and developments of Black business from early slave trade to present day. Relationship of economic forces to historical, political, and social change pertaining to Black Americans.

137. Black Women (3) (Same as W S 137). An overview of the accomplishments of Black women in the United States; their contributions to American culture; African influence; Black women as defined by a dominant society vs. legitimate definition designed to encourage a positive self-concept.

140. The Black Church (3). History of the formation and development of Afro-American religious institutions (Christianity, Islam, Judaism) in the Black community; their effect on the Afro-American personality.

141. Black Health Care (3). Investigation and analysis of major health problems and delivery services in the Black Community.

142. Black Child Rearing (3). Specific and unique issues facing Black parents as their children journey through the development process.

144. Race Relations (3). An examination of race in American society as it affects major social issues such as stratification, income distribution, and political power, with concern for theoretical orientations toward the study of black-white race relations.

146. Law and the Minority Community (3). Critical analysis of the foundation and changing structure of law and legal institutions as perceived by minority communities, with emphasis on consumer protection, equal employment and education, criminal justice and political power.

178. History of Black Americans (3) (Same as Hist 178). Evolution of Black society from 1619 to the present; emphasis on the social, political and economic aspects as they relate to

cultural values, theories in the development and environment that contribute to the Afro-American way of life.

180. Famous Black Americans (3). The course focuses on famous Black Americans and their important contributions to the many aspects of American history and society.

189. Field Work in Community Relations (3; max total 6). Supervised field observation, participation and documentation in the operation of minority communities.

190. Independent Study (1–3; max see reference). See *Academic Placement—Independent Study,* pages 96–97.

Native-American Studies (N A S)

5. Native American History (3). An interpretive survey of Native American history from the native point of view including accounts of Native American origin and the arrival of immigrants from Asia, Africa and Europe. (Former N A S 9T section)

9T. Topics in Native-American Studies (1–3; max total 9 if no area repeated). Selected topics at an introductory level in Native-American Studies.

50. Contemporary Life of the Native American (3). Current problems of American Indians and Arctic Natives resulting from culture conflict, acculturation, minority status, and governmental policy.

60T. Topics in Indian Education (3; max total 9). Foundations and history of Indian education, methods of teaching Indian children, curriculum and practices for Indian education, guidance for the Indian student, problems of teachers of Indian children, education of Indian adults.

100. American Indian Religion (3). Native American religious systems, including basic concepts of religion and the sacred, ceremonial life, medicine, functions of religious institutions and practices, and contrast/conflict with non-Native religious systems.

101. American Indian Law (3). Concepts of laws on Indian reservations, termination, litigation and complaints, strengthening tribal governments. Law related to Indian land and resources.

103. Indians of California (3). Survey course on the ancient cultures of California, historical development of California Indian cultures according to regional resources, conflict between the California Indian people and various colonial forces, arts and culture of California Indian people, and contemporary issues of California Indians.

190. Independent Study (1–3; max see reference). See *Academic Placement—Independent Study,* pages 96–97.

Armenian Studies (Arm S)

The following list includes the Armenian courses currently offered and related subjects in other fields. For further information consult the Coordinator of Armenian Studies, Professor Dickran Kouymjian.

10. Introduction to Armenian Studies (3). The history, geography, literature, language and art of Armenia from ancient times to the present with emphasis on resources, bibliography and report writing.

50T. Studies in Armenian Literature (3). Various themes and aspects of Armenian literature from ancient times to the present: David of Sassoun, the Armenian Folk Epic; William Saroyan; Armenian Historical Literature; Modern Armenian Literature; Armenian World of Richard Hagopian; Armenian- American Authors.

120T. Topics in Armenian Studies (1–3; max total 6). Designed to offer specialized topics in the realm of Armenian history, art, and culture, not normally covered in other Armenian Studies courses. Topics include: Armenian Church, Armenian Minor Arts, Armenian Film and Film-makers, Source of Armenian History, the Armenian Diaspora.

121. Armenian Painting (3). History and development of Armenian painting from earliest times to the present with special concentration on the art of manuscript illumination; rudiments of early Christian art and iconography; Armenian art in proper context of world art. Armenian painters of 19th and 20th century will also be considered.

123. Armenian Architecture (3). History and development of the church building in Armenian architecture, the first national architecture in the history of Christianity. There will be a survey of monuments from the 4th to the 17th century.

190. Independent Study (1–3). See *Academic Placement—Independent Study,* pages 96–97.

Art (Art H)

109T Topic: Islamic Art and Its Relation to Armenian Art (3)
109T Topic: Late Antique and Byzantine Art and Their Relation to Armenian Art (3)
109T Topic: Survey of Middle Eastern Art, I and II (3–3)
190 Independent Study (1–3; max see reference)
290 Independent Study (1–3; max see reference)

English (Engl)

50T William Saroyan (4)
169TArmenian Literature (1–4)

Ethnic Studies (Eth S)

130T Armenian Oral History (3)

Foreign Language (Arm)

1A–B Elementary Armenian (4–4)
2A–B Intermediate Armenian (4–4)
111 Composition and Conversation (3)
112 Advanced Composition and Conversation (3)
190 Independent Study (1–3; max see reference)

History (Hist)

106 The Near East and Islamic Civilization to 1500 (3)
108A Armenian History to the Mongol Invasion (3)
108B Armenian History from the Mongol Invasion to the Present (3)
109T Topics: Armenian Culture (1–3; max total 6 if no topic repeated)
124T Topic: Armenia and the Ottoman Empire (1)
124T Topic: The Armenian Genocide (1–3)
190 Independent Study (1–3; max see reference)
290 Independent Study (1–3)

Foreign Languages

School of Arts and Humanities
Department of Foreign Languages
Keith Sauer, Chair
San Ramon 4, Room 107
(209) 294-2386

M.A. in Spanish
B.A. in French
B.A. in German
B.A. in Russian
B.A. in Spanish
Minor in French
Minor in German
Minor in Latin
Minor in Russian
Minor in Spanish
Single Subject Teaching Credential in: French, German, and Spanish

Because of increasing mobility in our modern world, it takes no time at all to travel to places where people speak a language other than English. Even in California scarcely a day goes by that you do not hear people conversing in a foreign language. If you visit or go to work in another country you will quickly learn the fallacy of the phrase, "Everyone speaks English there; don't worry!" You can never fully appreciate the differences between your own way of life and the life of others unless you get out and communicate with them in their own language. When you know a foreign language you can learn even more about other cultures by reading newspapers, magazines, and books.

The goal of the Department of Foreign Languages is to prepare you for communication with other peoples, so that you may move about with greater ease in an ever-changing world. We offer the study of the humanities through foreign languages; we provide training for teaching in secondary schools and junior colleges; we offer courses specifically to prepare individuals for bilingual/cross-cultural teaching in public schools; we provide basic foreign language training for professions such as health and agriculture; we offer courses to train translators; and we prepare students who wish to pursue graduate studies.

The department offers a major and a minor in the following modern foreign languages: French, German, Russian and Spanish. Secondary Teaching Credentials are available in French, German and Spanish. The Master of Arts degree may be earned in Spanish. We also offer basic courses in Italian and Portuguese.

For those interested in the study of the Classics, we have a minor in Latin, which may be complemented by courses in Classical Greek.

The Department of Foreign Languages has a foreign language laboratory to provide students with additional listening and oral practice.

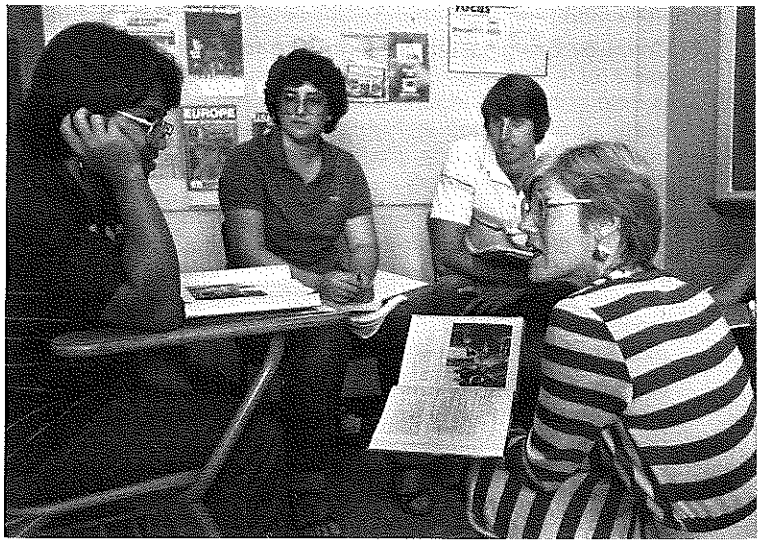
International Programs

Juniors and seniors have the opportunity for the invaluable experience of studying in a foreign country through the California State University International Programs. This one-year program is especially recommended for foreign language majors and minors. See *International Programs (Overseas)*, page 455, for more information.

Career Opportunities

Since a foreign language degree increases your ability to communicate with people, it provides a wide variety of career opportunities. In today's world of international markets and international professional exchange, the knowledge of another language and culture can be a great asset for success in any field. Many possibilities exist for employment with the U.S. Government and with international organizations, airlines, shipping companies, agricultural enterprises, and multinational corporations, even though there may be strong competition for some types of positions both at home and abroad.

In California, fluency in Spanish can be a very useful adjunct to your education in the fields of social work, health, elementary or secondary school teaching, teaching English as a second language, or other public service work where ethnic understanding is important.



When your primary major is in another career area, a second major or a minor in a foreign language is a very good way to acquire and document language skills important for a job or profession.

A great number of foreign language majors aim for a teaching career. Teaching at the college level requires at least a master's degree, while teaching in the public schools requires a teaching credential. There is currently a strong demand for high school language teachers due to the establishment of a foreign language admissions requirement in the University of California and California State University systems. There are many opportunities for teaching in elementary schools having bilingual/cross-cultural programs in Spanish.

Do not hesitate to visit the office of the Department of Foreign Languages to seek advice that can help you plan the course of study that will best meet your career goals. Faculty advisers can provide you with up-to-date information on career perspectives in foreign languages.

Faculty

Keith Sauer, *Chair*

John M. Barta
Wayne S. Bowen
Helen L. Dmitriew
Jose A. Elgorriaga
G. Ronald Freeman
Maurice C. Gendron
June M. Gill
Victor D. Hanson
Cordelia Jasutis
Paul F. Kinzel
Leta J. Lewis
M. Margarita Lopez-Urrutia
Alexander Pronin
David A. Ross
Ignacio B. Santesteban
Adriana N. Slaniceanu
Edith H. Stock
Cosme M. Zaragoza

Credit Allowance in Foreign Language

Students who have taken two or more years of a foreign language in high school may not receive credit for a 1A course in that language. Students who have had three years of a foreign language in high school may not receive credit for a 1B course in that language. Exceptions may be authorized by the department chair only in unusual circumstances.

Credit by Examination: Students who have taken two or more years of a language in high school may not challenge a 1A course in that language. Students who have taken three or more years of a language in high school may not challenge a 1B course in that language. Students who have taken four years of a language in high school may not challenge 2A in that language.

Students from non-English speaking countries who have received their education in the language of that country may not enroll in or receive Credit by Examination for lower-division courses in that language. Such students are not exempted from meeting the General Education requirements of Divisions 4 through 7.

Credit may not be awarded for a lower-division foreign language course if the student has received credit for an upper-division course in that language.

General Education Foreign Language Credit

The following courses in Divisions 4 and 7 are applicable to the General Education Requirement: Division 4, French 109, Greek 148, Latin 148, Spanish 140, 142. Division 7: Armenian 1A, 1B, 2A, 2B; Chinese 1A, 1B, 2A, 2B; French 1A, 1B, Fren 2, 3; German 1A, 1B, 2A, 2B; Greek 1A, 1B; Italian 1A, 1B; Latin 1A, 1B; Portuguese 1A, 1B; Russian 1A, 1B, 2A, 2B; Spanish 1A, 1B, 2A, 2B, 4A, 4B.

Bachelor of Arts Degree Requirements

Major Requirements

French Major *Units*

1. Major requirements:
   (see Notes 1, 2 and 3 below) 30–44
   a) Lower division: Fren 1A–B; select two: Fren 2, 3, 4, 5, (see Note 3) ..... (14)
   b) Upper division:
      1. Fren 101, 102, 109 ..... (9)
      2. Select three: Fren 110, 111, 112, 113 ..... (9)
      3. Select four: Fren 120T, 132, 147, 149, 150, 160T (see Notes 4 and 5) ..... (12)
2. General Education Requirements:
   (see Notes 2 and 5) 54
3. Electives, including other lower- and upper-division French courses, and remaining degree requirements (see *Degree Requirements,* pp. 98–101; may be used toward a dual major or a minor 26–43*

   Total 124

* This figure takes into consideration the fact that a maximum of two General Education-Breadth courses from one department may be applied to satisfy French major requirements (see *General Education,* pp. 104–111). These courses may be selected from French 1A–B, 2, 3 and 109. Consult a French major faculty adviser for details.

Notes:

1. No course used to satisfy General Education CAPSTONE requirements may be used to satisfy French major requirements.
2. *CR/NC* grading is not permitted for courses in the French major.
3. A maximum of two courses from one department may be used simultaneously to satisfy both the General Education BREADTH requirement and the major requirements. If the French major is the secondary major in a dual major (see *Dual Major,* p. 98), this limitation does not apply. Consult a faculty adviser for additional details.
4. French majors who have studied French in high school or who by culture or experience can speak French at a certain level of proficiency must consult with a French adviser to determine which required lower-division courses, if any, may be waived. (Also see *Credit Allowance in Foreign Language*). French majors who are able to enroll immediately in Fren 1B, 2, 3, 4, 5, or in an upper-division French course are not required to make up the lower-division units waived.
5. Only 3 units of courses taught in English may be applied to the French major.

German Major *Units*

1. Major requirements:
   (see Notes 1, 2 and 3) 27–41
   a) Lower division: Germ 1A–B, 2A–B (see Note 3) ..... (14)
   b) Upper division:
      1. Germ 101 ..... (6)
      2. Germ electives (see Note 4) ..... (21)
2. General Education Requirements:
   (see Note 2) 54
3. Electives, including other lower- and upper-division German courses, and remaining degree requirements (see *Degree Requirements,* pp. 98–101; may be used toward a dual major or a minor 29–43*

   Total 124

* This figure takes into consideration the fact that a maximum of two General Education-Breadth courses from one department may be applied to satisfy German major requirements (see *General Education,* pp. 104–111). These courses may be selected from German 1A–B and 2A–B. Consult a German major faculty adviser for details.

Notes:

1. *CR/NC* grading is not permitted for courses in the German major.
2. A maximum of two courses from one department may be used simultaneously to satisfy both the General Education BREADTH requirement and the major requirements. If the German major is the secondary major in a dual major (see *Dual Major,* p. 98), this limitation does not apply. Consult a faculty adviser for additional details.
3. German majors who have studied German in high school or who by culture or experience can speak German at a certain

level of proficiency must consult with a German adviser to determine which required lower-division courses, if any, may be waived. (Also see *Credit Allowance in Foreign Language,* p. 316). German majors who are able to enroll immediately in German 1B, 2A–B, or in an upper-division German course are not required to make up the lower-division units waived.

4. Only 3 units of literature courses in English translation may be applied to the German major.

Russian Major *Units*

1. **Major requirements:**
   (see Notes 1, 2 and 3) 24–37
   a) Lower division: Russ 1A–B, 2A–B
   (see Note 3) ..... (16)
   b) Upper division:
   1. Russ 101 (9 units), 118A–B ..... (15)
   2. Select two: Russ 110, 148A–B ..... (6)
2. **General Education Requirements:**
   (see Note 2) 54
3. **Electives,** including other lower- and upper-division Russian courses, and remaining degree requirements (see *Degree Requirements,* pp. 98–101; may be used toward a dual major or a minor 33–46*

Total 124

* This figure takes into consideration the fact that a maximum of two General Education-Breadth courses from one department may be applied to satisfy Russian major requirements (see *General Education,* pp. 104–111). These courses may be selected from Russian 1A–B and 2A–B. Consult a Russian major faculty adviser for details.

Notes:

1. *CR/NC* grading is not permitted for courses in the Russian major.
2. A maximum of two courses from one department may be used simultaneously to satisfy both the General Education BREADTH requirement and the major requirements. If the Russian major is the secondary major in a dual major (see *Dual Major,* p. 98), this limitation does not apply. Consult a faculty adviser for additional details.
3. Russian majors who have studied Russian in high school or who by culture or experience can speak Russian at a certain level of proficiency must consult with a Russian adviser to determine which required lower-division courses, if any, may be waived. (Also see *Credit Allowance in Foreign Language,* p. 316). Russian majors who are able to enroll immediately in a Russ 1B or a 2A course are not required to make up units waived. Russian majors who are able to enroll immediately in Russ 2B or in an upper-division course must see a Russian adviser to determine the need to take an additional upper-division elective in the major.

Spanish Major *Units*

1. **Major requirements:**
   (see Notes 1, 2 and 3) 30–44
   a) Lower division: Span 1A–B, 2A–B or 4A–B
   (see Note 3) ..... (14)
   b) Upper division:
   1. Span 118 or 120, 122, 140, 170 ..... (12)
   2. Electives: (exclude Span 110T) ..... (18)
2. **General Education Requirements:**
   (see Note 2) 54
3. **Electives,** including Spanish 5 and upper-division Spanish courses, and remaining degree requirements (see *Degree Requirements,* pp. 98–101); may be used toward a dual major or a minor 26–46*

Total 124

* This figure takes into consideration the fact that a maximum of two General Education-Breadth courses from one department may be applied to satisfy Spanish major requirements (see *General Education,* pp. 104–111). These courses may be selected from Spanish 1A–B, 2A–B, 4A–B, 140 and 142. Consult a Spanish major faculty adviser for details.

Notes:

1. *CR/NC* grading is not permitted for courses in the Spanish major.
2. A maximum of two courses from one department may be used simultaneously to satisfy both the General Education BREADTH requirement and the major requirements. If the Spanish major is the secondary major in a dual major (see *Dual Major,* p. 98), this limitation does not apply. Consult a faculty adviser for additional details.
3. Spanish majors who have studied Spanish in high school or who by culture or experience can speak Spanish at a certain level of proficiency must consult with a Spanish adviser to determine which required lower-division courses, if any, may be waived. (Also see *Credit Allowance in Foreign Language,* p. 316). Spanish majors who are able to enroll immediately in a Span 1B, 2A–B, 4A–B or an upper-division Spanish course are not required to make up the lower-division units waived.

Minors

Depending on the specific minor, the student is responsible for 21–22 units. Consult a departmental adviser for planning your program.

Armenian

A minor with strong language concentration is offered under Armenian Studies.

French *Units*

Lower-Division Courses	6–9
Upper-Division Courses	12–15
	21

German

Germ 2A–B	0–6
Germ 50	3
Germ 101	3
German electives, upper division	9–15
	21

Latin

Latin 1A–B	6
Latin 131T	6–9
Approved electives	6–9
	21

Russian

Russ 1A–B, 2A–B	16
Russ 101	6
	22

Spanish

Elect from Span 2A–B or 4A–B, 5, 110T	9
Elect from Span 113, 118 or 120, 122, 123	6
Spanish electives, upper division	6
	21

Students interested in careers in translation are advised to take the following courses: Spanish 115, 116 and 117. Those interested in interpreting should contact the department.

Credential Program

For Bilingual/Cross-Cultural Credentials, see *Education—Teacher Education Department,* page 274,and *Bilingual/Cross-Cultural Specialist Credential,* page 276.

The Single Subject Waiver Program in French consists of Fren 101, 102, 109, 120T, 132, 150, 160T; and 9 units selected from Fren 110, 111, 112, 113.

The Single Subject Waiver Program in German consists of Germ 101 (6 units), 103T (3–6 units), 137, 150; and 12–15 units selected from Germ 112, 114, 116, 118A–B, 135, 160T. Total required: 30 units.

The Single Subject Waiver Program in Spanish consists of Span 113, 118, or 120, 122, 123, 125, 137, 140, 170; and 6 units selected from Span 115, 116, 139, 142, 143, 145, 147, 150T.

Graduate Program

The Master of Arts degree is granted in Spanish. Students interested in graduate study in French and German see the options under the Master of Arts degree in linguistics. The Master of Arts degree program in Spanish language and literature is designed to intensify and extend the knowledge of students desiring further study beyond the baccalaureate degree, students desiring their first graduate degree in anticipation of advanced graduate study, and teachers in secondary schools and colleges. For specific requirements consult the departmental graduate committee chair; for general requirements, see *Division of Graduate Studies and Research,* pages 462–471.

Master of Arts Degree (in Spanish) Requirements

The Master of Arts degree program in Spanish assumes preparation equivalent to a CSU, Fresno undergraduate major in Spanish.

(See also *Admission to Graduate Standing, Advancement to Candidacy, Program Requirements,* and *Criteria for Thesis and Project,* pp. 464–468.)

Under the direction of a graduate adviser, each student prepares and submits a coherent program individually designed within the following framework:

	Units
Span 201, 202	6
Span 217, 220, 230, 240	6–24
Span 298 or 299 (see Program Options below)	0–6
Approved upper-division Spanish electives (must include Span 142 and 143 if not previously taken)	0–12
Approved electives in related fields	0–3
Total	**30**

Program Options: Plan *A* (Thesis Program), Span 299 (6 units). Plan *B* (Project Program), Span 298 (6 units). Plan *C,* successful completion of a comprehensive examination.

Students who intend to go on to a Ph.D. program at another institution are strongly advised to study at least one other foreign language.

COURSES

Armenian (Arm)

1A–B. Elementary Armenian (4–4). Not open to students with previous training in Armenian. Beginning course of graded lessons acquainting the student with basic structure and pronunciation of Armenian through practice, reading, and writing.

2A–B. Intermediate Armenian (4–4). Prerequisite: Arm 1A–B. Grammar review; selected readings; compositions and conversations on assigned topics; pronunciation drill.

111. Composition and Conversation (3). Prerequisite: Arm 2B. Idioms, written translations in Armenian, compositions on assigned topics, oral exercises. Emphasis on grammar and syntax.

112. Advanced Composition and Conversation (3). Prerequisite: Arm 111. Style in composition; written and oral reports on assigned topics.

190. Independent Study (1–3; max see reference). See *Academic Placement—Independent Study,* pages 96–97.

Chinese (Chin)

See *linguistics department,* page 360.

Foreign Language (FL)

131. Trends in Foreign Language Teaching (3). Current trends and issues in foreign language teaching. Evaluation of recent teaching materials. May include on-campus practice in teaching beginning languages.

135. Pronunciation and Phonetics (3). Intensive practice in the pronunciation, enunciation, and intonation of French, German, Italian, Russian, and Spanish to meet the needs of students in other areas.

190. Independent Study (1–3; max see reference). See *Academic Placement—Independent Study,* pages 96–97.

French (Fren)

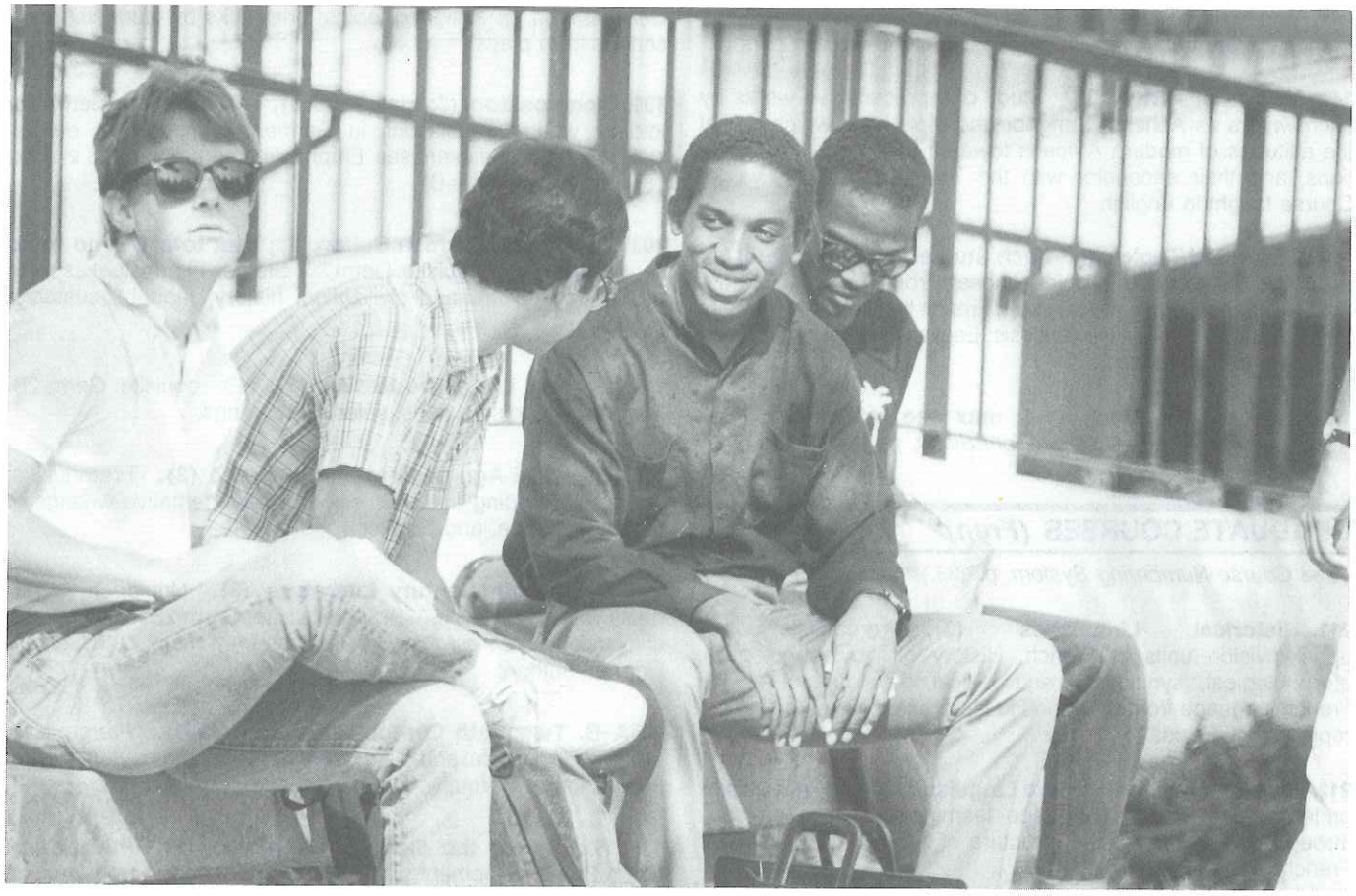
1A–B. Elementary French (4–4). Beginning course of graded lessons acquainting the student with the basic structure and pronunciation of French through practice in speaking, reading, and writing.

2. Basic Grammar Review (3). Prerequisite: Fren 1B. May be taken concurrently with Fren 3, 4, or 5. Opportunity to build upon previously acquired knowledge of fundamental structures of French. Course designed for students with one year of college French or high school equivalent. (Former Fren 2A)

3. Reading (3). Prerequisite: Fren 1B. May be taken concurrently with Fren 2, 4, or 5. Course designed specifically to increase reading skills. Selections from contemporary literary (poetry, prose, theatre) and journalistic expressions. (Former Fren 2B)

4. Writing (3). Prerequisite: Fren 1B. May be taken concurrently with Fren 2, 3, or 5. Opportunity to increase writing skills in preparation for upper-division course work in French.

5. Conversation (3; max total 6). Prerequisite: Fren 1B. May be taken concurrently with Fren 2, 3, or 4. Development of



listening and speaking skills. Exclusive use of French in an informal class atmosphere. Conversations on assigned topics, extemporaneous discussions. (Former Fren 50)

20. Contemporary France: Its Heritage and Influence (3). Special attention paid to students' interests in formulating topics for this course to include French theatre, music, art, politics, economics, cuisine, education and youth. Guest lecturers. Taught in English.

AREA I. LANGUAGE AND CULTURE

101. Advanced Composition (3). Prerequisite: Two semesters of Intermediate French. Written assignments in French on varied topics with emphasis on composition. Written exercises in French on specific points of grammar.

102. Translation (3). Prerequisite: French 101. Problems and techniques of translation from English into French and French into English. Materials to be translated taken from the fields of science, literature, economics and politics.

120T. Topics in French Civilization (3; max total 6 if no topic repeated). Prerequisite: Two semesters of Intermediate French. Possible topics: French contributions to Western Civilization (art, music, architecture, history, science). Special emphasis on contemporary France. The history of Anglo-French and Franco-American relations. Linguistic, cultural, intellectual, political, commercial and diplomatic similarities and differences explored. Taught in French.

132. French Phonology and Structural Analysis (3). Prerequisite: Two semesters of Intermediate French. As a progression toward mastery, an investigation of the French language as a functioning code of verbal communication. Relationships of oral/written aspects and contrasts with American English. Intensive drill on individual pronunciation problems.

150. Advanced Conversation (3). Prerequisite: Two semesters of Intermediate French. Intensive practice in oral expression in French. Emphasis on current affairs in France.

AREA II. LITERATURE

109. Introduction to French Literature (3). Prerequisite: Two semesters of Intermediate French. Intellectual background of major literary movements and representative authors from the earliest period to the present. Selected readings. Taught in French.

110. French Theater (3). Prerequisite: French 109. Drama in France from the Renaissance to the present, with emphasis on the 17th and 20th centuries. Reading and discussion of representative works.

111. The French Novel (3). Prerequisite: Fren 109. The novel as a reflection of French society. Analysis of major works from various periods.

112. French Prose: Essay and Short Story (3). Prerequisite: Fren 109. Analysis of prose works by such authors as Montaigne, Voltaire, Maupassant, Camus, Sartre.

113. French Poetry (3). Prerequisite: French 109. Introductory course in poetry as a genre; principles of French versification. Students will be exposed to major contributions of the French in poetry. Thematic and/or chronological presentations (movements, "isms").

147. French Literature in Translation (3). Reading discussion and written analyses of representative works from the French literary tradition, with emphasis on the modern period.

149. Voices of Africa (3). Study of representative works by such writers as Achebe, Senghor and Mphahlele which reveal the attitudes of modern Africans towards their land, their traditions, and their encounter with the Twentieth Century world. Course taught in English.

160T. Selected Topics in French Studies (1–3; max total 6 if no topic repeated). Topics chosen from French literature (genre, themes, movements), from French linguistics (History of the Language; Contrastive Analysis: English/French), or French Culture and Civilization.

190. Independent Study (1–3; max see reference). See *Academic Placement—Independent Study,* pages 96–97.

GRADUATE COURSES *(Fren)*

(See *Course Numbering System,* p. 133.)

211. Historical Linguistics (3). Prerequisite: 24 upper-division units in French. History of the phonological, morphological, syntactical, and lexical development of the French language from its origins to the present, through study of representative texts.

212. Comparative Synchronic Linguistics (3). Prerequisite: undergraduate major. Language learning problems as seen through comparison of the structure of American English and French.

220T. Seminar in French Literature (3; max total 9 if no topic repeated). Prerequisite: 24 upper-division units in French.

250. Directed Reading (3; max total 6). Prerequisite: 24 upper-division units in French.

290. Independent Study (3; max total 6). See *Academic Placement—Independent Study,* pages 96–97.

299. Thesis (2–6; max total 6). Prerequisite: *See Criteria for Thesis and Project,* pages 467–468. Preparation, completion, and submission of an acceptable thesis for the master's degree.

German (Germ)

1A–B. Elementary German (4–4). Beginning course of graded lessons acquainting the student with the basic structure and pronunciation of German through practice in speaking, reading, and writing.

2A–B. Intermediate German (3–3). Prerequisite: Germ 1B. Grammar review; reading and conversation. May be taken concurrently with German 50.

8T. Selected Topics in German (1; max total 2). Prerequisite: German 1A. Language experience outside classroom is stressed in oral topics. Problem vocabulary and grammar topics. Must be taken for *CR/NC* grade only.

50. Conversation (3; max total 6). Prerequisite: Germ 1B. Conversation on assigned topics; brief talks by students; short scenes from plays.

101. Composition (3; max total 6). Prerequisite: Germ 2B. Idioms; written translations in German; compositions on assigned topics; oral exercises. Emphasis on grammar and syntax. (Former Germ 101A–B)

103T. Topics in German Culture (3; max total 6 if no topic repeated). Prerequisite: Germ 2B. Studies in principal aspects of German culture and civilization, history, thought, customs, institutions.

112. German Literature to 1750 (3). Prerequisite: Germ 2B. Lectures and discussions; selected readings.

114. Classical Age of German Literature (3). Prerequisite: Germ 2B. Reading and discussion of representative writings of Lessing, Goethe, and Schiller.

116. Nineteenth Century Literature (3). Not open to students with credit in 116A–B. Prerequisite: Germ 2B. Reading and discussion of representative selections from major 19th Century German authors.

118A–B. Twentieth Century Literature (3–3). Prerequisite: Germ 2B. Analytical and critical study of twentieth century literary production of Germany. Discussion and short reports.

135. History of the German Language (3). Prerequisite: Germ 2B. Development of the German Language from earliest times to the present.

137. Applied Linguistics (3). Prerequisite: Germ 2B. Analysis of the phonological, morphological, syntactical, and lexical structure of German; conflicts with English structure; linguistic problems.

145. Introduction to German Literature (3). Prerequisite: Germ 2B. Selected readings from those literary works most representative of German culture in its development from the time of the Nibelungenlied to the present.

146T. Germanic Literature in Translation (3; max total 12 if no topic repeated). Major Germanic authors, movements, and genre. Selected readings, lectures and discussions in English. Only 3 units of credit may be applied to German major.

150. Advanced Conversation (3). Prerequisite: Germ 2B. Intensive practice in oral expression in German. Emphasis on current affairs in Germany.

160T. Selected Literary Topics (1–3; max total 12 if no topic repeated). Prerequisite: Germ 2B. Intensive study of significant topics through selected literary texts; analysis, discussion, and evaluation of specific genres, themes, movements, and literary problems.

190. Independent Study (1–3; max see reference). See *Academic Placement—Independent Study,* pages 96–97.

GRADUATE COURSES *(Germ)*

(See *Course Numbering System,* p. 133.)

220T. Seminar in Literature (3; max total 12 if no topic repeated). Prerequisite: completion of an undergraduate major in German. Study of an aspect of literary history: genre, period, movement, or individual author.

240T. Seminar in Germanic Languages (3; max total 12 if no topic repeated). Study of older Germanic languages and special linguistic problems.

290. Independent Study (1–3). See *Academic Placement—Independent Study,* pages 96–97.

Greek (Grk)

1A–B. Elementary Greek (3–3). Fundamentals of Classical and New Testament Greek with practice in the reading and writing of the Greek language.

131T. Greek Literature (3; max total 9 if no topic repeated). Prerequisite: Greek 1B. Concentration on a major Classical Greek poet or prose author. Translation and discussion. Research reports on literary, historical, and textual problems.

148. Greek Literature in English Translation (3). Analysis of selected works of major Greek poets, writers and thinkers from Homer to Lucian. Lectures, discussions, reports on readings.

190. Independent Study (1–3). See *Academic Placement—Independent Study,* pages 96–97.

Hebrew (Hebr)

See *linguistics department,* page 360.

Italian (Ital)

1A–B. Elementary Italian (4–4). Beginning course of graded lessons acquainting the student with the basic structure and pronunciation of Italian through practice in speaking, reading, and writing.

2A–B. Intermediate Italian (3–3). Prerequisite: Italian 1B or permission of instructor. Opportunity to build upon previously acquired knowledge of fundamental structures of Italian. Designed for students with one year of college Italian or high school equivalent.

190. Independent Study (1–3; max see reference). See *Academic Placement—Independent Study,* pages 96–97.

Japanese (Japn)

See *linguistics department,* page 360.

Latin (Latin)

1A–B. Elementary Latin (3–3). Elements of Latin grammar with its practical relation to Romance languages and English. Background study: Roman culture and its relevancy to the Western world.

> "I try to educate my students to appreciate the splendor of the high Sierra, as well as teach them to leave nothing behind but their footprints and take nothing away but pictures and memories."
>
> *— Professor, Geography*

31. Latin and Greek for English Vocabulary (3). Previous knowledge of Latin and Greek unnecessary. Analysis of Latin and Greek elements in English words; emphasis on practical use.

131T. Latin Literature (3; max total 9 if no topic repeated). Prerequisite: Latin 1B. Concentration on a major Latin poet or prose author. Translation and discussion. Research reports on literary, historical, and textual problems.

132. Classical Mythology (3). Greco-Roman myths, emphasis on their impact on the fine arts and literatures of the Western World. Illustrated lectures. Taught in English.

148. Roman Literature in English Translation (3). Analysis of selected works of major Roman authors from Plautus to St. Augustine. Lectures, discussions, readings.

190. Independent Study (1–3; max see reference). See *Academic Placement—Independent Study,* pages 96–97.

Portuguese (Port)

1A–B. Elementary Portuguese (4–4). Beginning course of graded lessons acquainting the student with the basic structure and pronunciation of Portuguese through practice in speaking, reading, and writing.

Russian (Russ)

1A–B. Elementary Russian (4–4). Beginning course of graded lessons acquainting the student with the basic structure and pronunciation of Russian through practice in speaking, reading, and writing.

2A–B. Intermediate Russian (4–4). Prerequisite: Russ 1B as determined by examination. **(A)** Review of grammar and syntax; composition; oral practice; reading of short stories. **(B)** Oral and written composition. Conducted in Russian.

50. Oral Russian (3). Prerequisite: Russ 1B, 2A, or 2B. Oral drill for intonation and pronunciation; conversation on assigned topics, brief talks; extemporaneous discussions.

101. Composition and Conversation (3; max total 9). Prerequisite: Russ 2B. Continuation of prose composition and oral-aural practice for mastery of the finer points in grammar and syntax.

102. Advanced Conversation (3). Prerequisite: Russ 2B. Oral conversational practice on assigned topics relevant to Russian life and culture. To include brief talks, discussions, and presentations.

103T. Topics in Russian Culture (3; max total 9 if no topic repeated). Credit may not be applied to Russian major and minor requirements. Sections designated as emphasizing Russian-Soviet culture and Socialist realism, Russian folk arts and folklore. Lectures illustrated with films and other audio-visual media. Taught in English.

110. Landmarks in Russian Literature (3). Chronicles, Byliny, Tales, Kievan Literature, Moscovite Literature, the Petrine Epoch, the Epoch of Catherine II, and the rise of the 19th century literary Giants.

118A–B. Twentieth Century Literature (3–3). Prerequisite: Russ 2B. Analytical and critical study of the twentieth century literary production of Russia. Outside readings.

127T. Soviet Russian Topics (3; max total 9 if no topic repeated). Sections designated as emphasizing landmarks in Russian literature. Russian underground, protest, and emigre works. Lectures illustrated with films and other audio-visual media. Taught in English.

148A–B. Russian Literature in Translation (3–3). Prerequisite: upper-division standing. Selective readings of major Russian literary works. Lecture, discussion. **(A)** Pushkin, Tolstoy, Dostoyevski. **(B)** Nobel prize winners: Solzhenitzyn, Pasternak, Sholokhov.

190. Independent Study (1–3; max see reference). See *Academic Placement—Independent Study,* pages 96–97.

Spanish (Span)

1A–B. Elementary Spanish (4–4). Beginning course to acquaint the student with the basic structures through practice in listening, speaking, reading, and writing.

2A–B. Reading and Speaking Spanish (3–3). Prerequisite: Span 1B or permission of instructor. Development of the student's ability to understand, speak, read, and write Spanish.

4A–B. Spanish for the Bilingual Student (3–3). For students with a bilingual background. Emphasis on reading and writing, some grammar review and conversation.

5. Spanish for Conversation (3). Prerequisite: Span 1B. Emphasis on spoken Spanish; development of oral fluency through class discussion, conversation games and vocabulary exercises.

8T. Fundamental Skills in Spanish (1–2; max total 4 if no topic repeated). Instruction in fundamental problems in writing and word usage, such as accentuation, spelling and vocabulary. Intended primarily for students who need more work in specific areas of writing and speaking. Must be taken *CR/NC* grade only

AREA I. BILINGUAL STUDIES

102. Spanish for the Bilingual Child (3). Prerequisite: Span 2A–B or 4A–B. Linguistic analysis of the child's language. Use of testing techniques to determine child's language competencies. Analysis of problems that occur in the teaching of reading in Spanish. Practical application of linguistic theory to classroom situations.

104. Spanish in Bilingual Schools (3). Prerequisite: Span 118 or 120, and 122. Emphasis on Spanish language development for bilingual teachers at the elementary level. Presentation of specialized vocabulary in teaching elementary courses. Development and evaluation of bilingual teaching materials in Spanish.

106T. Children's Literature in Spanish (3). Prerequisite: Span 2A–B or 4A–B. Examination of children's stories, poems, rhymes and songs written, composed or available in Spanish. Practice in the techniques of story-telling. Dramatizations of children's stories in Spanish. Presentation of puppet plays.

AREA II. LANGUAGE AND TRANSLATION

110T. Practical Spanish for Professions (3; max total 12 if no topic repeated). Applicable for minor. Preparation of professionals and paraprofessionals in California Spanish to work with the Spanish speaking in the following fields: health, education, social work, business, law, agriculture, and psychology.

113. Patterns of Spanish (3). Prerequisite: Span 2A–B or 4A–B. Recommended as the first upper-division course. Verb synonyms. Quantitative and qualitative usage of verbs. Acquisition of the following skills: narration, description, argumentation and expression of feelings through syntactical variations and substitution of verbs. Attention is focused on the formation of a sentence not on the composition of a paragraph.

115. Basic Principles of Translation (3). Prerequisite: Span 2A–B or 4A–B. Specific problems of Spanish to English and English to Spanish translation, with emphasis on idiomatic expressions. Some attention to specialized vocabulary. Use of bilingual dictionaries.

116. The Art of Translation (3). Prerequisite: Span 2A–B or 4A–B. Not open to students with credit in Span 116A–B. Mini-projects dealing with the differences between oral and written styles, idioms, metaphors, slang, technical vocabulary, as well as structural and semantic factors.

117. Problems in Translating from English into Spanish (3). Prerequisite: Span 2A–B or 4A–B. Open only to students with credit in Span 116. Advanced work in translating a variety of materials into Spanish. Analysis of the special problems encountered in different fields. Emphasis on the translation of public documents.

118. Spanish Composition for Bilinguals (3). Prerequisite: Span 4A–B. Not open to students with credit in Span 120. Refinement of writing skills through vocabulary development, spelling exercises and composition. Special emphasis on problems created by differences between the spoken and written language.

120. Composition and Reading (3). Prerequisite: Span 2A–B or 4A–B. Not open to students with credit in Span 118. Development and refinement of writing skills. Intensive practice in expository and imaginative composition. Analysis of original compositions with attention to common problems of accentuation, spelling and grammar.

122. Advanced Grammar (3). Prerequisite: Span 2A–B or 4A–B. Special emphasis on grammar review and development of writing skills. Analysis of grammatical constructions.

123. Advanced Conversation and Reading (3). Prerequisite: Span 2A–B or 4A–B. Reading and discussion of current periodicals, newspapers, and magazines that reflect the cultural patterns of the Spanish-speaking countries.

AREA III. HISPANIC CULTURE

125. Hispanic Culture (3). Prerequisite: Span 2A–B or 4A–B. Examination of the cultural patterns of Spain and Spanish America through readings, lectures, films and other media. Frequent written and oral reports by students.

AREA IV. SPANISH LINGUISTICS

137. Applied Spanish Linguistics (3). Prerequisite: Span 2A–B or 4A–B. Analysis of Spanish with emphasis on areas of

phonetics, pronunciation and grammar which cause the greatest problems in learning and teaching the language. Readings and practice in the development of instructional strategies and materials.

139. Spanish of the Southwest (3). Prerequisite: Span 2A–B or 4A–B. Research on dialect differences in California and the Southwest, including the linguistic, social, and cultural determinants. Emphasis on the Spanish of the San Joaquin Valley.

AREA V. HISPANIC LITERATURE

140. Hispanic Fiction and Poetry (3). Prerequisite: Span 2A–B or 4A–B. Readings and appreciation of Hispanic literature to familiarize the student with the fiction and poetry as art forms.

142. Introduction to Spanish Literature (3). Prerequisite: Span 2A–B or 4A–B. Selected readings from those literary works which have fundamentally affected the development of Spanish civilization, from El Cid to Lorca. Provides a historical framework for the study of Spanish literature.

143. Introduction to Spanish-American Literature (3). Prerequisite: Span 2A–B or 4A–B. Selected readings from those literary works which have fundamentally affected the development of Spanish American civilization, from Hernán Cortés to Octavio Paz. Provides a historical framework for the study of Spanish American literature.

145. Mexican Literature (3). Prerequisite: Span 2A–B or 4A–B. Study of the works of such major Mexican literary figures as Sor Juana, Gutiérrez Nájera, Azuela, and Fuentes.

147. Twentieth Century Spanish-American Literature (3). Prerequisite: Span 2A–B or 4A–B. Intensive study of selected Spanish-American works including writings of Azuela, Fuentes, Carpentier, Vargas Llosa; outstanding poets such as Neruda, Vallejo, and Paz.

148T. Major Figures in Hispanic Literature (3; max total 6 if no topic repeated). Prerequisite: Span 2A–B or 4A–B. Reading and analysis of the works of one major Hispanic author such as Cervantes, Unamuno, Neruda.

149T. The Golden Age (3). Prerequisite: Span 2A–B or 4A–B. A study of Spanish Renaissance Man and his environment. His socio-political, esthetic and literary ideas will be studied through readings in Garcilaso, San Juan de la Cruz and other authors.

150T. Twentieth Century Spanish Literature (3). Prerequisite: Span 2A–B or 4A–B. A study of Spanish Existential Man. His socio-political, esthetic and literary ideas will be studied through readings in Unamuno, Ortega y Gassett, Lorca, José Hierro and other authors.

170. Senior Seminar in Spanish Studies (3). Prerequisite: Twenty upper-division units of Spanish course work or graduate standing. Designed to meet the individual needs of students about to graduate. Diagnostic testing in language, linguistic, cultural and literary proficiency. Readings, research projects and assignments.

190. Independent Study (1–3; max see reference). See *Academic Placement—Independent Study,* pages 96–97.

GRADUATE COURSES *(Span)*

(See *Course Numbering System,* p. 133.)

201. History of the Spanish Language (3). History of the Spanish language from Latin to present. Influences from other languages. Special emphasis on development of sounds, structures, and vocabulary where they provide insight into the modern language and dialects. Readings from medieval literature.

202. Literary Criticism (3). Discussion and application of methods and techniques in research. Analysis and application of the methods of literary criticism with consideration given to critical approaches in Spain and Spanish America.

217. Spanish Translation (3–6; max total 6). Prerequisite: Span 116 or permission of instructor. Advanced work in the field of translation. Attention to the translation of public documents, particularly in the areas of government, business, and law, as well as translation of literary works.

220. Hispanic Linguistics (3; max total 9 if no topic repeated). In-depth analysis of the Spanish language through the study of the following areas; diachronic linguistics, synchronic linguistics, and dialectology.

230. Spanish Literature (3; max total 9 if no topic repeated). Seminar in critique and analytical study of selected topics, genres or specific literary figures in each of the following areas: Medieval Period, Renaissance Period, Golden Age, 18th–19th Century, and 20th Century.

240. Spanish-American Literature (3; max total 9 if no topic repeated). Seminar in critique and analytical study of selected topics, genres or specific literary figures in each of the following areas: Colonial Period to 1810, 19th Century to 1910, 20th Century.

290. Independent Study (2–3; max see reference). See *Academic Placement—Independent Study,* pages 96–97.

298. Project (3–6; max total 6). See *Criteria for Thesis and Project,* pages 467–468. Writing and/or editing materials suitable for school programs from elementary through high school level, such as children's literature, original poetry, testing devices and translations.

299. Thesis (3–6; max total 6). Prerequisite: See *Criteria for Thesis and Project,* pages 467–468. Preparation, completion and submission of an acceptable thesis for the completion of the master's degree.

IN-SERVICE COURSES *(Span)*

(See *Course Numbering System,* p. 133.)

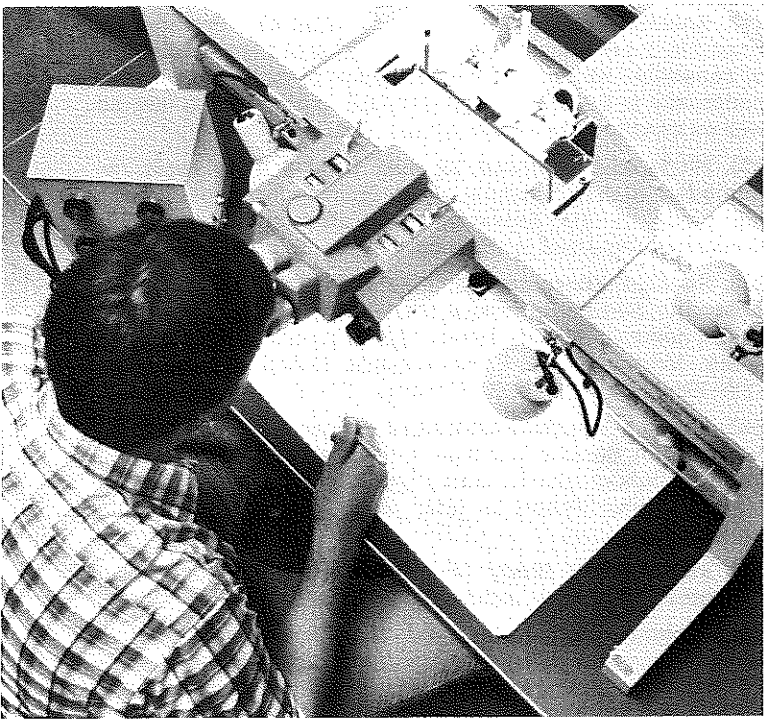
301. Conversation and Composition Review (2; max total 8 if no language repeated).

304. Theory and Practice (2; max total 8).

Geography

School of Social Sciences
Department of Geography
James S. Kus, Chair
New Science Bldg., Room 182
(209) 294-2797

B.A. in Geography
Minor in Geography
M.A. in Geography



Geography is an integrative discipline that bridges the natural and social sciences. Its distinctiveness is as much a product of its unique approach to the study of the earth and its human inhabitants as it is the subject matter itself. Thus, geography employs a spatial framework for organizational purposes analogous to the chronological framework employed in history.

Central to geographic inquiry is a concern with the human occupance of the earth, the character of the human environment, and the interrelationships that link humans and the physical world. In sum, geography seeks to provide a broad understanding of the world, its people, and its problems.

Not surprisingly, the subject matter of geography is diverse. Geographers examine and analyze patterns of rural and urban settlement, resource exploitation, land use, social and cultural phenomena. They are concerned with the natural features and processes of the earth's surface as evidenced by their interest in the atmosphere and hydrosphere, landforms, and the earth's biota. They are further interested in the ways in which nature has conditioned the human occupance of the earth and, in turn, those ways in which people have modified natural landscapes.

The department's instructional programs are designed to address several objectives. First, for the larger number of our students, we seek to contribute to a greater understanding of the world as an element of a liberal education. Second, we conduct programs for majors and minors in geography that assure a breadth of understanding and appropriate levels of competency in subject matter and technique. Third, we serve those students in related disciplines who wish to strengthen programs of study through a selection of courses in geography.

Faculty and Facilities

Instruction at introductory, advanced, and graduate levels is conducted by a faculty whose teaching and research interests are diverse. All of the major facets of the discipline are represented as are a number of the more limited specializations.

A variety of facilities is available for student use. Well-equipped laboratories are maintained for the conduct of research and instruction in physical geography and the technique fields—cartography, air photo interpretation and remote sensing, meteorological instrumentation, and quantitative analysis. The department also operates a fully-equipped weather and pollution monitoring station.

Computers are available for mapping and a variety of other applications and the department is well-equipped for field work.

Career Opportunities

Geographers are employed in government and the private sector. Their knowledge and skills have applications in a variety of fields including teaching, planning, cartography, locational analysis, intelligence and security, land and resource management, policy research, transportation, and industrial development.

Agencies of federal, state, and local governments are major employers of geographers. At the federal level many agencies employ geographers although most work opportunities are provided by the State Department, the intelligence and mapping agencies, the military, the Bureau of the Census, the Geological Survey, and the land and resource managing agencies.

At state and local levels most geographers are involved in planning, land and resource management, and community development.

Because many businesses and industries have important geographical dimensions to their operations, there is demand for geographers in the private sector. Geographers are employed in banking, transportation, international trade, utilities, wholesaling and retailing, and a number of other fields. Teaching, at all levels, is a major occupation of individuals with training in geography. The department welcomes inquiries about careers in geography.

Faculty

James S. Kus, *Chair*

Michael J. Biechler
Chester F. Cole
John A. Crosby
E. Frank Koller
Robert E. Lee
Richard C. Montgomery
Donald L. Morgan
George N. Nasse
Stanley F. Norsworthy
Joyce A. Quinn
Jerry C. Towle
Paul Vander Meer

Joyce A. Quinn, *Graduate Adviser*
Robert E. Lee, *Undergraduate Adviser*

Bachelor of Arts Degree Requirements

The Bachelor of Arts degree with a major in geography requires the completion of 124 units, at least 42 of which shall be in geography. The major is so designed that students can emphasize that area in geography in which their interest lies; or which conforms to their career objectives.

	Units
I. Major Requirements	42
Lower-division courses:	
Geog 5, 7, and two of the following:	
Geog 2, 3, 4	(12)
Upper-division breadth requirements (See *Notes* below):	(30)
II. General Education Requirements	54
III. Electives and Remaining Degree Requirements (See *Degree Requirements,* pp. 98–101); may be used toward a dual major or minor	28–34 *
Total	124

* This figure takes into consideration the fact that the Department of Geography will allow a maximum of 6 units of General Education-Breadth courses to be applied to the Geography Major Requirements (see General Education, pp. 104–111). The applicable courses include Geog 2, 3, 4, 5, 5L, 7, and 7L. Consult the geography department chair or faculty adviser for additional details.

Notes:

1. Geography majors can select either a *Professional* or a *General* emphasis for their major.

   For the *Professional emphasis,* select:
   a. 9 units from Geographic Techniques.
   b. Either 9 units from Physical-Environmental Studies and 3 units from Human Systematic *or* 9 units from Human Systematic and 3 units from Physical-Environmental Studies.
   c. 3 units from the Regional Geography courses.
   d. 6 units of electives from the upper-division Geography classes, including Geog 190, 192, and 195.

   For the *General emphasis,* select:
   a. 3 units from Geographic Techniques.
   b. 12 units from one of the categories: Physical-Environmental, Human Systematic, or Regional Geography.
   c. 6 units from each of the two remaining categories: Physical-Environmental, Human Systematic, and Regional Geography.
   d. 3 units of electives from the upper-division Geography classes, including Geog 188T, 190, 192, and 195.
2. All Geography majors should take Geog 194W. This course will satisfy the writing skills requirement for graduation.
3. No more than 3 units of Geog 195 may be applied to the Geography major.
4. No course used to satisfy General Education CAPSTONE requirements may be used to satisfy Geography major requirements.
5. *CR/NC* grading is not permitted in the Geography major with the exception of Geog 192 and 195.
6. General Education and elective units may be applied to a second major or a minor (see *Dual Major,* p. 98, or departmental minor). Consult the appropriate department chair, program coordinator, or faculty adviser for further information.
7. It is strongly recommended that students interested in professional careers complete course work in quantitative methods and computer concepts (e.g., IS 50, 53, 54, E E 70) and, if applicable, city and regional planning. Course work in introductory geology is also recommended. Consideration should be given to the development of foreign language competency and/or the completion of a second major or a minor in a related discipline.
8. Students must regularly consult with their academic adviser. Such consultation will facilitate course selection and enable the student to develop a program consistent with individual interests and needs.
9. The selection of an emphasis will be strongly influenced by career goals, interests in graduate study and related matters. Whether one's interest focuses on environmental protection, planning, cartography, locational analysis or any one of a wide array of geographic competencies, the department can provide current applicable information. Inquiries are welcomed.

Geography Minor

	Units
Elect from Geog 2, 3, 4, 5, or 7	9
Elect from upper-division geography *	12
	21

* No more than 3 units earned in Geography 195 may be applied to the minor. Students completing a minor in geography are encouraged to seek faculty advice relative to course selection and program planning.

Credential Program

See *Social Science Major,* pages 423–424, for the Single Subject Waiver program in Social Science.

Graduate Program

The Department of Geography offers two programs leading to the master of arts degree in geography: Plan *A*—Thesis Program and Plan *B*—Non-Thesis Program. Plan *A* is a research-oriented program and is intended to give extended preparation for a person going into research-oriented geographic professions and serves as a preparation for additional graduate work leading to the doctorate. Plan *B* is designed to give a person a broad background in advanced geographic topics as preparation for nonresearch-oriented geographic professions.

Master of Arts Degree Requirements

The Master of Arts degree program in geography assumes a B.A. degree in geography or a closely allied field. It is recom-

mended that cartography, field geography and quantitative techniques (statistics) (Geog 100, 109, and 110) be taken as technique courses at the undergraduate level.

(See also *Admission to Graduate Standing, Advancement to Candidacy, Program Requirements, Criteria For Thesis and Project,* pp. 464–468.)

For specific requirements consult the departmental graduate adviser; for general requirements see *Division of Graduate Studies and Research,* pages 462–471.

Under the supervision of the departmental graduate adviser, each student submits an approved program within one of the following frameworks:

Plan A—Thesis Program	*Units*
200-series courses in geography	18
Outside the field	3–6
Electives in geography	6–9
Total	30

Specific requirements: Geog. 200; 206T; 270T; 203T or 260T; 299 (6 units).

Plan B—Non-Thesis Program	*Units*
200-series courses in geography	18
Outside the field	3–6
Electives in geography	6–9
Total	30

Specific requirements: Geog. 200; 206T; 270T; 203T or 260T. Terminal oral examinations.

COURSES

Introductory Geography (Geog)

2. Introduction to Cultural Geography (3). General background to cultural geography, including origins of cultural landscapes, man's modification of the natural environment, and problems of population and settlement geography.

3. Economic Geography (3). Evolution and change in the location of major economic (agricultural, commercial, transportation, mineral, and industrial) activities. An examination of the diverse phenomena that influence the location of economic activities.

4. World Geography (3). Cultural and physical features; economic development; resources; man-land relationships. The approach is by continents and/or cultural regions.

5. Physical Geography: Global Concepts, Weather and Climate (3). The earth as a planet, map projections, location on the earth's surface, time, oceans, weather and climate.

5L. Physical Geography: Global Concepts, Weather and Climate Laboratory (1). Laboratory study of climatological methods and techniques. Use of meteorological instruments, and interpretation and construction of weather maps. To be taken concurrently with Geography 5. Optional lab. (2 hours)

7. Physical Geography: The Earth's Surface (3). A survey of those elements of the physical environment at the earth-atmosphere contact. Fundamentals of landform features, soils, natural vegetation and water bodies.

7L. Physical Geography: The Earth's Surface Laboratory (1). Laboratory study of basic principles and theorems in geomorphology, soils and vegetation. To be taken concurrently with Geography 7. Optional lab. (2 hours)

Techniques in Geographic Study (Geog)

100. Cartography (3). Introduction to the field of cartography. Map compilation, design and construction; principles of generalization, symbolization, lettering; map projections. Computer cartography, digital coding, plotting, data manipulation, graphical display. (two 3-hour labs)

104. Map Interpretation (3). Prerequisite: Geol 1 or Geog 7. Interpretation of foreign and domestic maps; symbols, scale, method of showing topography, vegetation, culture, land use, soils, water levels; characteristics of projections. (two 3-hour labs)

105. Aerial Photograph Interpretation (3). Prerequisite: Geol 1 or Geog 7. Aerial photographs as a means of determining culture, topography and vegetation; scale, use of index, vertical and oblique photographs, and stereoscopes. (two 3-hour labs)

106. Advanced Aerial Photo Interpretation and Remote Sensing of Environment (3). Prerequisite: Geog 105. Interpretation of air-borne and orbital imagery; panchromatic, color, infrared, color infrared, radar, multispectral. (two 3-hour labs)

109. Technical Field Geography (3). Gathering and analysis of rural land use data—crop distribution related to topography, climate, soils, water, markets; urban land use—delineation of central business district (CBD), foot and automobile traffic flows, housing quality, retail and wholesale trade territories, population concentrations and ethnic groupings. (4–8 field hours)

110. Basic Quantitative Techniques (4). Quantitative techniques applied to problems in geography. Small hand calculator required. A mini-computer will be used in some laboratory exercises. No prior knowledge of statistics is assumed. (3 lecture, 3 lab hours)

Physical-Environmental Studies (Geog)

111. Meteorology (4). Prerequisite: Geog 5 or equivalent. Study of the earth's atmosphere; energy exchanges and temperature; pressure and air circulation; fog, clouds, precipitation and the hydrologic cycle; cyclonic storms and orographic processes; stability and thunderstorms; weather modification and predictions with application to agriculture, aviation, and other activities. (3 lecture, 3 lab hours)

112. World Climates (3). Prerequisite: Geog 5 or 111. Study of various systems of climate classification. Climates as they exist throughout the world and the reasons for their occurrence.

114. Agricultural Climatology (3) (Same as Plant 134). Prerequisite: Geog 5 or 111. Study of micrometeorologic influences on local climates. Climatic factors influencing agriculture with specific reference to the San Joaquin Valley. Course

designed for anyone interested in the relations between climate and agriculture, regardless of major.

117. Plant Geography (3). Study of earth's plant cover; world floras; dispersal and migration; environmental effects on distributions; plant communities; major vegetation regions.

118. Soils Geography (3). Properties of soil, factors of soil genesis, soil types of the world and their distribution, man's use of the soil.

120. World Landform Regions (3). A systematic analysis of types of world landform regions with emphasis on glaciated regions, arid lands, and volcanic lands.

121. United States Landform Regions (3). Prerequisite: Geog 120 or Geol 105. Natural regions of the United States based on study of types of landforms. Analysis of unity and diversity in such landform regions as the Colorado Plateau, Sierra Nevada Province, Basin and Range, et al.

128. Environmental Pollution (3). A discussion of current environmental pollution problems involving the atmosphere, land, and water. The adverse effects of transportation, surface mining, sewage and waste disposal, noise, the use of pesticides, energy production and consumption, and related topics are examined.

132. Geography of Natural Resources (3). Study of the spatial distributions and relationships of natural resources, including land, water, minerals, plants, and animals; form, inherent characteristics, and external relations with the regions in which they are found; use and misuse.

134. Geography of Energy (3). The world's energy resources emphasizing fossil fuels. The energy crisis. Alternative sources of energy: solar, nuclear, hydroelectric, geothermal, wind and tidal.

135. The Protection of Nature (3). An examination of the plight of nature; the values of nature preserved; man's attempt to preserve nature. Attention focuses on the national park movement, wilderness, endangered species, the management of lands for the purpose of preservation, and related topics.

Human Systematic Geography (Geog)

127. Man's Modification of the Natural Environment (3). Ways in which man's activities have altered climate, landforms, soil and water conditions, and natural vegetation.

146. Land Use (3). Principles and trends relating to the causes and effects of existing land use patterns throughout the world. Topics include climate and soils, trade, transport, and manufacturing systems; national and local policies, and human abuse.

147. Population Geography (3). Geographical analysis of the causes and consequences of global population growth, migrations, distributions, and relationships to natural resources.

150. Agricultural Geography (3). Analysis of areal distribution of agricultural (crops and livestock) patterns of the world. Interactions with the environment, role in economies.

152. Transportation Geography (3). Analysis of areal distribution of transport networks of the world (road, rail, water, and air) and the interaction of these networks with other phenomena.

160. Urban Geography (3). The city environment. An understanding of the changing urban environments from ancient through medieval to modern times; the relationship of the urban center to its surrounding hinterland; the interdependence of its functional parts; its problems and future.

> "One of my favorite pastimes is to stroll around the campus and look at the roses, the variety of trees, and the artwork on display in front of the buildings. A walk around the campus is a nice way to think about things."
>
> *— Senior, Psychology*

161. 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.

162. Political Geography (3). Systematic treatment of the nature and structure of states, boundary problems, political policy for the oceans, international power, air space.

163. World Crises (3). Current major political, economic, and environmental crises occurring on either a global or a regional level.

164. Minority Peoples (3). Spatial analysis of minority groups in the world, in the United States, and in Central California. Historical and modern distribution of minority peoples, based on racial, ethnic, cultural, and economic characteristics.

165. Cultural Landscapes (3). Spatial aspects of the development of cultural landscapes, particularly the evolution of agriculture and urbanization. Emphasis on the cultural landscapes of Central California.

Regional Geography (Geog)

145T. Environmental Regions (1–3; max total 9, if no area repeated). Systematic and regional investigation of the physical and cultural complexes of various environmental regions. Regions to be discussed include the Humid Tropics, Arid Lands, Polar Lands, Coastal Lands, Mountain Environments, Island Environments.

166T. Anglo-American Regions (1–3; max total 9, if no area repeated). Examination of the physical, economic and cultural geographic foundations of major Anglo-American regions. Regions to be discussed include Canada, the United States, the American West, the South, the Middle West, and the North East.

168. Geography of California (3). Natural and cultural patterns of California; historical and regional geography of the state.

170T. Latin American Regions (1–3; max total 9, if no area repeated). Geography of Latin America. Relationship of cultural and natural features; social and economic development; man-land relationships. Regions to be discussed include Mexico, Central America, Caribbean Islands and South America.

174T. European Regions (1–3; max total 9, if no area repeated). Geographic regions of Europe emphasizing the relation of human activities to physical factors areal in their distribution and influence. Regions to be discussed include Mediterranean lands, Western Europe, Eastern Europe, Central Europe, Northern Europe, the British Isles.

176. Geography of the USSR (3). Comprehensive study of the economic, cultural, physical and political geographic foundations of the Soviet state, followed by intensive study of selected regions within the country.

177T. Asian Regions (1–3; max total 9, if no area repeated). Geographic regions of Asia emphasizing physical and cultural features. Regions to be discussed include Southeast Asia, South Asia, China, and the Far East.

179. Geography of the Middle East (3). Comprehensive study of the physical features of the Middle East and the cultural traits of its people. The area under consideration extends from the Turkish Straits to the Pamir Knot, and from the Caucasus to the Sudan.

180. Biblical Lands (3). The focus of this course is the area that spawned three of the world's great religions—Christianity, Judaism and Islam. A geographical approach is employed in describing and analyzing this cultural hearth.

181T. African Regions (1–3; max total 9, if no region repeated). Study of major African regions relating to basic physical, cultural, economic, and political geographic conditions and problems. Regions to be discussed include Developing Black Africa, North Africa, West Africa, East Africa, Central Africa and Southern Africa.

182. Subsaharan Africa (3). Comprehensive study of the economic, cultural, physical and political geographic foundations of Subsaharan Africa. (Former Geog 181T section)

183T. Australia, New Zealand, and Pacific Islands (3). Geographic relationships of natural and cultural features to social and economic development. (Former Geog 183)

Geographic Topics, Research and Field Trips (Geog)

188T. Topics in Geography (1–3; max total 9). Selected topics in cultural, physical, and economic geography.

190. Independent Study (1–3; max total 6). See *Academic Placement—Independent Study,* pages 96–97.

192. Directed Readings (1–3; max total 6). Prerequisite: permission of instructor. Supervised readings in a selected field of geography. Combined units of Geog 190 and 192 may not exceed 6 units.

194W. History and Theory of Human Geography (3). Prerequisite: Engl 1. A survey of the development of human geography, with emphasis on twentieth-century geographic thought. Discussion of the major themes and approaches that have been dominant in this field at various times. Satisfies the upper-division writing requirement for graduation.

195. Field Geography (1–6; max total 6). Prerequisite: permission of instructor. Week-end, semester break, or summer field trips.

GRADUATE COURSES

(See *Course Numbering System,* p.133.)

200. Methods in Geographic Research and Writing (3). Prerequisite: permission of instructor. Bibliographic technique with emphasis on statistical, map, aerial photograph sources; research writing; preparation of manuscripts including illustrative material.

203T. Seminar in Economic Geography (3; max total 6 if no topic repeated). Prerequisite: permission of instructor. Theory, concepts, and methods in economic geography. Each offering will be chosen from the fields of transportation, industrial, agricultural or resource geography.

206T. Seminar in Physical Geography (3; max total 9). Prerequisite: permission of instructor. Principles, concepts, and theories in the systematic study of physical geography and its methodology. Each offering chosen from the fields of geomorphology, climatology, biogeography, water, or soils.

230. Seminar in Contemporary Geographic Thought (3). Prerequisite: permission of instructor. Current theories of geography and their evolution.

260T. Seminar in Human Geography (3; max total 9). Prerequisite: permission of instructor. Principles, concepts, and theories in the systematic study of a field of human geography and its methodology: political, cultural, urban, historical, or population and settlement geography.

270T. Seminar in Selected Regions (3; max total 12, if no region is repeated). Prerequisite: undergraduate course dealing with the region under study. Study of geographic conditions in relation to economic, social and political problems in a selected region of the world.

290. Independent Study (1–3; max see reference). See *Academic Placement—Independent Study,* pages 96–97.

292. Directed Readings in Geography (1–3; max total 6). Prerequisite: graduate standing. Supervised reading in a selected geographic topic.

299. Thesis (2–6; max total 6). Prerequisite: see *Criteria for Thesis and Project,* pages 467–468. Preparation, completion, and submission of an acceptable thesis for the master's degree.

Geology

School of Natural Sciences
Department of Geology
Jon C. Avent, Chair
Science Bldg., Room 284
(209) 294-3086

B.S. in Geology
M.S. in Geology
Minor in Geology

The Department of Geology at California State University, Fresno offers courses leading to Bachelor of Science and Master of Science degrees, as well as a minor in geology.

Course work and research emphasize field and laboratory investigations of a wide variety of geologic problems. Our field orientation takes advantage of the university's close proximity to the Sierra Nevada, the California Coast Ranges, coastal California, and the Basin and Range province. This unique location gives faculty and students access to an unparalleled geologic laboratory all within one to five hours driving time from the university.

The Bachelor of Science degree is designed for students who wish to study geology in preparation for employment in petroleum geology, mineral exploration, land-use planning and engineering geology, or for students who want to teach earth science or physical science at the secondary level. The Master of Science program is designed to provide a graduate degree for students who want to work in industry or government on the professional level, for students who want to teach earth science in junior college, or for students who wish to pursue further graduate study.

Six of the California State University and Colleges, including CSU, Fresno, cooperate in the management of the Moss Landing Marine Laboratories on Monterey Bay, an establishment which offers regular course work and opportunities for research which are applicable to graduate and undergraduate programs, including courses in geological oceanography. Consult the chairs of the geology and biology departments. See—*Moss Landing Marine Laboratories; Biology Department,* pages 206–208.

Facilities and Support

The Department of Geology is situated in a wing of the Science Building. Department equipment includes:

- X-ray fluorescence spectrometer
- X-ray diffractometer
- Polarizing microscopes for transmitted and reflected light petrography
- Point-counting and universal stages
- Cathode luminoscope for microscopic study of textures
- Heating-freezing stage for microscopic study of fluid inclusions
- Rock preparation laboratory, which includes crushing and mineral separation facilities, as well as diamond saws and lapping machines for preparation of thin and polished sections.
- Microcomputers and peripherals
- Field and laboratory equipment for water chemistry studies
- Teaching and reference collection of rocks, fossils, minerals, and maps
- Two four-wheel drive vehicles and three other field vehicles

Equipment available elsewhere on campus includes:

- CYBER, VAX AND PRIME computers and microcomputer laboratories
- Atomic absorption-flame emission spectrometers
- Ion and gas chromatographs
- Electron microscopes
- Mass and magnetic resonance spectrometers



Why geology? What is it?
Continents adrift and colliding
Energy resources and waste disposal
Fossils and evolution
Volcanoes and earthquakes
Mountain building and erosion
4.6 billion years of earth history

Career Opportunities

Geology
Energy Exploration
Resource Exploration
(Mining, Petroleum, etc.)
Water Resources
Land Use Planning
Environmental Assessment
Science Teaching
Engineering Geology
Environmental Health
Geophysics
Well Logging
Mining Engineering

Faculty

Jon C. Avent, *Chair*

Arthur H. Barabas
Bruce A. Blackerby
Roland H. Brady
Eugene G. Cserna
Frederika J. M. Harmsen
Seymour Mack
Robert D. Merrill

Undergraduate Advisers: All full-time faculty
Graduate Adviser: Arthur H. Barabas

Undergraduate Program

Geology Major: The bachelor's degree with a major in geology consists of a total of 130 units including 46–47 units of geology. For general degree requirements see *Degree Requirements,* pages 98–101. A student planning graduate study is advised to meet the foreign language requirements of the institution he plans to attend. Students majoring in geology are strongly urged to take Geology 107 and make arrangements for Geology 108A and B during their junior year (see adviser).

High School Preparation: Adequate high school preparation for a major in geology will facilitate the progress of the student through our program. This preparation should include: algebra (2 years), plane and solid geometry, trigonometry, chemistry, and physics or biology. Also recommended is English (4 years).

Bachelor of Science Degree Requirements

	Units
1. Major requirements:	46–47
a) Lower-division requirements: Geol 1 or 15, 2L, 12 and 13 concurrently, 30	(12–13)
b) Upper-division requirements: Geol 100, 101, 102, 104W, 106, 107, 108A–B Two of the following: Geol 105, 110, 122	(28)
c) Upper-division Geology electives (See Note 2)	(6)
2. Additional requirements: Chem 1A–B; Math 75, 76, or 71, 72, 76; Math 77 or 101 or C Sci 20 or 40; Phys 2A–B	29–32
3. Remaining General Education requirement:	42–45*
4. Electives and remaining degree requirements: (see *Degree Requirements,* pp. 98–101); may be used toward a minor:	6–13
Total	130

* Of the 54 required General Education units, 12 are satisfied by Chem 1A–B (Division 1) and Math 75 (Core) if intermediate algebra was completed in high school. If not, 9 units will be satisfied (see *General Education,* pp. 104–111). Consult the geology department chair or your faculty adviser for details.

Notes:

1. "Additional requirements" courses may be applied to satisfy requirements of General Education, or a minor, as appropriate. They also may be taken *CR/NC* (*see CR/NC Grading,* pp. 90–91).
2. No more than 1 unit of Geol 160 may be used to fulfill the upper-division elective requirement. Geol 151 and 168 are not applicable toward geology major requirements.
3. No course used to satisfy General Education CAPSTONE requirements may be used to satisfy geology major requirements.
4. *CR/NC* is not permitted in the geology major with the exception of Geol 30, 160 and 189L.
5. General Education and elective units may be used toward a dual major or minor (see *Dual Major,* p. 98 or departmental minor). Consult the appropriate department chair, program coordinator or faculty adviser for further information.

Geology Minor

A minor in geology consists of 20 units and must include 6 upper-division units.

Credential Program

For the Single Subject Waiver program see Physical Science section.

Graduate Program

The Department of Geology offers graduate courses of instruction and research leading to the Master of Science degree. The graduate courses at CSU, Fresno are designed to meet the needs of individuals with several different career objectives: (1) to provide the first post-baccalaureate degree for students preparing for eventual enrollment in doctoral programs in geology and related sciences, (2) to prepare students for industrial or government employment, or (3) to extend the competence of secondary school and junior college teachers in the earth sciences.

Master of Science Degree Requirements

The graduate program for the Master of Science degree in geology is based on the equivalent of the undergraduate major at CSU, Fresno. Twenty of the 30 units required for the degree must be in geology. By the end of the first semester each new student should have taken the Graduate Record Examination Advanced Test in Geology. For specific requirements consult the chair of the department; for general requirements see Division of Graduate Studies and Research.

(See also *Admission to Graduate Standing, Advancement to Candidacy, Program Requirements, Foreign Language Requirements* and *Criteria For Thesis and Project,* pp. 464–468.)

Under the direction of a graduate adviser each student prepares and submits a program individually designed within the following framework:

Courses in geology, including at least 15 units in 200-series.

	Units
(See *specific requirements*)	20
Approved upper-division or graduate course electives in geology or related fields such as biology, chemistry, physics, engineering, and mathematics. Electives determined in consultation with graduate adviser	10
Approved electives in geology or related fields	0–6
Total	30

Specific requirements: Geol 299 (3–6 units). Oral presentation of thesis. Other courses may be specified after examination of the student's record and the performance on the Graduate Record Examination Advanced Test. Any graduate student of geology doing a thesis on a foreign area must have knowledge of the area's language or the language in which source materials are published.

COURSES

Geology (Geol)

1. Physical Geology (4). Prerequisite: Math 4. Processes and materials which together produce the different topographic and geologic features of the earth. Plate tectonic theory (including continental drift) as the unifying model to explain geologic phenomena. Effects of geology on man. (3 lecture, 3 lab hours)

2. Evolution of Life and Continents (3). Prerequisite: Math 4. Origin and evolution of the earth as revealed by the rock record and by fossil remains. Special emphasis on the evolution of life and on the physical development of North America.

2L. Evolution of Life and Continents Laboratory (1). Prerequisite: Geol 1 or 15, 2. Introductory laboratory study of rocks, geologic time, paleontology, stratigraphy and geologic maps as they relate to the interpretation of regional geologic history and the evolution of life. (3 lab hours)

3. Introductory Field Studies (1). Prerequisite: Geol 1 or 15 (concurrently). Weekend supervised field trips to areas such as Yosemite, Sequoia, San Joaquin Valley and the Coast Ranges.

12. Mineralogy (3). Geol 13 concurrent in the geology major. Prerequisite: high school chemistry. Properties, relationships, origin of minerals; determination of common minerals by chemical and other tests. May include field trips. (2 lecture, 3 lab hours)

13. Crystallography (2). Prerequisite: high school chemistry, trigonometry. Form and structure of crystals. (1 lecture, 3 lab hours)

15. The Earth and its History (5). Prerequisite: Math 4. Portion of *Man and the Natural Environment* Cluster. Physical and historical geology, including man's use of the earth and the impact of that use on the earth. Lecture, lab, and field work. (Field trip fee, $150)

30. Introductory Field Methods (2). Prerequisite: Geol 2L, Math 5. Introduction to methods and instruments used in geologic field work (6 lab/field hours per week. May include weekend field trips) *CR/NC* only

100. Optical Mineralogy (3). Prerequisite: Geol 13. Optical properties of minerals; identification of selected minerals by optical methods. Manipulation and use of petrographic microscope. (2 lecture, 3 lab hours)

101. Igneous and Metamorphic Petrology (4). Prerequisite: Geol 100. Origin classification, textures, and structures of igneous and metamorphic rocks; examination of samples in hand specimen and thin section. Some weekend field trips. (3 lecture, 3 lab hours)

102. Sedimentary Petrology (3). Prerequisite: Geol 2L, Geol 100, 101 (or concurrently). Origin, classifications, textures, and structures of sedimentary rocks; examination of samples in hand specimen and thin section. Some weekend field trips. (2 lecture, 3 lab hours)

104W. Scientific Writing (1). Prerequisite: satisfactory completion of Engl 1. Organization of the scientific paper, involving concise and logical presentation of data. Topics include analyses of abstract writing, bibliographical format, and scientific styles regarding punctuation and footnotes, preparation of illustrations. (3 lab hours.) Meets Upper Division Writing Skills Requirement for graduation.



105. Geomorphology (3). Prerequisite: Geol 1 or 15. Land forms, climates, geologic processes and their interrelation in shaping the earth's surface today and in the geologic past. Interpretation of topographic maps and aerial photographs. May include field trips. (2 lecture, 3 lab hours)

106. Structural Geology (3). Prerequisite: Geol 30, Physics 2A. Physics 2A may be taken concurrently. Recognition, representation, and interpretation of structural features of the earth's crust. Includes consideration of theoretical and mechanical principles involved in deformation of solid bodies. Study of regional tectonics and major structural provinces. Includes field trips. (2 lecture, 3 lab hours)

107. Advanced Field Methods (3). Prerequisite: Geol 30, 101, 102, 104W, or concurrently 106. Field trips to areas of diverse geology; observation, description and mapping of geologic phenomena (9 lab hours usually including field work on weekends or during January intersession and Spring Vacation. Includes written reports of areas selected for study. Students should contact the department for details). (Former Geol 107A)

108A. Field Geology (4). Prerequisite: concurrent enrollment in Geol 108B, Geol 107. Geologic reconnaissance and mapping in field groups. *Usually conducted in early summer.* (Former Geol 108)

108B. Field Geology—Reports (1). Prerequisite: concurrent enrollment in Geol 108A. Written presentation of field work conducted in Geol 108A. (1 lecture hour)

110. Invertebrate Paleontology (3). Prerequisite: Geol 2 and either Zool 1 or 10. Invertebrate structures and development of prehistoric animals; introduction to stratigraphic importance of fossils. May include field trips. (2 lecture, 3 lab hours)

112. Paleoecology of Marine Invertebrates (3). Prerequisite: Geol 110, Zool 114. Interpretation of ancient sedimentary environments using invertebrate fossils; use of index fossils for chronologic purposes. Includes field trips. (1 lecture, 6 lab hours)

115. Ore Deposits (3). Prerequisite: Geol 101, 106, college chemistry. Geology, mineralogy, distribution and occurrence of common ore minerals essential in industry; genesis and localization of metallic minerals. May include field trips. (2 lecture, 3 lab hours)

116. Petroleum Geology (3). Prerequisite: Geol 106. Theories of origin of petroleum, petroleum structures, prospecting, extraction methods, techniques used in exploration and development; selected petroleum fields. May include field trips. (2 lecture, 3 lab hours)

117. Ground Water (2). Prerequisite: senior standing. Geologic and hydrologic factors related to occurrence and utilization of ground water.

118. Advanced Structural Geology (2). Prerequisite: Geol 106. Tectonic framework of Europe and North America; study of selected areas in the Western Alps, Appalachians, Rocky Mountains and Sierra Madre Oriental. Advanced problems in structural geology, structural interpretation of geologic maps and aerial photographs. May include field trips. (1 lecture, 3 lab hours)

122. Stratigraphy (3). Prerequisite: Geol 102, Geol 30. Stratigraphic principles and recognition of stratigraphic units. Emphasis on tectonostratigraphic concepts. (2 lecture, 3 lab hours or field hours)

124. Geochemistry (3). Prerequisite: Geol 101, one year of college chemistry. Application of chemical principles to geological processes. Chemical reactions involved in origin and alterations of rocks and minerals of the earth's crust. (2 lecture, 3 lab hours)

130T. Advanced Problems in Geology (1–3; max total 6 if no topic repeated). Prerequisite: senior standing in geology. Topics or problems in the following fields: geology of North America, field geology, micropaleontology, advanced ground water geology, sedimentation and sedimentary rocks, geochemistry, geophysics, volcanic geology, and marine geology. Some topics may have labs.

140. Interpretation of Geologic and Topographic Maps (3). Prerequisite: Geol 105 or 106. Interpretation of geologic and topographic maps with respect to structure, stratigraphy, and processes. Some aerial photographs included. (2 lecture, 3 lab hours)

150T. Studies in Earth Science (1–3; repeatable with different topics). Applicable to the geology major only with prior departmental approval. Prerequisite: Geol 1. Earth science topics designed for students minoring in geology, with an interest in earth science, in teacher training, and for elementary and secondary teachers.

151. Minerals and Rocks (3). Primarily for students who are not majoring in geology. Recognition, origin, importance, and uses of common and significant minerals and rocks. (2 lecture, 3 lab hours) Not applicable to the geology major.

160. Field Studies (1–4; repeatable in different studies). Prerequisite may be specified by instructor. Weekend or vacation field trips to geologically important and significant areas such as the Grand Canyon, Baja California, the Sierra Nevadas, Death Valley.

168. Geology of California (3). Prerequisite: Introductory geology course strongly recommended. Portion of California: Land of Contrast CAPSTONE Cluster. Emphasis on the evolution of California's diverse geologic provinces and the geologic processes that influence human development of one of the most geologically varied regions of the United States. Offered Spring semester only. Not applicable to the geology major.

169. Environmental Geology (3). Prerequisite: Geol 1. Examination of the interaction between man and earth, with emphasis on earth features and processes that are hazardous to man. Includes field trips. (2 lecture, 3 lab hours)

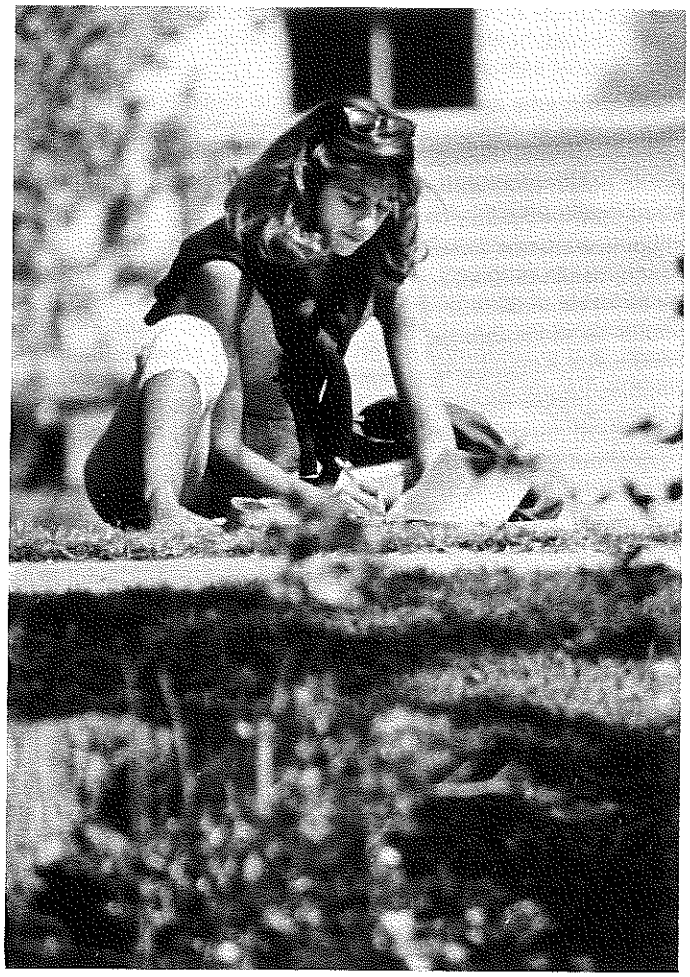
171. Igneous Petrography (3). Prerequisite: Geol 100, 101. Identification, classification, and interpretation of igneous rocks, using the petrographic microscope and other techniques. May include field trips. (2 lecture, 3 lab hours)

189. Cordilleran Geologic Evolution (2). Prerequisite: Geol 106, 122. Emphasis on the Mesozoic geology of the central Cordilleran region of the western United States in terms of plate tectonic evolution. Concurrent enrollment in Geol 189L recommended.

189L. Cordilleran Geologic Evolution Lab (1). Prerequisite: Geol 189 (or concurrently). Weekend and/or vacation field trips

to geologic localities in California studied in Geol 189. *CR/NC* Only.

190. Independent Study (1–3; max see reference). See *Academic Placement—Independent Study,* pages 96–97.



GRADUATE COURSES

(See *Course Numbering System,* p. 133.)

206. Depositional Systems (3). Prerequisite: Geol 101 and Geol 105. Investigation of modern and ancient depositional systems. (2 lecture, 3 lab hours)

209. Geology Seminar (3; max total 9 if no topic repeated). Research and reporting on theories, principles, experimentation, and methods of dealing with significant problems in geology.

210. Geotectonics (3). Prerequisite: Geol 106. Theory and applications of continental drift, plate tectonics, and sea floor spreading to understanding continental geology. Special emphasis on geology of the Americas. Structural analysis of deformed plate margins. (2 lecture, 3 lab hours)

212. Mineral and Rock Analysis (3). Prerequisite: Geol 100, Chem 1A–B. Principles and techniques of mineral and rock analysis using universal stage, X-ray diffractometer, X-ray fluorescence analyzer, atomic absorption and flame emission spectrometers, and other techniques. (1 lecture, 6 lab hours)

215. Hydrothermal Deposits (3). Prerequisite: Geol 115. Geologic setting and genesis of hydrothermal mineral deposits of western Cordillera, especially in California, Nevada, and Arizona. Emphasis on relationships between convective geothermal systems and igneous activity, prospecting models, and geologic, geochemical, and geophysical exploration techniques. Required field trip and laboratory project. (2 lecture, 3 lab hours) (Former Geol 250T section)

217. Hydrogeology Seminar (1). Prerequisite: Geol 117 or Geol 124. Origin and chemical evolution of surface and ground waters. Interaction between waters and geologic materials and natural water flow patterns. Natural processes and man-induced changes, with focus on the waters of California. Readings from primary scientific literature and oral presentations by participants. (Former Geol 250T section)

222. Carbonate Petrology (3). Prerequisite: Geol 101. Chemistry and content of carbonate rocks; introduction to organic and inorganic constituents with emphasis on diagenetic alteration. May include field trips. (2 lecture, 3 lab hours)

250T. Topics in Geology (1–3; max total 9 if no topic repeated). Prerequisite: Major or minor in geology; permission of instructor. Advanced studies in such areas as hydrology, regional stratigraphy, and marine geology. Some topics may have labs.

271. Volcanoes and Volcanic Rocks (3). Prerequisite: Geol 101. A study of volcanic activity, including classification, characteristics, products of eruptions, man's interactions with volcanoes and related phenomena. Field trips required. (1 lecture, 6 lab hours)

272. Metamorphic Petrology (3). Prerequisite: Geol 101, Chem 1A–B. Identification, classification, and interpretation of metamorphic and metasomatic rocks using the petrographic microscope and other techniques. May include field trips. (2 lecture, 3 lab hours)

290. Independent Study (1–3; max total 6). See *Academic Placement—Independent Study,* pages 96–97.

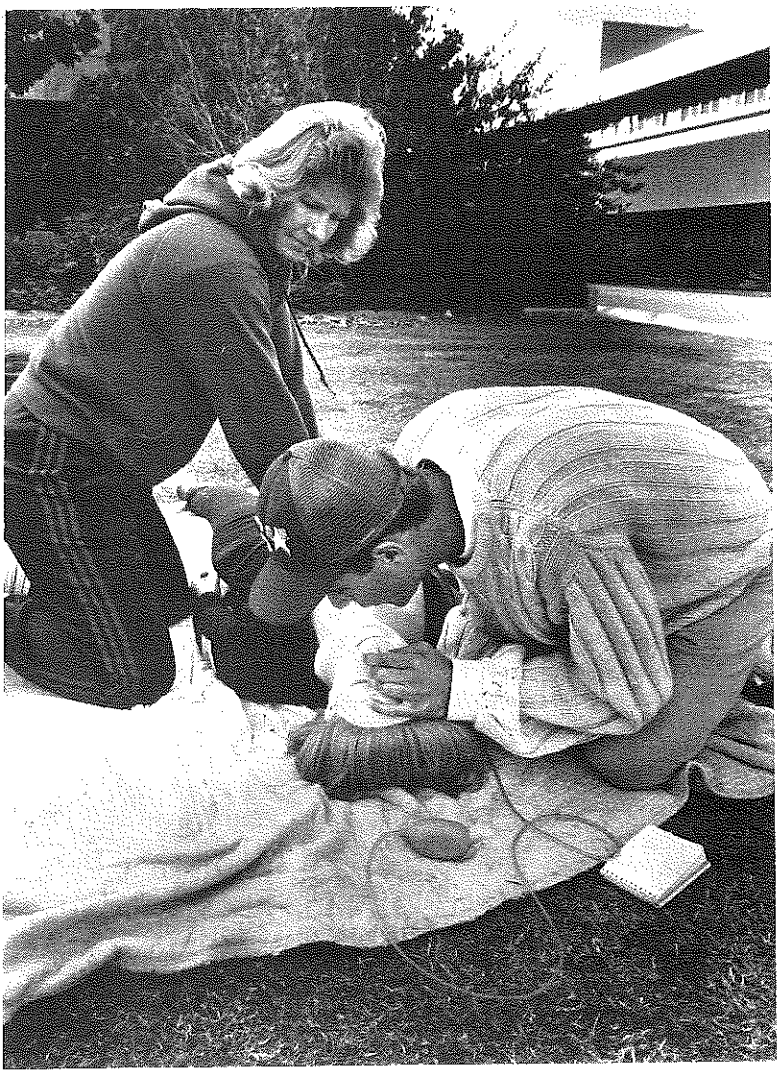
299. Thesis (2–6). Prerequisite: see *Criteria For Thesis and Project,* pages 467–468. Preparation, completion, and submission of an acceptable thesis for the master's degree.

Health Science

School of Health and Social Work
Department of Health Science
Ronald C. Schultz, Chair
Science Bldg., Room 196
(209)294-4014

B.S. in Health Science
Options in:
- **Community Health**
- **Environmental Health Science**
- **Health Services**
- **Occupational Safety and Health**

Single Subject Teaching Credential
Minor in Health Science
M.S. in Health Science
Options in:
- **Environmental Health Science**
- **Health Services Administration**
- **Health Education**



The Bachelor of Science and Master of Science degrees are designed to prepare students for careers with official and voluntary health agencies at the federal, state or local levels of government as well as the private sector.

Bachelor of Science Degree

The Department of Health Science offers curricula leading to a bachelor of science degree, including a major and minor in health science with options in community health, environmental health science, health services, and occupational safety and health.

These programs are designed to provide basic education for employment in environmental health programs, community health programs, occupational safety and health programs, public health programs, voluntary health agencies, and the allied health professions.

Much in evidence today is the increasing emphasis upon health, health problems, and the resolution of these problems by all levels of government and by the industrial and military segments of our society. People are concerned about their health, and a concerned nation is in need of educated, trained, and sensitive individuals to provide assistance and action—actions that will cater to the physical, psychological, and social needs of our country and developing nations throughout the world.

Master of Science Degree

The primary goal of the Health Science master's program is to provide graduate education to students and the working professionals who want advanced knowledge and skills beyond that of the baccalaureate degree. Course work for the Health Science master's degree is varied and designed to provide the maximum opportunity for problem solving approaches to the complex issues in the operation, environment, and human factors confronting the health care systems.

Single Subject Teaching Credential

The Single Subject Teaching Credential in Health Science prepares students to teach health in the secondary schools.

Faculty

Ronald C. Schultz, *Chair*

Sanford M. Brown
Wayne N. Clark
James A. Fikes
Terri A. Hamilton
John G. Hardgrave
Nathan E. Liskey
Donald L. Matlosz
Jeannine M. S. Raymond
Sherman K. Sowby
Christopher J. Tennant

Community Health Advisers: Terri A. Hamilton, John G. Hardgrave, Nathan E. Liskey, Donald L. Matlosz, Sherman K. Sowby
Environmental Health Advisers: Sanford M. Brown, Wayne N. Clark, Ronald C. Schultz, Christopher J. Tennant
Health Services Adviser: Donald L. Matlosz
Occupational Safety and Health Adviser: Lynda M. Brown

Bachelor of Science Degree Requirements

The Health Science Bachelor of Science curriculum consists of a core of five courses providing a foundation of knowledge and skills critical to the theory and practice of the health professional. In addition the student will complete a specialized cluster of courses in an option that provides the depth and breadth for the area. A variety of combinations between and within options is possible to meet professional goals. Some students will choose to specialize in two or more areas of community health whereas others may meet the requirements for environmental health and supplement this with occupational safety and health coursework. Still others may complete all requirements for two options such as environmental health and occupational safety and health.

A major in health science consists of a minimum of 36 units. To complete the major for the B.S. degree, students must complete the health science core (15), one of the options outlined below (21–24), and any additional requirements in related fields as specified.

The General Education Requirement, special course requirements, and electives, which may include a minor, complete the 85–88 units, totaling at least 124 units required for the B.S. degree. Consult the department adviser for recommended sequence of major and general education courses.

Health Science majors may not apply credit/no-credit grading toward major requirements for a baccalaureate degree. All substitutions must be approved by the department chair.

Health Science Core (15 units)

H S 100, 102, 105, 109, 163

Elect One Option Below (21–24 units):

Community Health

Due to the increasing number of opportunities in the area of health, we have structured courses in personal, community, environmental and international health to complement basic courses in safety, first aid, disease, drugs, and human sexuality. The curriculum is designed to prepare individuals not only to be competent instructors in the health areas, but to be health educators in many segments of our society.

Industry, business, labor, and the military all seek knowledgeable individuals to plan and direct health delivery and information services. Advanced study in health systems and evaluation techniques of health systems is available to qualified undergraduate and graduate students.

Community Health Option Requirements (21 units)

H S 104, 110, 113, 124

Elect 9 units from: H S 111, 112, 115, 117, 129, 130, 145, 152T, 161, 185F, Ag Ec 140, CFS 131, FScN 54, IS 50

Additional requirements: H S 90, Biol 10 or 105, Chem 2A, 2C, Phy 33

Environmental Health Science

The environmental health science option prepares an individual for registration as a Sanitarian. Sanitarians or environmentalists are specialists in environmental health programs for private industry or federal, state, and local levels of government.

The basic goals of this program are to prepare professionals to enter the field of environmental health and to provide environmental health education to all students regardless of their major.

The environmentalists may work in research development activities, in teaching, or in the implementation of environmental health concepts in the surveillance, prevention, and control of environmental hazards. The program is accredited by the National Environmental Health Association and approved by the State Department of Health Services.

Environmental Health Science Option Requirements (21 units) H S 160, 161, 162, 165, 167, 168, 3 unit approved elective

Additional requirements: H S 90, Biol 10, 105, Chem 2A–B, Micro 20

Registration as a Sanitarian: Students who desire to take the State Examination for Registration as a Sanitarian must complete H S 175, H S 166T, and must include among their electives and general education selections the following courses: Chem 8, Phys 2A–B, Engl 1, and Spch 3. Consult the departmental adviser concerning substitutions and additions. (Approved by the State of California Department of Health Services and accredited by the National Environmental Health Association.)

Health Services

The Health Services option provides a broad based program to prepare the student for generalist administrative positions within the health care system. The curriculum is designed with an emphasis on exposing the student to the principles of health services administration and the application of these principles. For additional information see the departmental adviser.

Health Services Option Requirements (24 units)*

H S 152T (Public Health Law), Mktg 100, PL SI 181 or MGT 104, Econ 131

Elect 12 units from:

Econ 162, Mktg 132, 138, HRM 150, H S 104, 115, 129, 143, 161, 168, 185F, Soc 147, I S 103

Additional Requirements (15 units)

Econ 1A–B, Acct 3, H S 90, I S 50

* H S 102 may also be applied to satisfy the General Education CORE mathematics requirements if intermediate algebra was completed in high school

Occupational Safety and Health

The basic goals of the Occupational Safety and Health option are to provide the specialized knowledge in the physical and social sciences that will allow the individual to perform the functions within the scope of the professional safety position, and to successfully provide leadership to conserve life, health, and property. This option is designed to give students a thorough understanding of the great variety of problems met in the occupational safety and health field.

Occupational Safety and Health Option Requirements (24 units)* H S 113, 143, 145, 147, 160, 168, I Ed 41, I T 114

Additional requirements: H S 90, 185F, I E 125 or Psych 176, Phys 2A–B

H S 102 may also be applied to satisfy the General Education CORE mathematics requirement if intermediate algebra was completed in high school.

Students who desire to meet the recommendations for the Safety Professional should consult with the department adviser for the selection of general education and elective courses.

Health Science Minor

The minor in health consists of 20 units composed of the health science core requirement and 5 units from the courses required in any one option. Consult the department adviser for assistance in program planning.

Credential Program

The Single Subject Waiver program in Health Science consists of the Bachelor of Science major and additional requirements. For assistance in program planning, consult the teacher education coordinator.

Single Subject Waiver Program in Health Science Requirements

Health Science Core (15 units) H S 100, 102, 105, 109, 163

Elect one option: Community Health, Environmental Health, or Occupational Safety and Health (21–24 units)

In addition the following courses *must* be included in the program: H S 104, 110, 113, 124, 161, CFS 39 or Psych 155, FScN 54, Micro 20, Phy 33, Spch 8 or Spch 114

Recommended courses for credential candidates: H S 112, 152T, A S 174, Biol 122, IS 50, P E 156B, Psych 136

The professional education program as outlined by the School of Education and Human Development (30 units) must also be completed.

Master of Science Degree

Options have been designed to provide in-depth study in environmental health (approved by the State of California Department of Health Services), health services administration and health education.

Requirements

Admission: The M.S. program is open to students with health science or related undergraduate degrees who have demonstrated the ability to perform at an advanced level. Evidence of such ability is required by: (1) a satisfactory undergraduate grade point average (2.50 overall and 3.00 in the major or on the last 60 units); (2) a minimum Graduate Record Examination Score (Q-430 or V-450); (3) passing successfully the department examination; (4) completion of all prerequisites.

(See also Admission to Graduate Standing, Advancement to Candidacy, Program Requirements, and *Criteria for Thesis and Project,* pp. 464–468.)

Under direction of a graduate adviser, each student prepares and submits a coherent program individually designed within the following framework:

	Units
Core courses in health science (see specific requirements)	18
Courses in health science option	6–12
Approved electives	0–6
Total (including 18 units in 200 series)	30

Specific Requirements: Health Science 210, 213, 222T, 280, 285F, 298 or 299.

Environmental Health Science

The curriculum is designed to prepare the individual for a lifetime career in the area of environmental health in industry and governmental agencies. This has been accomplished by providing a foundation of core courses emphasizing the administration and professional aspects of public health. The option curricula encompasses several aspects of environmental health and are designed to provide the student with in-depth and specific concepts of environmental health. Individuals have flexibility within the program and may develop a particular interest in a specific area by taking courses as electives in their area of concern. The program is approved by the State of California Department of Health Services.

Health Services Administration

The format of the program is such that an individual may continue full-time employment while pursuing the degree program. Subjects range from health planning and data analysis to organizational behavior and manpower management.

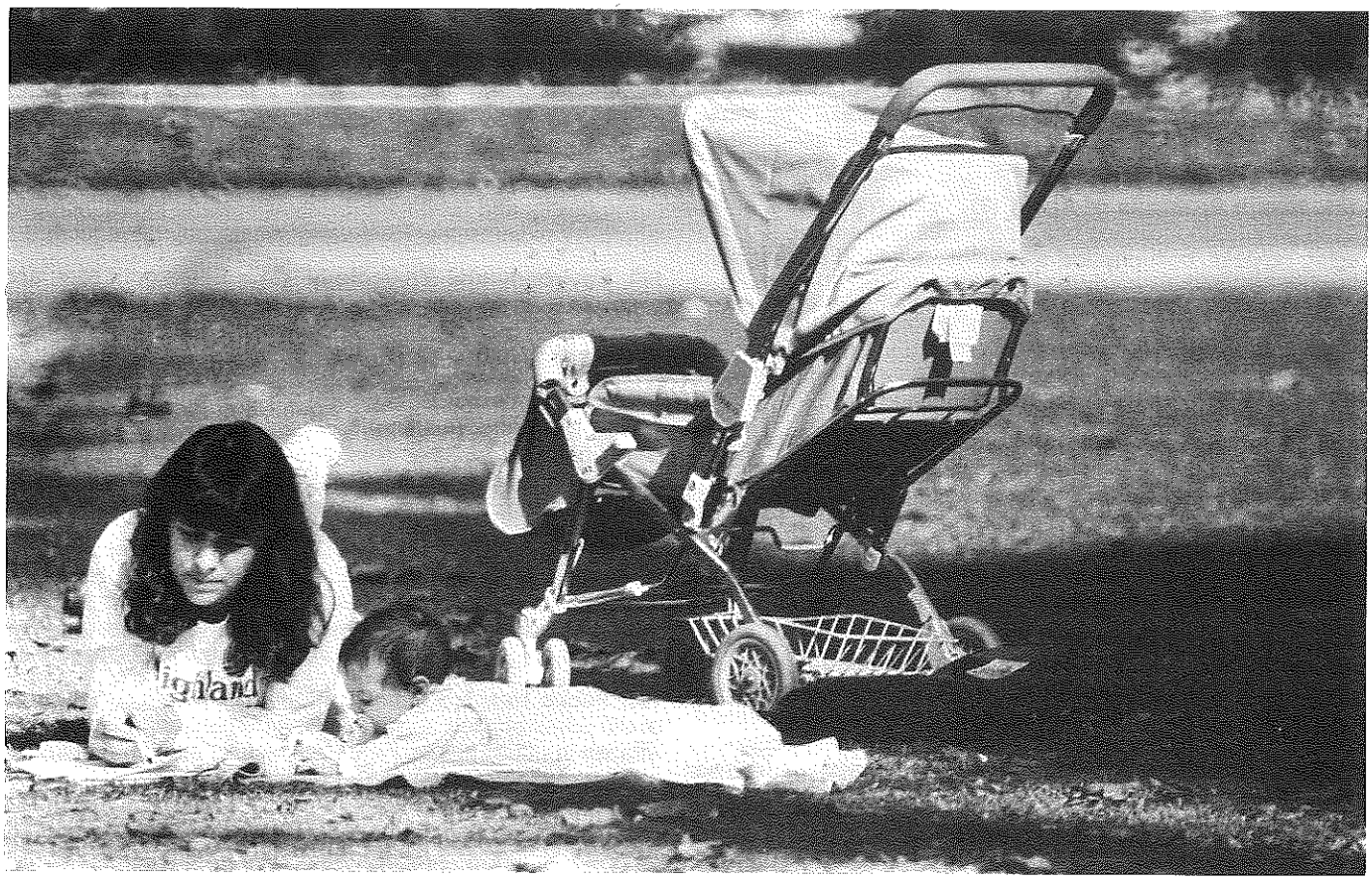
The Health Services Administration program provides:

- reparation for administrative roles within various settings in the health services field.
- Training in technical and analytical skills required of administrators in health care systems.
- Preparation for dealing with the philosophical and ethical issues faced by administrators.
- Opportunities to interact with other health professionals.
- Experiential approaches to management problems.

Health Education

The Master of Science degree in health education provides an opportunity to diverse groups of individuals to improve competencies as public health educators and teachers of health.

* H S 102 may also be applied to satisfy the General Education CORE mathematics requirement if intermediate algebra was completed in high school.



The major goals of the program are to provide advanced knowledge in the area of education and to provide a leadership and communication foundation for the professional health educator.

COURSES

Health Science (H S)

90. Contemporary Health Issues (3). Meets general education requirements. Significance of basic health problems applicable to the young adult and to society. Field assignments may be required.

100. Community Health (3). Prerequisite: H S 90. Public health services as they affect the community; investigation and analysis of community health problems. Field assignments may be required.

102. Public Health Statistics (3). Prerequisite: E.L.M. Exam. Public health statistics and principles of epidemiology; methods of investigating epidemics, collecting of data, analysis and reports. Field assignments may be required.

104. International Health (3). Prerequisite: H S 90. History and evaluation of programs of international health organizations; health problems on a world scale. Field assignments may be required.

105. Environmental Safety (3). The physical environment as it relates to accidents and safety; investigation and analysis of factors involved in the areas of home, school, industry, recreation, and traffic; human factors; accidents by type, age groups, and occupations. Field assignments may be required.

109. Epidemiology of Disease (3). Prerequisite: H S 102. Modern concepts and principles of epidemiology; interaction of all agents, host, and environmental factors of communicable and noncommunicable diseases; problems of the aged. Field assignments may be required.

110. Habit Forming Substances (3). Problems of tobacco, depressants, and stimulants including hallucinogens; use and effects on adolescents and adults. Field assignments may be required.

111. Alcohol and Alcoholism (3). Physical, mental, and social factors related to the consumption of alcoholic beverages; the development of alcohol dependence. Field assignments may be required.

112. Consumer Health (3). Consumer health as it relates to selection of health care products and services; how to differentiate fact from fiction in health matters. Field assignments may be required.

113. Advanced First Aid and Emergency Care (3). American Red Cross Advanced First Aid and Emergency Care course; safety factors in daily living; disaster preparedness programs, emergency treatment for various types of injuries; including cardiopulmonary resuscitation (C.P.R.); control of bleeding, artificial respiration, transportation, splinting, and bandaging. Also includes emergency childbirth, water and auto extrication. Certifications issued when requirements are met. Field assignments may be required. (2 lecture, 2 lab hours)

114. Public Health Science (2). Open to all students. Required for Nursing students; prerequisite or concurrent with second semester in Nursing major. Trends in public health administration, organization, functions; national, state, local, public, voluntary agencies; interpretation and use of vital statistics; environmental health and epidemiology. Field assignments may be required.

115. Health Problems of Aging (3). Health problems of the aged population including basic principles and concepts of the aging process, both physical and emotional. Field assignments may be required.

117. Holistic Health (3). Includes the discovery and integration of the individual into all levels of being: body, mind and spirit. Total approach will be investigated in terms of preventive health practices. Field assignments may be required.

120. Elementary School Health Science Education (3). Designed for the multiple subjects teacher credential candidate (non-health science major) to meet current California legislative requirements. Focus upon the methods, processes, and content used in the elementary schools for the teaching of health science. Student evaluation based on expected competencies. Field assignments are required.

121. Secondary School Health Science Education (2). Designed for the single subject teacher credential candidate (non-health science major) to meet current California legislative requirements. Focus upon the methods, processes, and content used in the secondary schools for the teaching of health science. Student evaluations based on expected competencies. Field assignments are required.

124. Human Sexuality (3). Factors relating to the significance of sexuality as a function of being human. Field assignments may be required.

125. Perspectives in Sexuality for Health Professions (3). Prerequisite: H S 124. Designed specifically for upper-division students in health professions. Focus on those individual sexual problems leading to the service of physical therapists, rehabilitation counselors, nurses or other helping professions. Field assignments may be required.

126. Female Sexuality (3) (Same as W S 127). Studies on female sexuality which include past and present sexual roles, female sexual response patterns, and discussion of common problems encountered by women functioning as sexual beings. Field assignments may be required.

129. Rural Health (3). Health problems of rural areas including community medical services, medical facilities, federal, state, and local legislation and administrative problems. Field assignments may be required.

130. Women's Health (3) (Same as W S 130). Examines current crises/controversies in women's health care. Includes conventional/alternative approaches to treatment, management and prevention with emphasis on self-care and promotion of optimum health. (Former H S 152T section)

143. Occupational and Industrial Safety (3). Application of safety and accident prevention measures that provide a basis for insight into the hazards of occupational and industrial situations. Field assignments may be required.

145. Occupational Safety Management (3). Concepts and principles dealing with the problems, methods, and solutions in the management and development of an effective safety program in the occupational environment. Field assignments may be required. (Former H S 152T section)

147. Evaluation of the Occupational Environment (3). Concepts and principles of investigative analytical methods for hazards commonly encountered in the occupational environment. Field assignments may be required. (Former H S 152T section)

152T. Topics in Health (1–3; max total 12). Analysis and investigation of selected areas in school and community health, public health, and health and safety with some topics including laboratory experiences. Field assignments may be required.

160. Environmental Toxicology (3). Basic principles and concepts of toxicology with a particular emphasis on the regulation of environmental and industrial toxicants for man. (Former H S 166T section)

161. Environmental Health I (3). Basic principles and concepts of environmental health with a particular emphasis on health hazards. Environmental health organizations; communicable disease and environment; contamination control, water, air, solid waste, and noise. Field assignments may be required.

162. Environmental Health II (3). Basic principles and concepts of environmental health with a particular emphasis on health hazards. Radiation, food, rodent control, managing special environments, planned environments, value systems, and community organizations. Field assignments may be required.

163. Public Health Administration (3). Principles of public health administration; fundamentals of organization and administration in public health. Field assignments may be required.

165. Directed Group Study in Environmental Health (3). Prerequisite: H S 161, 162. Problems of environmental health studied through field trips, observations, demonstrations, and seminars. (2 lecture, 2 lab hours)

166T. Topics in Environmental Health (1–3; max total 12). Analysis and investigation of selected areas in environmental health with some topics including laboratory experiences. Field assignments may be required.

167. Public Health Laboratory Techniques (3). Designed to provide training in the use of laboratory procedures and techniques of adjusting and operating monitoring equipment used in water quality, air pollution, noise pollution, food sanitation, radiological health and toxic substances. Field assignments may be required. (2 lecture, 2 lab hours)

168. Occupational and Industrial Health (3). Prerequisite: H S 161 or 162. Concepts of occupational health as they pertain to appraising and controlling environmental health hazards; occupational diseases, chemical, biological, and physical agents that produce organic or systemic damage. Problems in toxicology, measurement instruments, and evaluating health hazards. Field assignments may be required.

170. Health Effects of Indoor Pollution (3). A descriptive analysis of environments encountered at home and in the workplace with an emphasis on assessment of risk, health effects and a review of federal regulations that apply to these environments. Field assignments may be required. (Capstone Cluster, see C E 170.)

175. Environmental Internship (3–6; max total 6). Prerequisite: completion of 21 units of the environmental health option in the Health Science major. Provides practical experience in environmental health. The internship may be with a governmental agency or industrial situation or a combination, depending upon the student's need.

180. Research for the Health Professions (3). Prerequisite: H S 102. Statistical and research procedures for the Health Professions with emphasis on the use of intermediate level research tools. Interdisciplinary approach to the application of inferential measures. (Former H S 152T section)

185F. Field Work in Health (1–3; max see below). Repeatable to 3 units in any one area, maximum total 6. Prerequisite: completion of 24 units of the health science major. Provides practical experience in a community work setting.

190. Independent Study (1–3; max see reference). See *Academic Placement—Independent Study,* pages 96–97.

GRADUATE COURSES

(See *Course Numbering System,* p. 133.)

203. Seminar in Community Health Organization (3). Prerequisite: H S 100. Individual research, analysis, and evaluation in relation to educational aspects of community health programs; group procedures; community organizations; selection, development, and use of media. Field assignments are required.

205. Seminar in Safety Problems and Programs (3). Prerequisite: H S 105. Development, organization, and administration of safety programs; individual research, analysis, and evaluation of pertinent problems. Field assignments are required.

210. Seminar in Health Services Administration (3). Prerequisite: H S 163. Individual research, analysis, and evaluation of the organization, administration, and legal aspects of health programs. Field assignments are required.

213. Health Planning and Program Evaluation (3). In-depth analysis of the principles and practices in comprehensive health planning and program evaluation. Field assignments are required. (Former H S 222T section)

222T. Seminar in School and Community Health (1–3; max total 15). Individual research, analysis, and evaluation of current topics in school health education and community health education programs such as family life education, consumer health problems, substance abuse, and chronic disease. Field assignments may be required.

223. Seminar in Health Science Education (3). Prerequisite: teaching experience. Individual research, critical analysis and evaluation of the health science program; curriculum materials, and special techniques relating to instruction, services, and environment. Field assignments are required.

242T. Seminar in Occupational Safety and Health (1–3; max total 15). Prerequisite: H S 105 and 143. Individual research, analysis, and evaluation of current topics such as loss control, product safety laws, and governmental occupational standards. Field assignments may be required.

262T. Seminar in Environmental Health (1–3; max total 15). Individual research, analysis, and evaluation of current topics: air, water, housing, vector control and other selected environmental health problems. Field assignments may be required.

280. Seminar in Techniques of Health Research (3). Research methodology, identification of health research problems, use of library resources, data gathering and processing, writing a research report.

285F. Field Work in Health (1–4; max total 10). Planning, implementation, participation, evaluation in selected areas: safety, school health, community health, physical handicaps, occupational health, and environmental health.

290. Independent Study (1–3; max see reference). See *Academic Placement—Independent Study,* pages 96–97.

298. Project (2–4; max total 4). Prerequisite: advancement to candidacy for M.S. degree in health science. See *Criteria for Thesis and Project,* pages 467–468. A significant endeavor in health science that may include an educational booklet, audio-visual presentation, evaluation of a health agency, or the development of an experimental device or piece of equipment. A narrative component is required which will follow a formal format and shall include a written abstract.

299. Thesis (2–4; max total 4). Prerequisite: see *Criteria for Thesis and Project,* pages 467–468. Preparation, completion, and submission of an acceptable thesis for the master's degree.

IN-SERVICE COURSES

(See *Course Numbering System,* p. 133.)

302. Selected Topics in Health (1–3; repeatable with different topics).

HEALTH AND SOCIAL WORK
Interdisciplinary Courses

School of Health and Social Work
Richard D. Ford, Dean
Science Bldg., Room 191
(209) 294-4004



The School of Health and Social Work offers the following interdisciplinary courses as general electives open to all students. These courses provide students with an opportunity to interact with various university disciplines that have a common purpose and with professionals who are working cooperatively in an interdisciplinary setting.

COURSES

Interdisciplinary Health and Social Work (HSW)

100T. Selected Topics in the Health Professions (1-3). Interdisciplinary topics of current interest covering subject matter that is appropriate for all health professional disciplines. Topics are rotated each semester. Field assignments may be required.

101. Adjustment to Disability (3). An investigation of the psychological/social adjustment process to illness and disability and methods to facilitate the development of coping mechanisms.

History

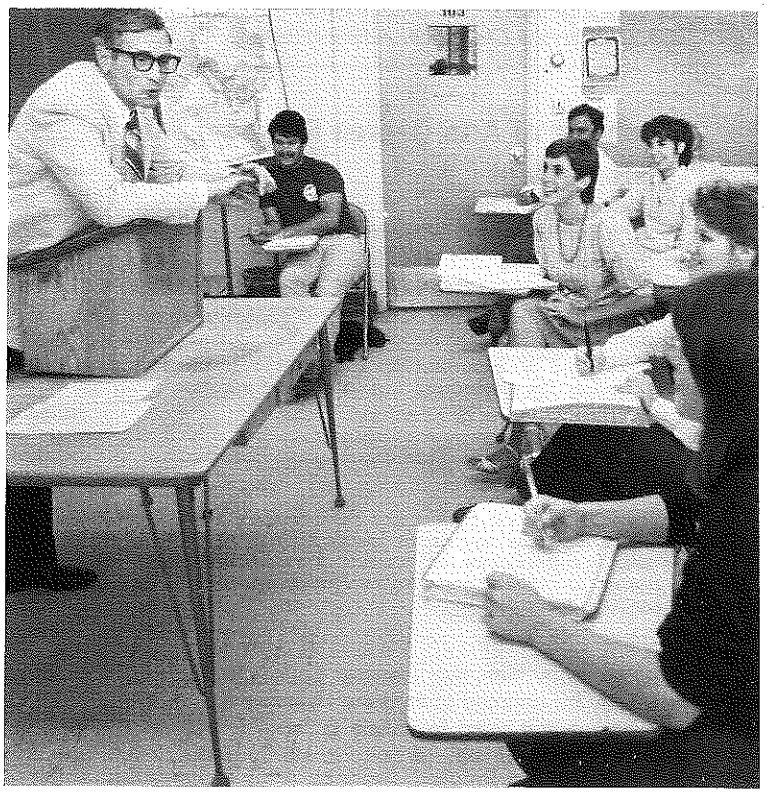
School of Social Sciences
Department of History
John C. Kendall, Chair
Social Science Bldg., Room 101C
(209) 294-2153

B.A. in History
Minor in History
M.A. in History
Single Subject Teaching Credential in Social Science

History is the study of man's recorded past. It encompasses all aspects of human behavior, social organization and cultural development. The arts and the sciences, the development of technology and changing economic forces are as much a part of history as is politics or social conflict.

The student of history is engaged in a journey through time in which he or she can witness and compare the development of a variety of cultures and the interrelations between people in many different circumstances. Through the study of past events, history provides a great storehouse of experience by which the theories of the other social sciences can be tested. And through its analysis of the development of institutions and cultures, it provides one of our best tools for understanding social phenomena.

History is also one of the broadest and most universal of the humanities. Just as the personality of any individual is shaped through the totality of his past experiences, so cultures and institutions also develop in time. The study of history can help students understand themselves and their culture better and develop a more tolerant and humane spirit toward others. In this way, as in so many others, a knowledge of the past can help all of us meet the problems of today with greater understanding and compassion.



Faculty and Program

The Department of History at CSU, Fresno currently has 18 faculty members, offering a wide variety of courses in the history of Europe, the United States, Latin America, the British Empire, Africa, the Middle East and the Far East, as well as courses in intellectual and cultural history, social history, military history, and the history of women.

The history department offers a major and minor in history for the Bachelor of Arts degree, a graduate program leading to the Master of Arts, and courses for use in the teaching credential program. It participates in the non-departmental social science major and in the interdisciplinary programs and minors in Armenian studies, Asian studies, classical studies, Latin American studies, Russian area studies, and women's studies. History courses may also be used as electives toward graduation in most other majors, and the history department encourages students to take minors and second majors in other fields as well.

Career Opportunities

A history major is trained to read with comprehension and to compare and analyze both written and oral material. In addition he or she must know how to evaluate evidence and sources, how to critique the writing of others, and how to do research and writing on his own. These are highly valued skills in many occupations and professions today, and the history department offers preparation for careers in teaching, law, government service, librarianship, journalism, publishing, and business. Career opportunities may also be found in such diverse fields as marketing, advertising, insurance, public relations, social services, urban planning, and the foreign service.

Students with questions related to their future careers are encouraged to consult with the faculty advisers of the history department, as well as with the Office of Advising Services and the Office of Career Planning and Placement Services, which can provide much useful information with regard to career planning and current job market trends.

Faculty

John C. Kendall, *Chair*

Stephen A. Benko
D. Loy Bilderback
Roger C. Bjerk
John W. Bohnstedt
James M. Brouwer
Sidney H. H. Chang
Jack D. Christensen
Carlos A. Contreras
Robert J. Dinkin
Warren E. Gade
H. Marshall Goodwin, Jr.
David C. Hudson
David N. Jones
W. Hudson Kensel
Peter J. Klassen
Robert M. Smetherman
Ephraim K. Smith, Jr.

Undergraduate Adviser: John C. Kendall
Graduate Adviser: David C. Hudson
Social Science Credential Adviser: Jack D. Christensen

Bachelor of Arts Degree Requirements

History Major

	Units
1. Major requirements:	42
a) Lower-division requirements (select four): Hist 1, 2, 3, 5, 6, 7	(12)
b) Upper-division requirements: Hist 100W and 27 additional History upper division units	(30)
2. General Education requirement	54
3. Electives and Remaining Degree Requirements (see *Degree Requirements,* pp. 98–101); may be used toward a dual major or minor	28–34 *
Total	124

* This figure takes into consideration that a maximum of two General Education BREADTH courses may also be applied to satisfy History major requirements (see General Education, pp. 104–111). These courses may be selected from History 1, 2 and 101. Consult the history department chair or faculty adviser for additional details.

Notes:

1. No more than two General Education BREADTH courses may be counted toward the History major.
2. No course used to satisfy General Education CAPSTONE requirements may be used to satisfy History major requirements.
3. History majors are not permitted to take History courses by *CR/NC* grading.
4. General Education and elective units may be used toward a dual major or minor (see *Dual Major,* p. 98 or departmental minor). Consult the appropriate department chair, program coordinator, or faculty adviser for further information.
5. Students who are planning to do graduate work in History are advised to take a foreign language as an undergraduate in consultation with the History Department.
6. The 27 units of upper-division History electives must be selected from the 3 fields listed below. At least 1 course must be selected in each field, but no more than 18 units in one field. At least 1 course must deal primarily with history prior to 1700.

Fields

Western Hemisphere: Hist 101, 137, 153, 160, 161, 162, 165, 166, 169T, 171, 172, 173, 174A, 174B, 177, 178, 179T, 180, 181A, 181B, 183, 184A, 184B, 186, 189A, 189B, 190, 198.

European: Hist 103A, 103B, 103C, 106, 111, 112, 116, 119T, 120, 121, 122, 124T, 125, 126, 129T, 130, 131, 132, 133, 134, 135, 136, 138, 140, 141, 142, 143, 144, 145, 147, 148, 149T, 150, 151, 190, 198.

Asian, African, and Middle Eastern: Hist 106, 108A, 108B, 109T, 110, 114, 115, 157, 190, 191A, 191B, 198, 199T.

History Minor

The History minor consists of 18 units of upper-division History courses, which should be chosen in conjunction with an adviser in the history department. History minors are not permitted to take History courses by *CR/NC* grading.

Credential Program

See *Social Science Major,* pages 423–424, for the Single Subject Waiver program in social science.

The American History Requirement

The American history requirement for graduation may be fulfilled by passing (a) the Advanced Placement Examination (See *Advanced Placement,* p. 95) or (b) Hist 11 or 12.

Graduate Program

The Master of Arts degree program in history is designed to extend the competence of persons engaged in a wide variety of fields requiring a broad grasp of historical knowledge, techniques, and interpretation, for those in public service, for teachers at various levels, and for those anticipating advanced graduate study in history.

Prerequisites: Admission to the Master of Arts degree program in history assumes undergraduate preparation equivalent to a CSU, Fresno major in history. Majors from other disciplines may also qualify for admission depending on grade point average and other factors deemed pertinent for success in historical studies. The department determines in each case whether the applicant needs additional preparation, such as History 100W, before receiving classified standing.

Master of Arts Degree Requirements

(See *Graduate Studies and Research,* pp. 466–469.)

The history department offers a 30-unit Master of Arts program with two options: *Thesis* and *Examination.* The basic requirements for both are:

A. **Core:** 12 units, consisting of History 200 (3 units), History 210 or 220 (3 units), History 230 or 240 (3 units), History 280T (3 units).

B. **Six units from among** 100-level History courses and/or History 210, 220, 230, and 240 (except History 100W, 190, 198). With the approval of the departmental adviser, up to 6 units of related courses in other departments may be substituted.

C. **Six units from among** History 280T (if repeated), History 290, History 292.

Thesis Option: Six units of History 299A–B.

Examination Option: Six additional units from Category *B,* plus a written comprehensive examination in three fields chosen from among the following. No more than two may be taken from any one group.

Field I: a) Ancient History b) Medieval History c) Early Modern Europe to 1815 d) Modern Europe since 1815.

Field II: a) The United States to 1865 b) The United States since 1865.

Field III: a) Latin America b) Asia and Africa.

Comprehensive examinations are given during the first week in November and the first week in April of each year. For other specifics, consult the department graduate adviser; for general requirements see the *Division of Graduate Studies and Research,* pages 462–471.

Foreign Language Requirement. This is an optional requirement determined at the discretion of the Department of History and is contingent upon the research needs of the individual. Candidates writing a thesis based on foreign language sources will be expected to pass a language competency examination to be administered by the Department of History. Language examinations will be given during the first week in November and the first week in April of each year. For details, see the departmental graduate adviser.

COURSES

History (Hist)

1. Western Heritage I (3). The Mediterranean and European world from prehistoric to early modern times. Social, political, intellectual, and artistic movements in the ancient Fertile Crescent, classical Greece and Rome, and in Medieval, Renaissance and Reformation Europe.

2. Western Heritage II (3). Survey of modern European culture since the 17th century. Impact of industrialization and urbanization; political revolutions and ideologies; intellectual, artistic and religious movements; European imperialism; the two world wars and changing patterns in contemporary European life.

3. Colonial America (3). Western Hemisphere history from discovery to independence.

5. The World Today (3). A consideration of selected current affairs in their historical perspectives. Topics change with each offering of the course.

6. East Asian Civilization (3). Introduction to the history and cultures of the East Asian countries, particularly China, Japan, and Korea. Examination of the East Asian mind as reflected in Confucianism, Taoism, Buddhism and in resistance to the challenges of the West.

7. African Civilization (3). Not open to students with credit in Hist 157 prior to fall, 1983. Survey of African history from ancient times to the present. Emphasis is on political, economic, and religious movements which have contributed to the rich diversity and the distinctive unity of African civilization.

11. American History to 1865 (3). Meets the American history requirement. The formation of the Union and the development of American society to 1865.

12. American History from 1865 (3). Meets the American history requirement. The development of American society since 1865.

100W. Introduction to Historical Method (3). Prerequisite: Engl 1, upper-division standing, preferably first-semester junior. (Consult department for more specific requirements of individual instructors.) Introduction to the theory and practice of historical inquiry. Students receive careful guidance and criticism in preparing papers on historical subjects. Emphasis is placed on research techniques, evaluation of evidence, documentation, bibliography, organization, style and mechanics of writing. Meets the Upper Division Writing Skills Requirement for graduation.

101. Women in History (3) (Same as W S 101). Historical survey of women's roles in history, with an emphasis on the emergence of the feminist movement.

103A. History of Early Christianity (3). Early Christianity from the first century to Constantine the Great and the legalization of Christianity (313 A.D.); origin of Christian movement from Judaic roots and its spread in the Graeco-Roman world; development during the early patristic period.

103B. History of Medieval Christianity (3). Medieval Christianity from its legalization to eve of Reformation. Christian institutions and ideas, their impact upon society; reform movements and decline of Christian influence; gradual secularization of society.

103C. History of Modern Christianity (3). An analysis of Catholicism, Orthodoxy and Protestantism in Europe from the Reformation to Vatican II. Areas of study include: religion in confrontation with science, secularism and Marxism; state-church relations; reform movements; totalitarianism and the church.

106. The Near East and Islamic Civilization to 1500 (3). Rise of Islam, its territorial expansion, teachings, and cultural contributions. Emergence of the Umayyad and Abbasid Caliphates and appearance of Seljuk and Ottoman Turks.

108A. Armenian History I: Ancient and Medieval (3). Not open to students with credit in Hist 108 prior to fall 1981. History of Armenia and Armenians from prehistoric times to the 13th century Mongol invasions will be considered from Armenia's point of view as well as from that of its neighbors: Assyria, Iran, Rome, Byzantium, the Arabs, and the Seljuk Turks.

108B. Armenian History II: Modern and Contemporary (3). Not open to students with credit in Hist 108 prior to fall 1981. Discussion of the Armenian Kingdom of Cilicia, the rise of the Ottoman Empire, Armenia's subjugation to Turkish, Persian, and Russian Empires, the "Armenian Question," the massacres and Genocide, Soviet Armenia, and diasporic communities in America, Europe, and the Near East.

109T. Studies in Middle East and Africa (1–3; max total 6 if no topic repeated). Intensive study of special topics.

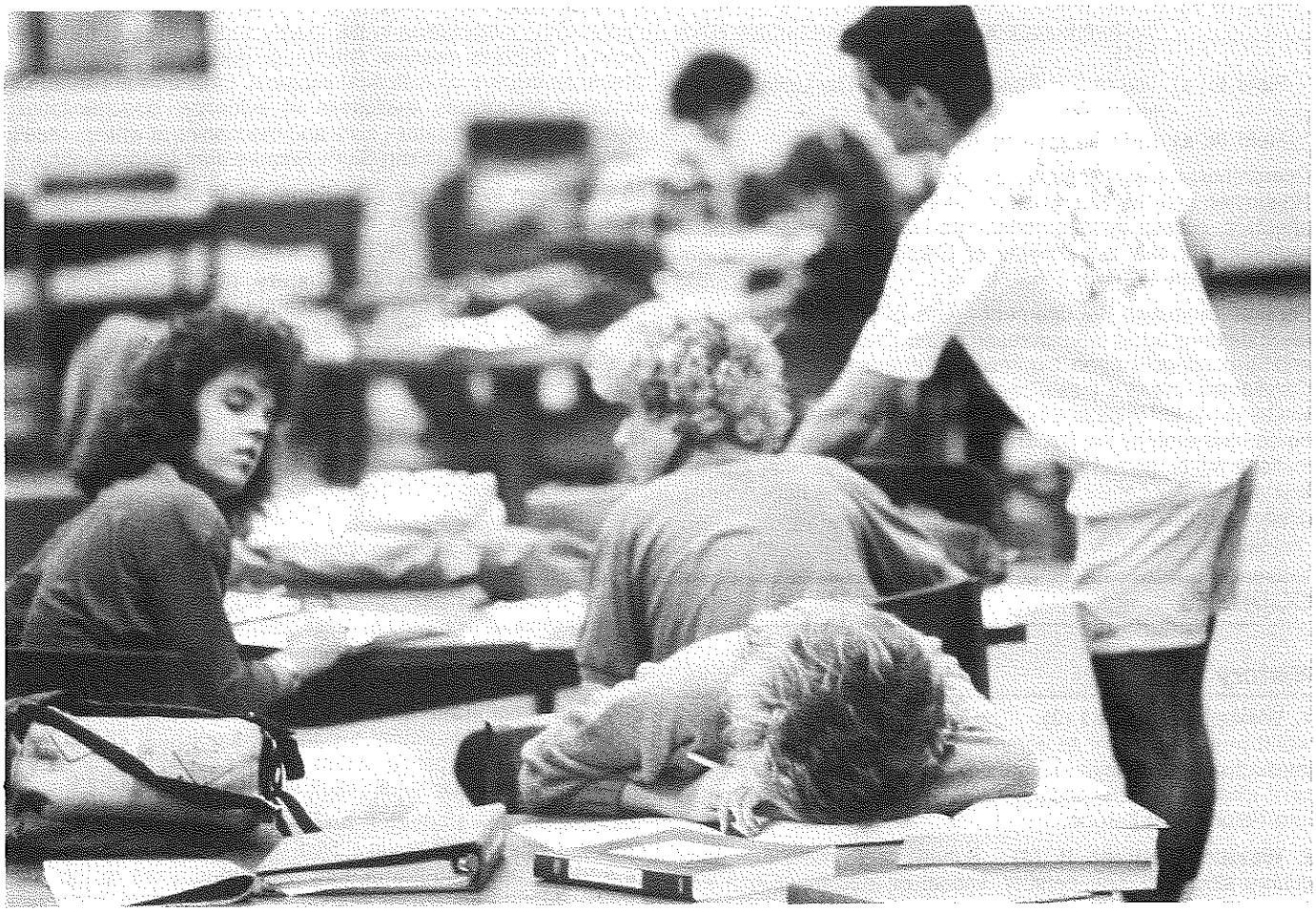
110. Ancient Near East (3). Ancient civilizations of the Middle East. History and culture of the Sumerians, Assyrians, Babylonians, and Persians from the dawn of history to Alexander the Great and the ascendance of Greece.

111. Ancient Greece (3). The history and culture of ancient Greece from the Minoan-Mycenaean periods through the Golden Age of Athens to the dissolution of the empire of Alexander the Great.

112. Ancient Rome (3). The early history of Rome and the evolution of Roman society, politics, and culture through the republican and imperial periods.

114. Ancient Egypt (3). The history and culture of Egypt from prehistoric times to the death of Cleopatra. In addition Phoenicia and Carthage are briefly discussed.

115. Ancient Israel (3). Ancient Israel from Abraham to the destruction of Jerusalem in 70 A.D. Jewish religious thought is



discussed by placing the books of the Old Testament in their historical context.

116. Greek and Roman Religion (3). Survey of the religious ideas, customs and practices of ancient Greeks and Romans from the time of Homer to the establishment of Christianity.

119T. Studies in Ancient History (1–3; max total 6 if no topic repeated). Intensive study of special topics.

120. Later Eastern Roman or Byzantine Civilization (3). The Roman Empire in the East from the anarchy of the third century to the fall of Constantinople; political, military, and economic causes of its survival, the Church's role, and the Empire's relations with the Islamic, Latin, and Slavic world.

121. The Middle Ages (3). Medieval Europe from the fall of the Roman Empire in the West to the Renaissance.

122. Medieval Culture (3). Selected aspects of medieval life and culture such as warfare, commerce, art and architecture, learning and the university presented as manifestations of the medieval mind. Extensive use of visual materials.

124T. Studies in Medieval History (1–3; max total 6 if no topic repeated). Intensive study of special topics.

125. Renaissance (3). Social, intellectual, political and economic factors that shaped Europe in the 14th and 15th centuries; humanism, foundations of the state; secularization and dissent within the church.

126. Reformation (3). Analysis of the political, social, and intellectual movements associated with the 16th century religious upheaval.

129T. Studies in Intellectual and Social History (1–3; max total 6 if no topic repeated). Topics concerned with ideas and movements that have significantly shaped the course of history.

130. Europe in the 17th Century (3). European culture, society, and politics from 1600 to the death of Louis XIV.

131. Europe in the 18th Century (3). Intellectual, social and political development of Europe from 1715 to the French Revolution and Napoleon Bonaparte.

132. Europe in the 19th Century (3). Prerequisite: Hist 2 or equivalent. History of Europe (mainly Great Britain, France, Germany and Austria) from Napoleon to the outbreak of World War I. Social and cultural consequences of the Industrial Revolution; rise of modern national states; European imperialism and dominance in world affairs.

133. Europe in the 20th Century (3). Narrative and interpretive account of 20th century Europe. Stress on the impact of World War I, the Communist and Fascist Revolutions, the economic recovery of Europe, and the loss of European significance in the world after World War II.

134. Europe Today (3). An examination of recent European history, emphasizing the trauma of decolonization, adjustment to the reality of a divided Europe, the twisting path to European unification, and the revolution in European lifestyles caused by economic prosperity.

135. European Cultural History (3). Prerequisite: Hist 2 or equivalent. Survey of European thought from the Enlightenment to the present. Major movements in philosophy, religion, literature, art and architecture; ideologies such as conservatism, liberalism, socialism, communism, nationalism, racism and fascism. Emphasis on ideas of lasting and world-wide influence.

136. European Military History From Napoleon to Hitler (3). Examination of strategic planning, tactical innovation, military systems, and campaigns from the time of Napoleon to Hitler. World wars of the 20th century with particular attention to their causes and consequences.

137. Historic Preservation (3). History of historic preservation in the United States from 1816 to the present, and an introduction to the methodology involved in identifying, researching, and protecting sites, buildings, and neighborhoods of architectural and historical significance. Includes tours of local historical sites.

138. History of the Second World War in Europe (3). A detailed examination of the military, diplomatic, political, economic, social and cultural impact of the Second World War in Europe. The causes, conduct and consequences of the war will be analyzed.

140. Modern France (3). The culture, politics, and society of France from the Old Regime to the Fifth Republic.

141. Modern Germany (3). Political and social developments from Bismarck to the present. Rise of Germany as a world power; failure of German democracy; Hitler and the Third Reich; politics of a divided Germany since 1945.

142. Tsarist Russia (3). The political, economic, and social history of Tsarist Russia from 862 to 1917.

143. The Soviet Union (3). The political, economic, and social history of the Soviet Union since 1917.

144. Russian Culture (3). Russian art and literature in their historical context. Extensive use of visual material.

145. Spain and Portugal (3). Development of the Iberian Peninsula from prehistoric to modern times.

147. Eastern Europe (3). A survey of the history of East Central Europe and the Balkans.

148. Scandinavia (3). A survey of the history of Scandinavia from the age of the Vikings to the present.

149T. Studies in Modern European History (1–3; max total 6 if no topic repeated). Intensive study of special topics.

150. England to 1688 (3). Structure of the British government, society, and economic life from Roman times to the Glorious Revolution.

151. England and the Empire (3). Rise of England and the British nation; spread of the English-speaking peoples and the transfer of British institutions; from Elizabeth I to the modern era.

153. Canada (3). Analysis of the Canadian historical experience; from discovery, through French regime and British Empire, to modern transcontinental nation.

157. Modern Africa (3). The history of Africa since 1800. Topics given special attention include the slave trade and its abolition, European exploration, the imposition of European colonial rule, African nationalism, the struggle for independence, and Africa's rise to prominence in world affairs.

160. The Great American Civilizations: Maya, Aztec, Inca (3). Historical examination of the rise and fall of the Maya, Aztec, and Inca empires. Social organization, religion, technology, art, and scientific achievements of the pre-Columbian great American civilizations.

161. Caribbean Basin (3). Emphasis on origins and evolution of the Greater Antilles and Central America. The role of the U.S. in these areas will be examined.

162. South America (3). Not open to students with credit in Hist 117 prior to fall 1985. The history of South American republics, with an emphasis on such themes as instability, economic development, political parties and revolution.

165. Modern Mexico (3). Nineteenth century origins of Mexican nationality. Development of modern Mexican culture from the Mexican Revolution to the present as compared to that of the Mexican-American. Literature and art as an expression of the new Mexican culture.

166. United States—Latin American Diplomacy (3). History of the relations between the United States and Latin America, ranging from the Monroe Doctrine through the Good Neighbor Policy, Alliance for Progress and the Caribbean Basin Initiative.

169T. Studies in Latin American History (1–3; max total 6 if no topic repeated). Intensive study of special topics.

171. Early American History, 1607–1789 (3). First of a sequence of five courses covering the full period of history of the United States; colonial foundations; political and economic factors; social and cultural development through the founding of the new republic.

172. United States History, 1789–1865 (3). Political, economic, social, and cultural developments from the beginning of the republic through the Civil War.

173. United States History, 1865–1914 (3). The development of an increasingly urban and industrialized society from Reconstruction to the eve of WW I.

174A. United States History, 1914–1945 (3). The United States in world affairs; political, economic, social, and cultural developments and problems from 1914 to 1945.

174B. United States History, 1945–Present (3). The United States in world affairs; political, economic, social, and cultural developments, and problems from 1945 to present.

177. American History in Film (3). Analysis of significant films and documentaries on controversial aspects of American History. Emphasis given to placing film content in an historiographical framework. Offered especially, but not exclusively, for prospective teachers.

178. History of Black Americans (3) (See BI S 178)

179T. Studies in United States History (1–3; max total 6 if no topic repeated) (Same as W S 179T). Intensive study of special topics.

180. United States Military History (3). An overview of American military history, with emphasis on the 20th century.

Tactical and strategical analysis of American participation in armed conflicts. Study of the impact of technology and the evolution of tactics.

181A. Westward Movement to 1848 (3). The challenge of free land; development of British and United States western policies; problems of American migration to the interior, effects of the frontier environment upon the culture of the West.

181B. Westward Movement Since 1848 (3). Patterns of exploitation; role of the federal government in the West: land policy, Indian policy; problems of communication; economic growth.

183. The Hispanic Southwest (3). Exploration, conquest, and settlement of the Spanish Borderlands from 1513 to the Mexican War; contributions of Hispanic culture to the Southwest.

184A. American Diplomatic History to 1898 (3). Principles, ideals, and policies of the United States in diplomatic relations from 1775 to 1898.

184B. American Diplomatic History, 1898–Present (3). Principles, ideals, and policies of the United States in diplomatic relations as a great world power in the twentieth century.

186. American Ethnic History (3). The immigration of peoples from Europe, Asia, Africa and Latin America to the United States and the life they created here.

188. Early California (3). Not open to students with credit in Hist 189A prior to fall 1986. 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. (Former Hist 189A)

189. Modern California (3). Not open to students with credit in Hist 189B prior to fall 1986. Social, cultural, economic, and political development of California from the 1860's to the present. (Former Hist 189B)

190. Independent Study (1–3; max see reference). See *Academic Placement—Independent Study,* pages 96–97.

191A. Modern Far East, 1843–1949 (3). Not open to students with credit in Hist 191 prior to fall 1987. History of the Far East from the conclusion of the Opium War to the eve of Chinese Communist Revolution. Particular emphasis on China, Japan, and Korea.

191B. Modern Far East, 1949–Present (3). Not open to students with credit in Hist 192 and/or 194 prior to fall 1986. History of the Far East from the success of the Chinese Communist Revolution in 1949 to the present. Particular emphasis on China, Japan, Korea, and Vietnam.

198. Directed Reading (1–3; max total 3 if no area repeated). Prerequisite: upper-division standing. Readings on selected themes, problems, and topics in consultation with a faculty adviser.

199T. Studies in Far Eastern History (1–3; max total 6 if no topic repeated). Intensive study in special topics.

GRADUATE COURSES

(See *Course Numbering System,* p. 133.)

200. Historiography (3). The development of historical consciousness and historical methodology as manifested in the writings of great historians and philosophers of history from Herodotus to the present.

210. Seminar: Interpretations in United States History to 1865 (3). Intensive reading and discussion/analysis of significant historical literature and problems in United States History to 1865.

220. Seminar: Interpretations in United States History since 1865 (3). Intensive reading and discussion/analysis of significant historical literature and problems in United States History since 1865.

230. Seminar: Interpretations in Ancient, Medieval, and Early Modern European History (3). Intensive reading and discussion/analysis of significant historical literature and problems in European History prior to 1650.

240. Seminar: Interpretations in Modern European History (3). Intensive reading and discussion/analysis of significant historical literature and problems in European History since 1650.

280T. Research Seminar (3). Prerequisite: six units from among History 200, 210, 220, 230, 240. The writing of a major research paper in a seminar setting, based on intensive research. Topics studied will vary with the instructor. May be repeated for graduate credit if topics do not overlap.

*** 290. Independent Study (1–3; max total 6 if no topic repeated).** See *Academic Placement—Independent Study,* pages 96–97.

*** 292. Directed Reading (1–3; max total 6 if no area repeated).** Prerequisite: see instructor. Readings on selected themes and topics in consultation with a faculty adviser.

299A–B. Thesis (3–3). Prerequisite: see *Criteria for Thesis and Project,* pages 467–468. Preparation, completion, and submission of an acceptable thesis for the master's degree. A. Thesis design. B. Thesis writing. *A* and *B* may be taken concurrently.

IN-SERVICE COURSES

(See *Course Numbering System,* p. 133.)

300. Topics in History (2; max total 8 if no topic repeated).

* (Maximum total for History 290 and 292 combined is 9 units if no area repeated.)

HUMANITIES
Interdisciplinary Minor

School of Arts and Humanities
Joseph Satin, Dean
San Ramon 4, Room 222
(209) 294-3056

The minor in Interdisciplinary Humanities surveys relationships among philosophy, literature, music, architecture, sculpture, and painting. It also makes some use of science, popular culture, contemporary events, and whatever else relevant that may come to hand in order to explore as richly as possible the interrelationships among arts and ideas. And it does so for entire cultures, subdivided, of course, into their major periods.

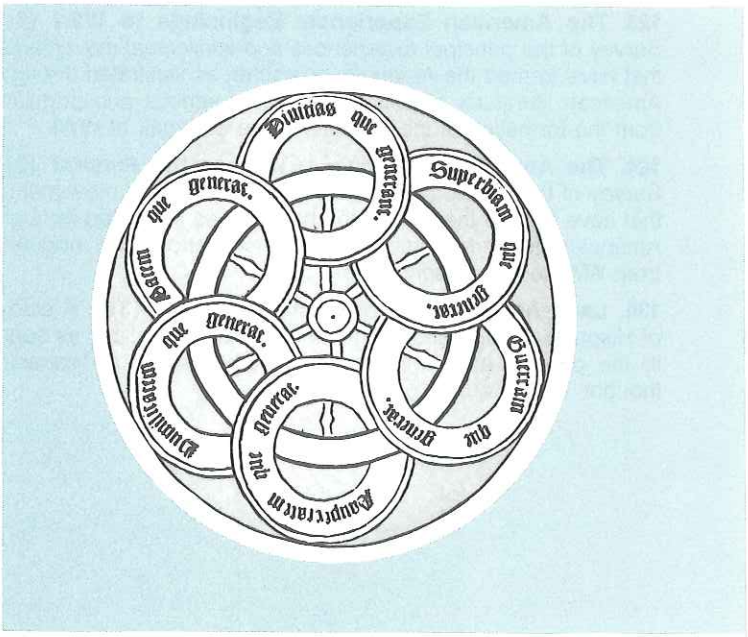
Faculty

Jose A. Elgorriaga, *Program Coordinator*
Loy D. Bilderback, *History*
Kathryn L. Bumpass, *Music*
George E. Diestel, *Speech Communication*
June M. Gill, *Foreign Languages*
John J. McDermott, *English*
David T. Natharius, *Speech Communication*
Joseph Satin, *English*
Kenneth A. Seib, *English*

Requirements for the Minor

Twenty-one units in interdisciplinary humanities study to be selected as follows:

	Units
Hum 10 or 11	3
CapS 104, 108, 112, or 116	3
CapS 123, 124, or 130	3
Hum 100, 140, or 150	3
Hum 180 or CapS 116	3
Electives (Select from remaining humanities courses or from other pertinent courses approved by the faculty adviser.)	6
	21



COURSES

Humanities (Hum)

1T. Topics in Humanities (1–3) (Same as Hum 101T). Selected topics in the humanities not normally covered by regular course offerings.

10. Introduction to the Humanities (3). Interrelationships among art, literature, music and philosophy, from Greece and Rome through the Renaissance.

11. Introduction to the Humanities (3). Interrelationships among art, literature, music, and philosophy, from the seventeenth century Age of Reason to the present.

100. African Humanities (3). To explore interrelationships among the visual arts, music, literature and religion-philosophy throughout key periods of African civilization from the earliest times to the present.

101T. Topics in Humanities (1–3) (See Hum 1T).

140. Tradition and Change in China and Japan (3). (Same as Anth 186) This course examines the current aspirations and problems of the Chinese and Japanese in terms of their traditional cultures, and explains how their histories, values, world views, and intellectual traditions affect their lifestyles and their international relations today.

150. Indic Cultures and Traditions (3). (Same as Ling 110) Study of the cultures and traditions of the Indian Subcontinent as part of the common human heritage, and for informed perspectives on international issues. Understanding of peoples of South Asia: their life styles, world views and experiences; the development of their intellectual, aesthetic and spiritual traditions; and their current aspirations and problems.

180. Global Interdisciplinary Humanities: Interrelationships among World Cultures (3). Exploring interrelationships among world cultures—Western, Far Eastern, African—by examining common traits and ideas, societal structures, and archtypal forms among them.

CAPSTONE (CapS)

104. Humanities in the Middle Ages and Renaissance (3). An examination of art, literature, philosphy, and music and their interrelationships in European culture during the Middle Ages and Renaissance.

108. Humanities in the Ancient World (3). An examination of art, literature, philosophy, and music and their interrelationships in the Ancient world (Sumer, Babylonia, Ancient Egypt, Ancient Greece).

112. Humanities During the Baroque and Enlightenment (3). An examination of European and American art, literature, philosophy, and music and their interrelationships during the period from the late sixteenth century through the eighteenth century.

116. Humanities in the Modern World (3). An examination of art, literature, philosophy, and music and their interrelationships in the Western world during the nineteenth and twentieth centuries.

123. The American Experience: Beginnings to WWI (3). Survey of the principal experiences and intellectual movements that have formed the American character, as illustrated through American literature, music, and the arts, serious and popular, from the formation of the colonies to the outbreak of WWI.

124. The American Experience: WWI to the Present (3). Survey of the principal experiences and intellectual movements that have formed the American character, as illustrated through American literature, music, and the arts, serious and popular, from WWI to the present time.

130. Latin American Cultures and Traditions (3). A study of Hispanic cultural and aesthetic trends and practices as seen in the popular and formal arts and other styles of Hispanic thought, feeling and expression.

Journalism

School of Arts and Humanities
Department of Journalism
James B. Tucker, Chair
McKee Fisk Bldg., Room 237
(209) 294-2087

B.A. in Journalism
Minor in Journalism
Sequences in:
Advertising
News-Editorial
Photocommunication
Public Relations
Radio-Television News Communication

Journalism is essential to democracy. The principle that only a free press can provide the diversity of ideas necessary to discover truth is fundamental to Western civilization. The Department of Journalism bases its courses of study on that principle.

The department has two main goals: **(1)** to teach its students how to express themselves with the clarity and precision needed to convey the information vital to the survival of a democratic society, and **(2)** to instill in students the sense that journalism is a craft whose members continually question not only the decisions of society's leaders, but also the professional standards of journalists themselves.

Program

The department offers courses that emphasize intensive skills training as well as courses that raise serious questions about topics such as concentration of media ownership, ethical and philosophical issues, changes in communications law, the effects of broadcast media, and the impact of the computer on society.

The program stresses a broad liberal arts and sciences education in addition to specialized study in journalism. Only 33 units of journalism are required for a journalism degree. Journalism units in excess of 33 will not be counted toward the 124 units required by the university for graduation.

In accordance with national accreditation standards of the Association for Education in Journalism and Mass Communication (A.E.J.M.C.), the department requires students to take a minimum of 90 semester units in courses outside of journalism and outside of other areas of mass communications. Of the 90 outside units, 54 must be taken in the General Education pattern, and an additional 12 must be taken to satisfy an additional "Liberal Arts and Sciences" requirement of the Department of Journalism.

The department offers five sequences of study: **(1)** news-editorial and **(2)** radio-television news communication, both of which stress effective news-gathering techniques and the development of a clear writing style; **(3)** public relations, which focuses on developing communication skills that will create better understanding between institutions and the general public; **(4)** advertising, which involves communication skills in the marketing of consumer goods and services and in the disseminating of other information; and **(5)** photocommunication, which emphasizes photography and the visual elements of mass media.

As part of its program, the department publishes a weekly laboratory newspaper, *Insight.* Students in several journalism classes produce stories, photographs, and advertising for *Insight* and also handle the production processes.

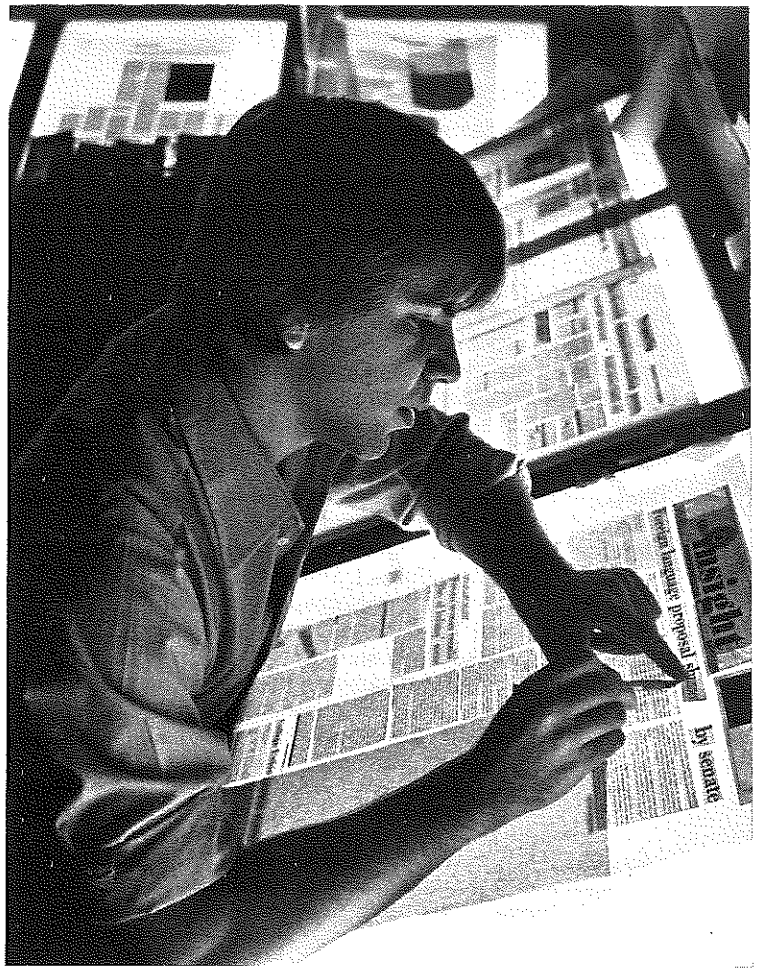
Graduate Program

An interdisciplinary graduate program for the Master of Arts degree in mass communication is jointly offered by the Department of Journalism and the Telecommunications Program. See *Special Programs—Graduate Studies,* page 453.

Faculty

All fulltime faculty members have had professional experience in their respective areas of specialization, and all hold advanced degrees in journalism or a related field. The department supplements its fulltime staff with several part-time faculty members, many of whom are practicing local journalists.

Members of the faculty place special emphasis on developing close advising relationships with journalism majors. New majors are urged to report to the department office to receive adviser assignments.



Accreditation and Affiliations

The news-editorial and public relations sequences are accredited by the Accrediting Council on Education in Journalism and Mass Communications. The department is a member of the Association of Schools of Journalism and Mass Communication. Student organizations include chapters affiliated with the Society of Professional Journalists (Sigma Delta Chi), the American Advertising Federation, and the National Press Photographers Association.

Career Placement

The department assists graduating seniors in job placement through individual counseling and job referrals. Faculty members work actively with media employers to help students find positions in journalism and related fields. Students are encouraged to extend their classroom instruction by seeking internships in their selected fields of interest. More information on internships may be obtained from the department.

Financial Support

The department has been endowed with a number of scholarships that it offers annually to deserving students. Applications for these scholarships are processed during the spring semester for awards to be granted the following school year. Applications and additional information may be obtained from the Financial Aids Office. In addition to awarding endowed scholarships, the department also gives annual scholarships provided by grants from media organizations. These media scholarships are awarded directly by the department each year; additional information about them may be obtained from the department.

Facilities

The department has computerized typesetting equipment that is used in classes and in the production of *Insight*, the department's weekly laboratory newspaper. Other facilities include an Associated Press teletype machine and well-equipped laboratories for photography, news writing, and layout and design. The department also maintains a student reading room stocked with an extensive selection of major American newspapers, magazines, trade publications, and scholarly journals. Journalism students have the opportunity to work independently in paid positions on *The Daily Collegian*, the university's student newspaper, and on KFSR-FM, the university's radio station.

Faculty

James B. Tucker, *Chair*

Roberta R. Asahina	Emma P. Oshagan
George A. Flynn	B. Schyler Rehart, Jr.
D. Gregory Lewis	H. Roger Tatarian
Dayle H. Molen	Gregory T. Wuliger

An Overview of the Journalism Major

	Units
1. Courses in Journalism (24 units must be upper division)	33
2. General Education Requirement	54
3. Department of Journalism's Liberal Arts and Sciences Requirement	12
4. Additional Electives (none may be in journalism or telecommunications or in any course in which the main emphasis of content is mass communications)	25
Total	124

Three core courses (Journalism 1, 8, and 114) are required of all journalism majors. (See Note 1.) In addition, each journalism major eventually must select a sequence, which is an area of specialization within the major. Each sequence is designed to allow for extensive exploration in other subject areas beyond the requirements of general education and the major. The journalism major also requires 9 units of journalism electives.

Regular contact with a journalism faculty adviser is essential if a journalism major wants to ensure normal progress toward a degree. Students are encouraged to get acquainted with their advisers as soon as possible after beginning their studies at CSU, Fresno. The department recommends that all journalism majors meet with their advisers every semester before each new registration period begins. Students may obtain the names of their advisers by checking with the department.

Summary of Degree Requirements

All journalism majors should be aware of the following requirements for completion of the Bachelor of Arts degree in journalism:

1. The university requires 124 total units for graduation, 54 of which must be in general education as specified in the university's General Education requirements.
2. The Department of Journalism requires 33 units of approved journalism courses for completion of the journalism major. The 33 units are broken down into 9 units of core courses, 15 units of required journalism courses in a chosen sequence of study, and 9 units of approved journalism electives. (Approval of journalism electives is obtained by seeing a journalism faculty adviser.) Journalism majors who wish to take more than 33 units of journalism must understand that journalism units in excess of 33 will not apply to the 124 units required for graduation.
3. The General Education requirement (54 units) plus the journalism major requirement (33 units) totals 87 units, which leaves 37 additional units required for completion of the 124-unit degree requirement. Of these 37 remaining units, 12 must be taken to satisfy the Department of Journalism's "Liberal Arts and Sciences" requirement. Courses used to satisfy the Liberal Arts and Sciences requirement are subject to the following restrictions:
   a. Courses taken to satisfy the department's Liberal Arts and Sciences requirement shall be selected from academic disciplines in the schools of Arts and Humanities, Social Sciences, and Natural Sciences.
   b. All courses used to satisfy the department's Liberal Arts and Sciences requirement must be approved by a journalism faculty adviser. Students should seek this approval in advance to be sure they are taking acceptable courses. Transfer students should seek an advising session in the Department of Journalism as soon as possible after transferring to determine their Liberal Arts and Sciences requirement status.
   c. The department's Liberal Arts and Sciences requirement cannot be met by courses that involve skills or production.
4. Completion of general education (54 units), the journalism

major (33 units), and the Department of Journalism's Liberal Arts and Sciences requirement (12 units) totals 99 units, which leaves 25 additional units required to meet the university's 124-unit graduation requirement.

Students are encouraged to use these 25 units for additional study in liberal arts and sciences. Students in the advertising and public relations sequences may want to use some of the 25 units to take certain courses in business.

These 25 units shall not be in journalism or telecommunications and shall not be in any course, regardless of departmental classification, in which the emphasis of study is mass communications or the preparation of mass media messages. For example, a political science course on "politics and mass media" would not qualify; nor would an advertising course in a marketing department.

Sequences (select one)

Advertising

	Units
1. *Core courses:* Jour 1, 8, 114	9
2. *Required journalism courses:* Jour 113, 145, 146, 155, 175	15
3. *Journalism electives* (at least 6 units must be upper division)	9
	33

Students in the advertising sequence are encouraged to concentrate their outside electives in arts and humanities, social sciences, and natural sciences. Certain business courses, especially marketing, also are recommended. Outside electives in which mass communications is the main content will not be accepted toward the 124-unit degree requirement. Additional direction on outside electives may be obtained from a journalism faculty adviser.

News-Editorial

	Units
1. *Core courses:* Jour 1, 8, 114	9
2. *Required journalism courses:* Jour 100W, 110, 181, 184, 188	15
3. *Journalism electives* (at least 6 units must be upper division)	9
	33

Students in the news-editorial sequence are encouraged to concentrate their outside electives in arts and humanities, social sciences, and natural sciences. Outside electives in which mass communications is the main content will not be accepted toward the 124-unit degree requirement. Additional direction on outside electives may be obtained from a journalism faculty adviser.

Photocommunication

	Units
1. *Core courses:* Jour 1, 8, 114	9
2. *Required journalism courses:* Jour 17, 100W, 116, 117, 187	15
3. *Journalism electives* (all must be upper division)	9
	33

Students in the photocommunication sequence are encouraged to concentrate their outside electives in arts and humanities, social sciences, and natural sciences. Outside electives in which mass communications is the main content will not be accepted toward the 124-unit degree requirement. Additional direction on outside electives may be obtained from a journalism faculty adviser.

Public Relations

	Units
1. *Core courses:* Jour 1, 8, 114	9
2. *Required journalism courses:* Jour 100W, 110, 113, 145, 173	15
3. *Journalism electives* (at least 6 units must be upper division)	9
	33

Students in the public relations sequence are encouraged to concentrate their outside electives in arts and humanities, social sciences, and natural sciences. Certain business courses also are recommended. Outside electives in which mass communications is the main content will not be accepted toward the 124-unit degree requirement. Additional direction on outside electives may be obtained from a journalism faculty adviser.

Radio-Television News Communication

	Units
1. *Core courses:* Jour 1, 8, 114	9
2. *Required journalism courses:* Jour 100W, 128, 130, 153, TCom 30 or 50	15
3. *Journalism electives* (all units must be upper division)	9
	33

Students in the radio-television news communication sequence are encouraged to concentrate their outside electives in arts and humanities, social sciences, and natural sciences. Outside electives in which mass communications is the main content will not be accepted toward the 124-unit degree requirement. Additional direction on outside electives may be obtained from a journalism faculty adviser.

Notes

1. **Core Courses:** Journalism 1 may be taken at any time, but majors are encouraged to take it during the freshman or sophomore year. Journalism 8 may be taken as early as the second semester of the freshman year, but taking it as a sophomore or even as a first-semester junior will keep a fulltime journalism major on schedule for graduation in four years. Journalism 114 is usually taken by journalism majors during the junior or senior year.
2. **Transfer Units:** Up to nine units of community college journalism courses may be accepted as being equivalent to lower-division requirements in the department. Community college transfer students are encouraged to meet with an adviser in the department to obtain further information.
3. **Language Qualification Examination:** A screening examination administered by the department must be passed before permission will be given for enrollment in Journalism 8 and in most of the department's other writing and editing courses. (See prerequisites for each course before attempting to enroll.) Students who do not pass the Language Qualification Examination may retake it the following semester.
4. **Permission Courses:** Many of the department's courses require permission of the instructor before enrollment. The department opens its permission lists on the first day of the early registration period during the semester preceding actual enrollment.
5. *CR/NC* grading is not permitted in the journalism major.
6. General Education and elective units may be used toward a dual major or minor (see *Dual Major,* p. 98 or departmental minor). Consult the appropriate department chair, program coordinator, or faculty adviser for further information.
7. Students enrolled in the department's writing and reporting classes must be able to type.

Journalism Minor

A minor in journalism consists of 18 units including a required core of 6 units and 12 units in one of the sequences.

CORE	Units
Jour 8, 114	6

Sequences:

Advertising	Units
Jour 145, 146, 155	9
Journalism electives	3
	12

News-Editorial	Units
Jour 100W, 110, 188	9
Journalism electives	3
	12

Photocommunication	Units
Jour 17, 100W, 117	9
Journalism electives	3
	12

Public Relations	Units
Jour 100W, 113, 173	9
Journalism electives	3
	12

Radio-Television News Communication	Units
Jour 100W, 128, 130	9
Journalism electives	3
	12
Total	18

Master of Arts Degree in Mass Communication

The graduate program leading to the Master of Arts degree in mass communication with emphasis in the print media is based upon undergraduate work in journalism. For requirements, consult the department chair; for courses see *Special Programs,* pages 453–454. Detailed information about the graduate program may be obtained from the Office of the Division of Graduate Studies and Research.

COURSES

Journalism (Jour)

1. Mass Communications (3). 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 Current Events (3). Analysis and discussion of major world news events as they occur with readings from periodicals reflecting various shades of opinion; analysis of various media for objectivity, emphasis and political or nationalistic coloration.

5. Basic Editing (3). Open only to journalism majors. Recommended for all journalism majors who do not pass the language qualification test. Application of basic language skills to journalistic writing and editing.

8. News Writing (3). Prerequisite: Pass language qualification test, at least second-semester freshman standing. Preparation of varied news stories with speed and accuracy; introduction to basic news sources; techniques of interviewing; problems encountered by reporters; ethical and legal considerations. (2 lecture, 2 lab hours)

17. Beginning Photojournalism (3). Survey and instruction in beginning photojournalism. Characteristics of the journalistic photograph and its role in publications. Instruction in use of cameras and laboratory technique for black-and-white photographs. (2 lecture, 3 lab hours)

100W. Reporting (3). Prerequisite: Pass language qualification test, Jour 8, Engl 1. Analysis of news sources; techniques of interviewing applied to specific reporting situations; coverage of campus and community functions in the preparation of articles for publication. (2 lecture, 2 lab hours) Meets the Upper Division Writing Skills Requirement for graduation.

106. Specialized Publications (3). Survey, design and editing of specialized publications for advertising, public relations, and technical use. Includes magazines, brochures, fliers and other publications.

110. Advanced Reporting (3; max total 6). Prerequisite: Pass language qualification test, Jour 8, 100W. Practice in handling advanced news writing and reporting assignments in a newsroom environment; preparation of interpretative and investigative articles for publication. Department newspaper used for laboratory purposes. (8 lab hours, 4 hours arranged)

113. Public Relations (3). Development of public relations practice; principles and methods; application in business, education, and other fields.

114. Editing of Publications (3). Prerequisite: Pass language qualification test, Jour 8. Editing copy; writing headlines; using type effectively; handling wire service copy; laying out newspaper pages. (2 lecture, 2 lab hours)

116. Photo Editing (3). Study of photographs and other visual elements in publications; principles of graphic design. Practical experience in the selecting of photographs and of design elements for content, aesthetic values and technical quality.

117. Advanced Photojournalism (3). Prerequisite: Jour 17. Study and practice of photojournalism; evaluation of photographs for publication; field and laboratory experience; emphasis on lighting, lenses, and special processing methods. (2 lecture, 3 lab hours)

120. Newspaper Workshop (3; max total 6). Prerequisite: permission of instructor. Practice in editorial leadership and newspaper production techniques. Department newspaper used for laboratory purposes. (1 lab hour, 10 hours arranged)

124W. Magazine Feature Writing (3). Prerequisite: Pass language qualification test, Engl 1. Writing and marketing feature material for magazines, newspaper supplements, and syndicates. Meets the Upper Division Writing Skills Requirement for graduation.

126. Critical Writing (3). Prerequisite: Pass language qualification test, Jour 8, 100W. Critical analysis of structure and content of editorials, other opinion pieces, and interpretative articles. Practice in writing editorials and critical essays. (2 lecture, 2 lab hours)

127. Multimedia Journalism (3). Prerequisite: permission of instructor. Survey and practice in multimedia communications, especially as a public relations or advertising tool. Emphasis placed on slide-tape and its production.

128. Radio and Television News Writing (3). Prerequisite: Pass language qualification test, Jour 8. Gathering, writing, editing news for radio and television. (2 lecture, 2 lab hours)

129. Field Work in Broadcast News (3). Prerequisite: Pass language qualification test, Jour 8, 128, and permission of instructor. Gathering, writing, and editing broadcast news in live studio situations.

130. Problems of Broadcast Journalism (3). Prerequisite: upper-division standing. Sociological and journalistic study, including evaluation of historical development, legal problems, and traditional and contemporary criticism of broadcast journalism.

139T. Topics in Journalism (1–3; max total 6). Analysis and investigation of selected areas in mass communications including current developments in advertising, public relations, broadcast news, print media, photocommunications, and journalism education.

145. Advertising Procedures (3). Overview of all aspects of the field of advertising. Study of history, agent-client relationships, media, relationship to the behavioral sciences, production of copy and layouts, and advertising legislation and responsibility.

146. Newspaper Advertising Staff (3; max total 6). Prerequisite: Jour 145, permission of instructor. Selling and servicing accounts and creating and producing advertisements for *Insight,* a laboratory newspaper.

153. News/Public Affairs Laboratory (3). (See TCOM 153) (Former R-TV 142, Jour 142)

155. Print Advertising Copy Writing (3). Prerequisite: Jour 145, permission of instructor. Print advertising copy writing for variety of print media. The role of the copy writer; development of creative strategy; laws regulating print advertising.

160. Advertising Media (3). Prerequisite: Jour 145. Media planning and buying for advertising media. Evaluating and selecting media to meet specific marketing and communication goals; designing specific media plans and making buys in various media.

165. Broadcast Advertising Copy Writing (3). Prerequisite: Jour 145, permission of instructor. Radio and television advertising copy writing. Technical and format considerations; the role of the broadcast copy writer; development of creative strategy; laws regulating broadcast advertising.

173. Public Relations: Programs and Problems (3). Prerequisite: Jour 8, 100W, 113. Development, assessment, and evaluation of public relations in business, education, philanthropy, and other field practice.

175. Advertising Campaigns (3). Prerequisite: Jour 145, 155. Background, planning, and preparation of advertising campaigns. Term campaign, in advertising agency groups, with client-agency setup; analysis of campaigns and their effectiveness.

180. Journalism Ethics (3). Study of ethical choices made by journalists in the context of the political, social, and economic structure of U.S. communications systems. Also emphasizes applying traditional ethical theories to current media issues and problems. (Former Jour 139T section)

181. Laws of Communication (3). Study of federal and state laws as applied to the media, including such topics as freedom of information acts, libel, right of privacy, fair trial-free press, copyright, obscenity, advertising regulation, and broadcast regulation.

182. The Press and World Affairs (3). The role of the world press, radio and television in national and international affairs.

183. Public Opinion and Propaganda (3). Examination of theories of persuasion, traditional views of propaganda, and more recent formulations of propaganda as part of the process of social integration. Discussion of research methods, the role of advertising in forming opinions, and the ethical dilemmas of persuasion.

184. History of Journalism (3). Historical background of the American press from colonial to modern times.

186. Mass Media and Society (3). Impact of mass media on society. Includes problems, contributions, criticisms and contemporary issues of the mass media.

187. Photocommunication Projects (3; max total 6). Prerequisite: Jour 17, 117. Designed to allow students to pursue in-depth and individualized study and practice in advanced photographic skills related to the field of photocommunication; to include special lighting effects, posing, advanced darkroom skills, action photography, candid photography and color.

188. Reporting of Public Affairs (3). Prerequisite: Pass language qualification test, Jour 8, 100W. Methods and field work in reporting courts and municipal, county, state and federal governments. (2 lecture, 2 lab hours)

190. Independent Study (1–3; max see reference). See *Academic Placement—Independent Study,* pages 96–97.

193. Field Work in Public Relations (3). Prerequisite: Jour 8, 100W, 113 and permission of instructor. Supervised work experience in public relations. Reports made regularly to instructor.

196. Public Relations Practice (1–3; max total 3). Prerequisite: permission of instructor. Internship in public relations with agencies, institutional offices, organizations or other media. Reports made regularly to instructor.

197. Photocommunication Practice (1–3; max total 3). Prerequisite: permission of instructor. Internship on regional newspapers, television stations, advertising agencies, or other media which use photocommunication. Reports made regularly to instructor.

198. Newspaper Practice (1–3; max total 3). Prerequisite: permission of instructor. Internship on regional newspapers and radio and television stations. Reports made regularly to instructor.

199. Advertising Practice (1–3; max total 3). Prerequisite: permission of instructor. Internship in advertising departments of regional mass media and with advertising and public relations agencies. Reports made regularly to instructor.

GRADUATE COURSES

(See *Course Numbering System,* p. 133.)

See *Special Programs,* pages 453–454.

IN-SERVICE COURSE

(See *Course Numbering System,* p. 133.)

353. Topics in Journalism (1–3; max total 9 if no topic repeated).

Liberal Studies

School of Education and Human Development
Liberal Studies Program
Ivan H. Rowe, Coordinator
Ed./Psych. Bldg., Room 111
(209) 294-3974

B.A. in Liberal Studies
Teaching Credentials in:
- **Elementary School Education**
- **Early Childhood Education**
- **Special Education**
- **Bilingual Education**



Students choose to be liberal studies majors because they wish to become teachers in elementary schools or they desire a broad foundation for later professional training in medicine, law, journalism, and various fields of public service. Thirty-nine departments of the university contribute courses to the major.

The non-education, pre-professional liberal studies student follows a specially designed program that is adapted to the personal needs of the student. Early consultation with the coordinator of the major is essential and an appointment should be made within the first two weeks of the semester and preferably before class selection is made.

The Liberal Studies student who wishes to be a teacher follows a very specific program designed to prepare the student for teaching in an elementary classroom. There is a different pattern of study for those students wishing to teach in bilingual classrooms. The courses specific to the latter student are noted in parentheses in the course outline.

If the student conforms closely to the course outline, it is possible to complete a Preliminary Multiple Subjects Credential authorizing teaching in kindergarten through grade 12 in a self-contained classroom at the same time as a Bachelor of Arts degree.

Beginning in the junior year, the credential student begins to take Professional Education Program courses—including student teaching. Students should consult with the coordinator regarding the timing of their entry into the education program. Students are required to meet with the coordinator during the first two weeks of their first semester at CSU, Fresno, *or earlier* at orientation sessions provided by the Office of Advising and Orientation.

The liberal studies major is accepted by the California Commission for Teacher Credentialing as an alternative to taking and passing the general knowledge section of the National Teachers Examination.

The liberal studies major must be completed prior to or concurrently with the final student teaching assignment.

Transfer Students

The credential program has more classes than the degree program so that *transfer students* with a certified General Education program are *not* required to take additional classes for their degree, but may be required to take additional classes for their credential.

Community College courses not directly equivalent to CSU, Fresno courses *may* be accepted as exceptions and/or substitutions for specific courses in the major after consultation with the coordinator.

Bilingual Emphasis Students

Students in the bilingual emphasis follow the same credential program as other students except that they have 6-units of additional upper-division classes in Spanish (3-units) and Chicano-Latino Studies (3-units).

Special Education Students

In addition to the major and education credential requirements, special education students must take Advanced Studies 111 (Mainstreaming Exceptional Students) in their junior year. Their student teaching assignments are taken over two semesters during which time the Special Education prerequisite classes—Advanced Studies 116, 153, and 170 or 171—are taken.

Credit/No Credit

Up to 12 units of *CR-NC* credit may be taken in lower- or upper-division courses in the major. Do not take more than 3 units without consulting with the coordinator.

Career Opportunities

The growth in population in California ensures a continuing demand for elementary school teachers. Even greater employment opportunities exist for the Liberal Studies graduate who obtains a specialist credential in the field of Special Education. The non-credential student will find that employers are seeking prospective employees who have a larger vision of the world than that afforded by narrow specialization.

Examinations

The Upper Division Writing Examination should be taken by all credential candidates, after *56 units* have been completed,

because the examination is required for graduation by the university. (It is also a good diagnostic practice for the California Basic Education Skills Test—CBEST.) Students may take English 160W instead of the test, but in doing so they may miss the CBEST practice opportunity afforded by the Upper Division Writing Examination. (Registration for this test is also done at the **Testing Office—Joyal Administration Building, Room 218.)**

Scholarship Requirements

For a *degree,* a grade point average of 2.00 ***(C)*** is required. A grade point average of 2.86 is required for entry into the Multiple Subject Credential Program. Direct inquiries to **Education-Psychology Building, Room 120.**

General Education Requirements

When a student completes the liberal studies major they have automatically completed the General Education Requirements of the university, Liberal Studies has subsumed General Education within its program.

Liberal Studies Course Outline (Credential)

Liberal Studies Core Classes—15 units

1. English 1
2. Speech 3 or 8
3. Mathematics 4 and/or Math 41
4. History 11 or 12

*5. Political Science 2 or 101

Liberal Studies Breadth Classes—45 units minimum

Division 1 — Geology 1 or 2, Physics 10, or Physical Science 21
2 — Biology 10 or Botany 10 or Zoology 10
3 — Psychology 10 AND Geography 5
*4 — English 20
5 — Art History 10 or 11 AND Music 9 or 74 or Chicano-Latino Studies 9
6 — History 1 or 2 AND Humanities 10 or 11
7 — Ling 10 or 134 or 6 units of one foreign language. (Bilingual students must take Spanish AND Linguistics)
8 — Sociology 1 or Anthropology 2 and Geography 2 or 4
*9 — Take ONE class from:
Armenian Studies 10
Asian American Studies 15, 30, 56, 110
Black Studies 25, 27, 38
Ethnic Studies 1
History 101
Chicano-Latino Studies 3 or 5 (Bilingual students MUST take 3 AND 5)
Native American Studies 50
Women's Studies 10, 101, 131, 135
10 — Drama 22 AND Art 13 or 20 or 30 or 40 or 50 or 60 or 70 *or 179*

Liberal Studies Capstone—6 units

(To be taken only after 56 units have been completed and a conference with the coordinator)

* See coordinator before taking these courses.

> "Studying for high school and studying for college are two different things. When I took my first exam here, I left the room in shock. But it made me realize how much I needed to prepare and study for the next one."
>
> *— Senior, Liberal Studies*

Liberal Studies Upper-Division Classes—24 units

Area I ENGLISH—Select 6–12 units in upper-division courses from ONE or TWO of the following disciplines:

English or Linguistics, or Speech. *Highly recommended:* Linguistics 146; Speech 114 (bilingual students must take Linguistics 132 and 141)

Area II HUMANITIES—Select 6–12 units in upper-division courses from ONE or TWO of the following disciplines:

Art, Black studies, drama, one foreign language, Chicano-Latino studies, music, philosophy. *Highly recommended:* At least two from Music 153, 155, Drama 136, 137, 138, PE 152. (Bilingual students must take Spanish 118 (120 if not a native speaker), 122, and 104)

Area III MATHEMATICS AND SCIENCE—Select 6–12 units in upper-division courses from ONE or TWO of the following disciplines:

Biology, chemistry, geology, mathematics, geography (choose from 111, 112, 114, 117, 118, 120, 121, 126, 127, 128, 132, 134), and physics. *Highly recommended:* Biology 101 and 105.

Area IV SOCIAL SCIENCES—Select 6–12 units in upper-division courses from ONE or TWO of the following disciplines:

Anthropology, Black studies, economics, geography (excluding 111, 112, 114, 117, 118, 120, 121, 127, 128, 132, 134), history, Chicano-Latino studies, political science, psychology, and sociology. *Highly recommended:* Psychology 101, 102 and Economics 165 (choose two). (Bilingual students must take Chicano-Latino Studies 116, 143, and 145.)

Liberal Studies Major (Credential) Requirements:	*General Student Program*	*Bilingual Student Program*
	Units	*Units*
Liberal Studies Core Program	15	15
Liberal Studies Breadth Program	45 [1]	54 [1,5]
Liberal Studies Capstone	6	6
Liberal Studies Upper Division	24	24 [2]
Electives (usually Teacher Education courses)	34	30 [3]
Total for B.A. and Preliminary Multiple Subjects Credential	124	132

Notes:

1. Remedial classes required for admission to English 1 and

Math 4 are in addition to the liberal studies major specified above.
2. Six to eight units of Spanish lower division, or equivalent, and Chicano-Latino Studies 3 and 5, or equivalent, are prerequisites for admission to the Liberal Studies Major Bilingual Emphasis specified above.
3. Include T Ed 138 for bilingual/bicultural students.
4. English 160W and T Ed 166 are in addition to the liberal studies major specified above, if needed.
5. Linguistics 134 is required for all bilingual/bicultural students.
6. Up to 12 units of *CR-NC* credit may be taken in lower- or upper-division courses in the major but only after consultation with the coordinator.

Liberal Studies (Non Credential)

The liberal studies major, which leads to the Bachelor of Arts degree, is a program which utilizes courses from 39 departments of the university to provide an interdisciplinary course of study. The major consists of 84 units made up of:

1. 54 units in General Education as part of the major;
2. A minimum of 24 upper-division units in 4 areas; and
3. 6 units of lower- or upper-division courses chosen from the disciplines that contribute courses to the major.

The major is designed to meet the needs of students desiring a liberal studies foundation for later professional training in medicine, law, journalism, and various fields of public service.

The General Education requirements of the university are *included in the Liberal Studies Major Program.*

Up to 12 units of *CR-NC* credit may be taken in lower- or upper-division courses in the major.

Students in their *first* semester at CSU, Fresno are *required* to consult with the coordinator in the *first* two weeks of the semester. Appointments are to be made in **Education-Psychology Building, Room 120.**

Liberal Studies Major *84 units*

A. General Education Requirements 54
Students will complete the 54 unit General Education requirements of the university.

B. Upper-Division Requirements 30
Area I: English. Select 6–12 units in upper-division courses from *one* of the following disciplines: English or Linguistics or Speech.
Area II: Humanities: Select 6–12 units in upper-division courses from *one* of the following disciplines: Art, Black Studies, Drama, one foreign language, Chicano-Latino Studies, Music, Philosophy.
Area III: Mathematics and Sciences: Select 6–12 units in upper-division courses from *one* of the following disciplines: Biology, Chemistry, Geology, Mathematics, Physical Geography (choose from 111, 112, 114, 117, 118, 120, 121, 126, 127, 128, 132, 134), Physics.
Area IV: Social Sciences: Select 6–12 units in upper-division courses from *one* of the following disciplines: Anthropology, Black Studies, Economics, Geography (excluding 111, 112, 114, 117, 118, 120, 121, 127, 128, 132, 134), History, Chicano-Latino Studies, Political Science, Psychology, Sociology.

Electives (of which at least 10 units must be upper division) 40

B.A. Total 124

Summary

Liberal Studies Major	*Units*
General Education Core Requirements	15
General Education Breadth Requirements	30
General Education Capstone	6
Upper-Division Courses in the Major	30
Remaining General Education Units	3
Total Units for Major	84
Electives for the degree:	
Upper Division	1
Upper or Lower Division	39
Total Units for B.A. Degree	124

Linguistics

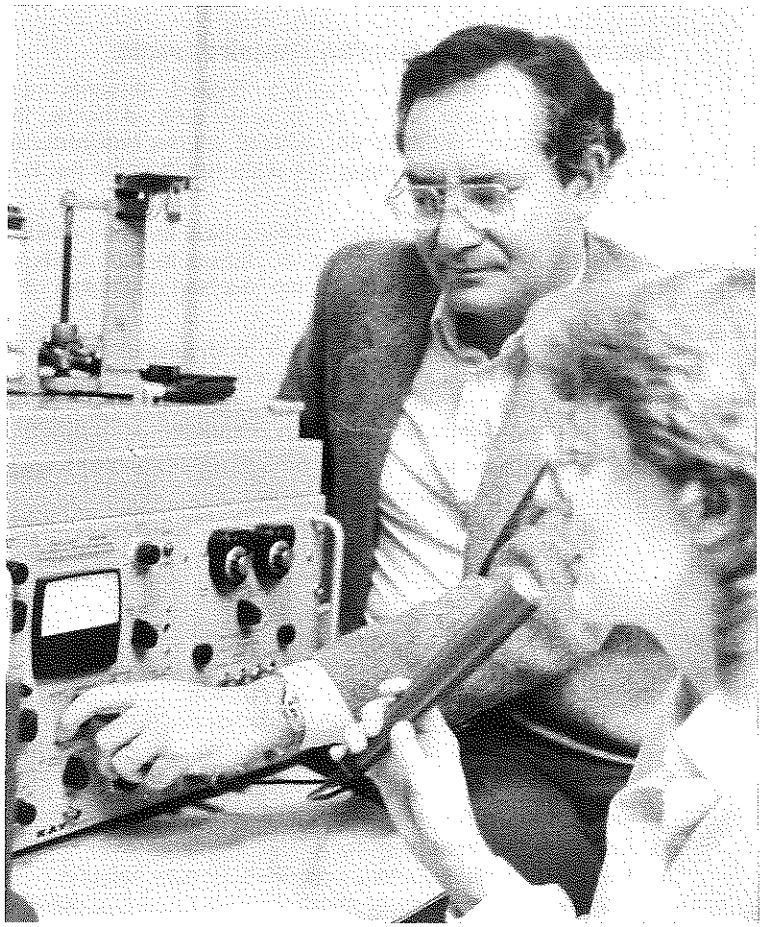
School of Arts and Humanities
Department of Linguistics
P. J. Mistry, Chair
San Ramon 4, Room 148
(209) 294-2441

B.A. in Linguistics
Minor in Linguistics
M.A. in Linguistics

The Department of Linguistics offers an undergraduate minor; a Bachelor of Arts degree with options in English as a Second Language, and Spanish-English Bilingualism; and a Master of Arts degree with options in General Linguistics and English as a Second Language. In addition, Master of Arts degrees with emphasis in French or German are available.

Linguistics is the study of human language—its structure, its history, and its function in human society. Linguists analyze the sounds of speech, they write grammars and dictionaries, they investigate the ways in which languages change across space and through time, and they study what it means to know a language, how languages are learned, and how an individual's language is related to the operation of his or her mind and to the values and expectations of the society to which he or she belongs.

An undergraduate major in linguistics qualifies a student to teach English as a Second Language in some foreign countries. It may also be used in conjunction with certain credential programs for elementary and secondary teaching careers in this country. Most students with undergraduate majors enter graduate programs either at CSU, Fresno or another university. A graduate degree qualifies a student to teach in a community college or university or in an adult school as well as in institutions in most foreign countries. A linguistics minor is a valuable supplement to a liberal studies major or to majors in psychology, anthropology, communicative disorders and other areas with a language component.



Facilities

The Department of Linguistics has equipment for the analysis of speech sounds and for displaying the operation of the organs of speech. Computers are used for simulating speech and for mapping the geographical extent of language features, as well as for storing the data needed for the making of grammars and dictionaries. To provide practical classroom experience for future teachers of English as a Second Language, the linguistics department is affiliated with the American English Institute, a school operated through the Extended Education Office to provide pre-university instruction in English for foreign students. Graduate students and a few undergraduates who have completed the basic E.S.L. courses are invited to teach in this Institute. A description of the American English Institute is included in the *Special Programs* section of this catalog. The department's goal is to balance theory and practical application. Our graduates are not only well acquainted with linguistic theory but are also prepared to begin work as teachers or consultants and to continue advanced study of linguistic theory.

Career Opportunities

Most Linguistics graduates become teachers. There is a constant and increasing world-wide demand for teachers of English as a Second Language and for consultants and resource teachers in elementary and secondary schools, as well as for authors and editors of E.S.L. instructional material. Linguists also work as teachers of other languages, as translators, as consultants to government and business, as bibliographers, as speech clinicians, and as specialists in any area where the ability to analyze human language is required.

Faculty

P. J. Mistry, *Chair*

Frederick H. Brengelman
Ellen Lipp
Gerald R. McMenamin
Shigeko Okamoto
George W. Raney
Graham W. Thurgood
Raymond S. Weitzman
Milton Wohl
Jack B. Zeldis

Undergraduate and Graduate Advisers: P. J. Mistry, Fred Brengelman

Bachelor of Arts Degree Requirements

To complete the major for the B.A. degree, students must complete 30 units in one of the patterns outlined below, the General Education requirement, special course requirements, and electives, totaling at least 124 units required for the B.A. degree.

The B.A. program in linguistics is diversified but integrated. It prepares the student for a variety of careers in such fields as bilingual-bicultural education and the teaching of English as a Second Language.

At present, two options are available to linguistics majors: 1) English as a Second Language, 2) Spanish-English Bilingualism. In each of these options the student receives a basic grounding in the nature and structure of human language.

1. Major Requirements	*Units*
1A English as a Second Language	
a) Ling 10 or 135, 134 or 146, 141, 171	12
b) Select from: Ling 132, 138, 147	6
c) Approved electives (see Note 1)	12
	30
1B Spanish-English Bilingualism	
a) Ling 10 or 135, 134 or 146, 141	9
b) Select from Ling 132, 136, 147, 148	6–9
c) Electives from Chicano-Latino Studies, Spanish, Linguistics	12–15
	30
2. General Education Requirement	54
3. Electives and remaining degree requirements (See *Degree Requirements,* pp. 98–101); may be used toward a dual major or minor	40–43 *
	124

* This figure takes into consideration that Ling 10 may be applied to satisfy a linguistics major requirement as well as toward General Education, BREADTH, Division 7 (see *General Education,* pp. 104–111). Consult linguistics department chair or faculty adviser for details.

Notes:

1. Contact linguistics department chair or adviser for list of approved electives.
2. No course used to satisfy General Education CAPSTONE requirements may be used to satisfy linguistics major requirements.
3. *CR/NC* grading is not permitted in the linguistics major.
4. General Education and elective units can be used toward a dual major or minor (see *Dual Major,* p. 98, or departmental minor). Consult the appropriate department chair, program coordinator or faculty adviser for further information.

Linguistics Minor

A minor in linguistics consists of at least 21 units.

	Units
a) Ling 10 or 135, 134 or 146	6
b) Approved electives (See Note 1)	15
	21

General Education Credit

The following courses are applicable to Division 7 of the General Education requirements: Chinese 1A–B, 2A–B; Hebrew 1A–B; and Japanese 1A–B, 2A–B; Linguistics 10; Sanskrit 10A–B. See also the Foreign Language Department, pages 315–324.

Bilingual/Cross-Cultural Credentials

See Education—Teacher Education Department, page 272, Bilingual/Cross-Cultural Specialist Credential, page 277, and Bilingual/Cross-Cultural emphasis in liberal studies, page 274.

Single Subject Waiver Program: English/English as a Second Language

Prerequisites:
Engl 41 or 43 (4)
Ling 10 or 135 (3)

Core Courses (Choose the required number of units from each group:	*Units* 35
Engl 182	(2)
Engl 189	(4)
Engl 193	(4)
Engl 164	(4)
Ling 141	(3)
Ling 138	(3)
Ling 134, 146	(3)
Engl 154, 155	(4)
Engl 146, 147, 150, 151, 152, 156	(4)
Engl 112, 113, 114, 115, 116, 146, 147, 150, 151, 152, 153, 154, 155, 156, 167, 168, 169, 183, 193, 194	(4)
Breadth Courses (Choose the required number of units from each group):	18
Ling 171	(3)
Ling 132, 136, 137	(6)
Ling 139, 142, 143, 145, 147, 148	(9)
Total	53

Graduate Program

Two options are available, one in General Linguistics, and one in English as a Second Language. For specific requirements, see description on page 359; for general requirements see *Division of Graduate Studies and Research,* pages 462–471. Students who are interested in the linguistic aspects of the French or German languages may select one of the formal emphases which are offered in cooperation with the Department of Foreign Languages.

The Master of Arts degree program in linguistics assumes a baccalaureate degree major in an appropriate field and at least three upper-division courses in linguistics as a prerequisite. Graduate students are required to take a minimum of 15 units of

graduate level courses (excluding Ling 290), and to pass a comprehensive examination.

(See also *Admission to Graduate Standing. Advancement to Candidacy, and Program Requirements,* pp. 464–468.)

Master of Arts Degree Requirements

	Units
Common Core Courses: Ling 145, 242, 243	9
General Linguistics option: Ling 148, 238 and 15 units of approved upper-division and graduate level course work	21
E.S.L. option: Ling 237, 241, 244, and 12 units of approved upper-division or graduate level course work of which a minimum of three units are in E.S.L.-related areas	21
	30

Upon examination of the student's record other courses will be specified to produce a coherent program.

French and German Emphases

Students wishing master's degrees with concentrations in French or German may select the French or German emphases in the master's degree in linguistics. (See *Linguistics adviser.*) Graduate courses in French and German are available for use in these options. All have prerequisites of 24 upper-division units in the language or permission of the instructor.

Emphasis in French. Two courses from Fren 211, 212, 220T. Thesis topic should be in French linguistics. The G.R.E. Advanced Test in French should be taken prior to advancement to candidacy.

Emphasis in German. Germ 220T, 240T. Thesis topic should be in German linguistics. The G.R.E. Advanced Test in German should be taken prior to advancement to candidacy.

COURSES

Linguistics (Ling)

10. Introduction to Language (3). The nature and study of language. Human and animal language, languages of the world, sound and writing systems, systems of grammar, linguistic change, child language acquisition, role of language in society.

110. Indic Cultures and Traditions (3). (Same as Hum 150). Study of the cultures and traditions of the Indian Subcontinent as part of the common human heritage, and for informed perspectives on international issues. Understanding of peoples of South Asia: their life styles, world views and experiences; the development of their intellectual, aesthetic and spiritual traditions; and their current aspirations and problems.

132. Linguistics and Reading (3). Prerequisite: Linguistics 10 or 134. The linguistics background necessary for teaching reading in English. The English spelling system; the grammar and vocabulary of written English; preparation and evaluation of materials for teaching reading.

134. Structure of English (3). An introductory survey of the structure of English: sounds, spelling, word formation, and grammar. Applications to language arts teaching and to the development of language skills.

135. General Linguistics (3). Human language and its characteristics. The nature and description of phonological, grammatical and semantic systems. Procedures for establishing language relationships and investigation of linguistic changes. Relationship between linguistics and allied areas.

136. Varieties of English (3). The regional, social, and stylistic varieties of modern English. Emphasis on Black dialect and on the English of Mexican-Americans.

137. American English (3). Prerequisite: Ling 134 or 135. Studies in the linguistic structure of modern English.

138. History of the English Language (3). Study of the development of the sound system, grammar, vocabulary, and writing system of English.

139. General Phonetics (3). Introduction to the phonetic properties of human languages; descriptive analysis of the speech sounds in a wide variety of languages; articulatory and acoustic aspects of speech; practice in production, perception and transcription of speech sounds. Introduction to experimental techniques.

140T. Topics in Linguistics (1–4; max total 12 if no topic repeated). Topics to be offered at the discretion of the department: historical, contrastive, mathematical, and other areas of linguistics.

141. English as a Foreign Language (3). Prerequisite: Linguistics 132. Theories, techniques, and procedures in TESOL (Teaching English to Speakers of Other Languages); contrastive analysis of target and native language; the audio-lingual method; E.S.L. (English as a Second Language) as a strand in bilingual education; cognitive vs. behavioristic view of language learning.

142. Phonology (3). Prerequisite: Ling 135. The sound patterns of human language. Phonemic theory and analytical techniques. Distinctive feature theory and analysis. Major phonological processes and their description.

143. Syntax (3). Prerequisite: Ling 135. Theory and practice in the description of grammatical systems. Comparison of approaches. Practical experience with data.

145. Historical Linguistics (3). Prerequisite: Ling 135. Explanation of similarities among languages; methods of reconstructing past languages and investigating relationship and grouping among languages. Inquiry about the nature and types of linguistic change and their correlation with changes in culture.

146. Practical English Grammar for Language Teachers (3). English grammar from the perspective of the language teacher. Format designed to be compatible with actual classroom needs. Special emphasis on English as a Second Language. (Former Ling 140T)

147. Bilingualism (3). An examination of psychological and sociological factors affecting individuals who attempt to function simultaneously in two different cultural environments, employing two separate linguistic codes. Review and comparison of past experience as well as current experimental programs in bilingual education.

148. Sociolinguistics (3). Methods of investigation and major findings in the study of the relationship between languages of the world and social class, race, age, sex and other social subcategories. Political and educational implications. Interaction between linguistic and social factors in linguistic variation.

171. Practicum in TESL (3). Prerequisite: Ling 141 or concurrent enrollment in Ling 141. Provides practice in teaching English as a Second Language; includes class visitations and classroom demonstrations; working with non-native speakers,

lesson planning, material preparation, language lab work and evaluation of current E.S.L. texts.

190. Independent Study—(1–3; max see reference) See *Academic Placement—Independent Study,* pages 96–97.

Foreign Language Courses

Chinese (Chin)

1A–B. Elementary Chinese (3–3). Not open to students with previous training. Basic structure and pronunciation of Mandarin Chinese; practice in speaking, reading, and writing.

2A–B. Intermediate Chinese (3–3). Prerequisite: Chin 1B. Review grammar and syntax; techniques of brush use; speaking and reading.

Hebrew (Hebr)

1A–B. Basic Hebrew (3–3). Basic structure and pronunciation of Hebrew; practice in reading, writing, speaking, and grammar; suitable introduction to both Biblical and modern Hebrew.

Japanese (Japn)

1A–B. Elementary Japanese (3–3). Beginning course in modern spoken and written Japanese. Covers learning comprehension and oral practice, basic grammar and sentence patterns. Introduction to reading and writing in Kana and Kanji characters.

2A–B. Intermediate Japanese (3–3). Prerequisite: Japn 1B. Intermediate spoken and written Japanese; reading modern Japanese with emphasis on expository writings; translation and oral and written composition.

Sanskrit (Skt)

10A–B. Sanskrit (3–3). Introduction to the Sanskrit language and the Devanagari script. Core grammatical structure and vocabulary. Reading of Sanskrit texts. Literary tradition and life style of the speakers of the language, and relationship with Greek, Latin, and Germanic languages.

English as a Foreign Language *(EFL)*

(See *Special Programs* section, pp. 454–455, for English courses for speakers of other languages offered through the linguistics department.)

GRADUATE COURSES

(See *Course Numbering System,* p. 133.)

231T. Seminar in Linguistics (3; max total 12 if no topic repeated). Prerequisite: Ling 135 and permission of instructor. Topics to be offered at the discretion of the department: philosophy of language, psycholinguistics, dialectology, and other subjects in general linguistics.

232T. Seminar in English Linguistics (3; max total 12 if no topic repeated). Prerequisite: Ling 135 and permission of instructor. Topics to be offered at the discretion of the department: structure of Old, Middle, or Early Modern English; topics in English phonology, grammar, and lexicon.

237. Teaching Basic Written English (3). A description of the features of word formation, sentence structure, punctuation, vocabulary, and paragraph and essay structure basic to written English, with techniques for teaching. (Former Ling 232T section)

238. History of Linguistics (3). Historical survey of scientific ideas, terms, techniques, and theoretical positions in the study of language from ancient time to the present day, including traditional grammar, comparative philology, and modern linguistics. Overview of general scholastic concern and climate during each period. (Former Ling 231T section)

241. Seminar in Teaching English as a Second/Foreign Language (3). Prerequisite: Ling 141. Overview of research in the field of E.S.L./E.F.L. teaching as reflected in current journal articles. Discussion and feedback dealing with points raised in assigned articles. Written reports summarizing ideas propounded in articles and expanded in class discussion.

242. Phonological Analysis (3). Prerequisite: Ling 142. The nature of phonological analysis, trends and issues in phonological theories, and phonological analysis of data from a variety of languages.

243. Syntactic Analysis (3). Prerequisite: Ling 143. The nature of syntactic analysis, trends and issues of syntactic theories, and syntactic analysis of data from a variety of languages.

244. E.S.L. Classroom Evaluation Techniques (3). The course will cover classroom evaluation techniques from three perspectives: error analysis, contrastive analysis, and testing. Current thinking on these topics will first be analyzed and discussed, and then applied to the actual classroom experience. (Former Ling 232T section)

245. Seminar in Historical Linguistics (3). Prerequisite: Ling 145. Contribution of recent work on general linguistics, sociolinguistics, and language acquisition studies to our understanding of diachronic grammar and its reconstruction. Other topics include the insights provided by language variation, language universals and typology, and discourse analysis. The nature, genesis, and directionality of linguistic change.

249. Field Methods in Linguistics (3). Prerequisite: Ling 142 or equivalent. First-hand experience in eliciting linguistic data from informants; practice in analyzing and describing a language.

290. Independent Study (1–3; max see reference). *See Academic Placement—Independent Study,* pages 96–97.

Mathematics

School of Natural Sciences
Department of Mathematics
Noal C. Harbertson, Chair
San Ramon 5, Room 206
(209) 294-2992

B.A. in Mathematics
Concentrations in:
Applied Mathematics
Pre-College Teaching
Pure Mathematics
Statistics and Probability
Minor in Mathematics
Credential Program Single Subject Waiver

M.A. in Mathematics
M.S. in Mathematics

Mathematics and related subjects play important dual roles in our culture. On the one hand mathematics is a study in its own right; on the other hand it is an indispensable tool for expressing and understanding ideas in the sciences, engineering and an increasing number of other fields. As a consequence, employment opportunities for mathematicians have been expanding in recent years. The courses offered by the department are designed to develop skills in and an appreciation and understanding of both roles.

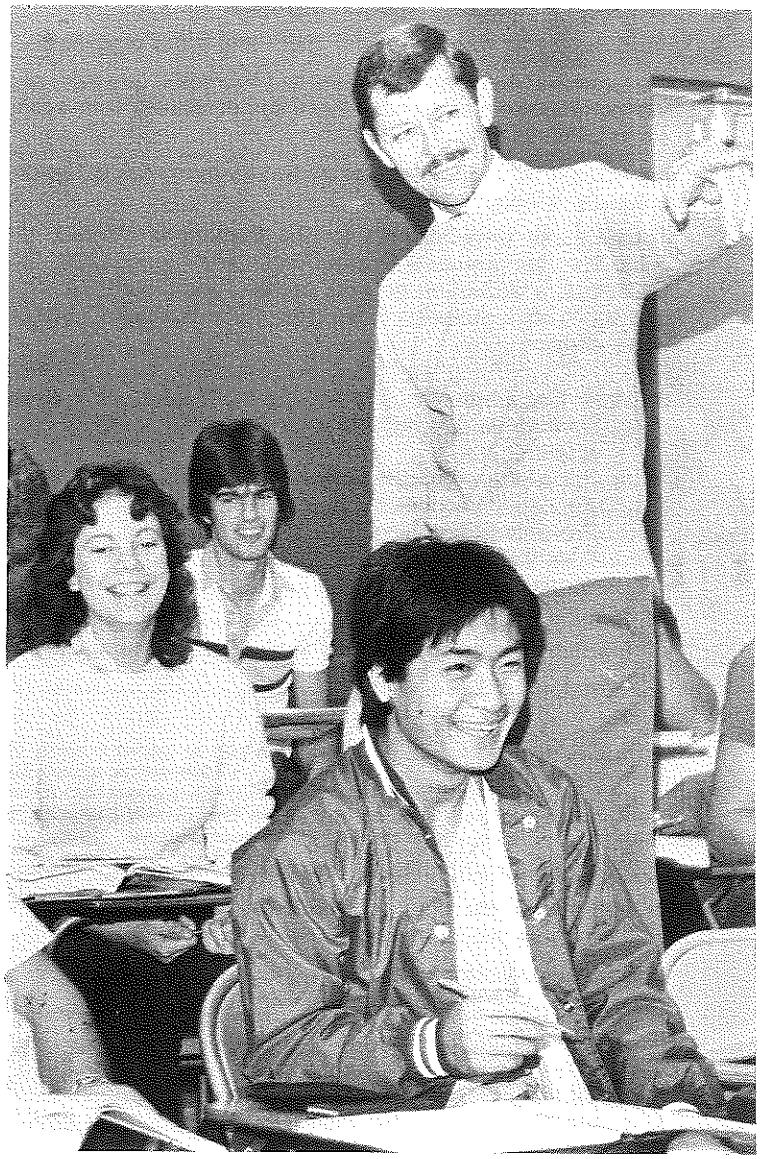
Because there are so many different areas in which a trained mathematician can find employment or continue studies, the department has created 4 concentrations within the mathematics major. Within each concentration there is flexibility in choices to accommodate individual interests.

The concentration in ***Applied Mathematics*** prepares students to assume positions in technical industries or government employment, or to continue advanced studies in the applied area.

The concentration in ***Pre-College Teaching*** in mathematics provides students with the necessary background for obtaining a California Secondary Teaching Credential in mathematics. In order to complete the credential requirements, a fifth year of education courses, classroom observation and practice teaching is needed. At the present time there is an increasing demand for well-trained people in this area.

The concentration in ***Pure Mathematics*** prepares students for the pursuit of graduate studies leading to advanced degrees and employment at the college or university level, or research in industries.

The concentration in ***Statistics and Probability*** provides a good foundation for students planning to work as statisticians for industry or government agencies involving statistical analysis of scientific, technical or economic data. It also offers preparation for the first two examinations in the mathematics of insurance that are offered annually by the Society of Actuaries (this preparation includes Math 75, 76, 77, 107, 108). The offerings in applied topics as well as statistical computing are currently being expanded.



Faculty

Noal C. Harbertson, *Chair*

Mir K. Ali
Robert F. Arnold
Moses E. Cohen
Larry W. Cusick
Donald J. Donohue
Daniel J. Ewy
Ernesto Franco-Sanchez
Merrilee K. Helmers
Arthur A. Hiatt
Thomas C. Kipps
Anthony E. Labarre, Jr.
Detlev Lindae
Hussain Sayid Nur
Hugo S. Sun
Peter Tannenbaum
Ronald L. Wagoner
Norman T. Woo
Burke Zane

Graduate Coordinator: Ernesto Franco-Sanchez
Undergraduate Advisers: All full-time faculty
Credential Adviser: Arthur A. Hiatt

Bachelor of Arts Degree (in Mathematics) Requirements

Requirement for entrance to the major and minor programs:

Completion of two years of algebra and courses in geometry and trigonometry, or a sequence of courses containing their equivalents, such as Math 1R, 2R, 4, 5.

It is strongly recommended that such study be completed before entrance to the university.

Total Course Requirements for the Bachelor's Degree: 124 units. See *Baccalaureate Degree Requirements,* pages 98–101, for complete details on general degree requirements. A minimum of 40 units, including those required for the major, must be upper division.

	Units
A. Major Requirements:	39–49
a) Core for all concentrations: (12)	
Math 75, 76, 77	
b) Concentrations (select one) (27–37)	
Applied Mathematics (34–35)	
Pre-college Teaching (35)	
Pure Mathematics (27)	
Statistics and Probability (37)	
B. General Education:	54
C. Electives (which may include a minor):	21–37 *
Total	124

* This figure takes into account that Math 75 may also be applied to satisfy the General Education-CORE mathematics requirement if intermediate algebra was completed in high school. Under certain circumstances, two units of Math 76 may be applied toward the total 54 unit requirement (see *General Education,* pp. 104–111). Consult department chair or faculty adviser for details.

Major Concentration Requirements:

In addition to the core requirements, one of the following concentrations must be selected.

Applied Concentration:	Units
Core	12
C Sci 20 or 40	4
Math 81 or 123	3–4
Math 107, 108, 131, 132 (select two)	6
Math 121, 165, 168, 181, 182 (select three)	9
Math 124, 128, 151, 171	12
Total	46–47

Pre-college Teaching Concentration:	Units
Core	12
C Sci 40, 41	8
Math 107, 116, 143, 145, 151, 152, 161, 171; 172 or 128	24
Total	47

Pure Mathematics Concentration:	Units
Core	12
Math 151, 152	6
Math 153T, 173T, 181 (select two)	6
Math 161, 165, 168 (select one)	3
Math 110, 111, 116, 118, 128 (select two)	6
Math 171, 172	6
Total	39

Statistics and Probability Concentration:	Units
Core	12
C Sci 20	4
Math 81, 101, 103	12
Math 102 or 109	3
Math 107, 108, 151, 171	12
Math 124 or 152	3
Math 128 or 172	3
Total	49

Mathematics Minor

The requirements for a minor in mathematics consist of the following:

	Units
a) Math 70, or Math 71 and 72, or Math 75	4–6
b) Upper-division Math courses	6
c) Electives in Mathematics	10–8
	20

Math 1R, 2R, 4 may not be included in the minor.

Advising Requirements

Mandatory advising at least once a semester is required of all majors in the degree programs. See the department chair for assignment to an adviser.

Grade Requirements

All courses taken to fulfill major course requirements must be taken for a letter grade. All courses required as prerequisites for a course must be completed with a grade of *C* or better before registration will be permitted.

Duplication of Courses

No credit will be allowed for:	If taken after completion of:
Math 4	Math 71 or 75
Math 5	Math 72 or 75
Math 6	Math 71 or 75
Math 70	Math 72 or 75
Math 75	Math 76
Math 76	Math 77
Math 77	Math 81

Graduate Program

Requirement for Entrance to the Graduate Program: Completion of undergraduate preparation equivalent to a CSU, Fresno major in mathematics. (See also *Admission to Graduate Standing, Advancement to Candidacy, Program Requirements,* and *Criteria for Thesis and Project,* pp. 464–468.)

Master of Arts and Master of Science Degree Requirements

The Master of Arts and Master of Science degree programs in mathematics are designed to provide preparation for work in industry, for high school and junior college teaching, and for advanced graduate study in mathematics. Those who plan to work in industry will ordinarily take the Master of Science, and combine mathematics courses with courses in physics, engineering, economics, etc.; those planning to teach will usually take additional work in allied fields and in education, along with the mathematics courses recommended for the Master of Arts degree; and those who plan advanced graduate study in mathematics should take the Master of Science degree program.

Language Requirement: There is no foreign language requirement for the master's degree. However, any student preparing for graduate work in mathematics is advised to meet the foreign language requirements of the university in which the graduate work will be taken, since most graduate programs do not leave time for language study. Such preparation normally involves at least two of the languages: French, German, Russian.

Under the direction of an advisory committee, each candidate prepares and submits for approval a coherent program individually designed within the following framework:

	Units
At least 15 units of mathematics in the 200 series, including Math 298	15
Electives from upper-division or graduate level, including at least 9 units of mathematics	15
Total	**30**

Master of Science degree candidates must complete Math 152, 172, and 181 or their equivalents in their graduate program if they have not completed them in their undergraduate program.

The Math 298 research project culminates in a written and oral report to the Department of Mathematics.

COURSES

Mathematics (Math)

ILR. ELM Basic Mathematics Skills. (3–6 units). This course prepares students for the E.L.M. exam and for Math 4. The course takes two semesters and reviews arithmetic, elementary algebra, and geometry. **Note:** Enrollment is limited to those that score lower than 24 on the E.L.M. exam. *CR/NC* grading only. No degree credit.

AR. ELM Basic Mathematics Skills. (3 units). This course develops problem solving skills in arithmetic (integers and rational numbers), elementary algebra (exponents, roots, polynomials and rational expressions, linear and quadratic equations, and graphing) and geometry (perimeters, areas, volumes, triangle properties, parallelism and perpendicularity). *CR/NC* grading only. No degree credit.

1R. Elementary Algebra (3). Fundamental operations, linear equations, polynomials, factoring, rational expressions, graphing of linear equations, introduction to inequalities, quadratic equations, and systems of linear equations. *CR/NC* grading only. (See *Duplication of Courses,* p. 362.)

1AR. Elementary Algebra Laboratory (1). Prerequisite: Must be concurrently enrolled in Math 1 and assigned to laboratory after taking placement examination. Laboratory does not count toward baccalaureate degree. Extra review and practice with skills essential to success in elementary algebra. *CR/NC* grading only.

2R. Elementary Geometry (3). Prerequisite: elementary algebra. Postulates concerning points, lines, planes. Definitions. Congruence; properties of triangles. Parallel lines. Properties of quadrilaterals. Area formulae. Similar figures. Circles. Volumes of certain solids. *CR/NC* grading only.

4. Intermediate Algebra (3). Prerequisite: elementary algebra and geometry and a passing score on the Entry Level Mathematics Exam. Radicals, rational exponents, quadratic equations, simultaneous linear equations, graphing, inequalities, complex numbers in rectangular form, introduction to exponential and logarithmic functions, applications. *CR/NC* grading only. (See *Duplication of Courses,* p. 362.)

4AR. Intermediate Algebra Laboratory (1). Prerequisite: Must be concurrently enrolled in Math 4 and assigned to laboratory after taking placement examination. Laboratory does not count toward baccalaureate degree. Extra review and practice with skills essential to success in intermediate algebra. *CR/NC* grading only.

5. Trigonometry (3). Prerequisite: E.L.M. Exam, intermediate algebra. Concept of a function, sine and cosine functions, tables and graphs, other trigonometric functions, identities and equations. Trigonometric functions of angles, solution of triangles. (See *Duplication of Courses,* p. 362.)

6. Precalculus (4). Prerequisite: E.L.M. Exam, two years high school algebra, or Math 4, or permission of instructor. Basic algebraic properties of real numbers; linear and quadratic equations and inequalities; functions and graphs; polynomials; exponential and logarithmic functions; analytic trigonometry and functions; conics; sequences, and series.

11. Elementary Statistics (3). Prerequisite: E.L.M. Exam, intermediate algebra. Illustration of statistical concepts: elementary probability models, sampling, descriptive measures, confidence intervals, testing hypotheses, chi-square, nonparametric methods, regression. It is recommended that students with credit in Math 72 or 75 take Math 101.

11L. Elementary Statistics Laboratory (1). Concurrent enrollment in Math 11. (Not required for Math 11.) Computational techniques pertinent to elementary statistics with emphasis on calculator programming and formula derivation.

41. Number Systems (3). Not open to mathematics majors. Prerequisite: E.L.M. Exam, intermediate algebra and geometry; designed for elementary credential candidates. Development of rational number system and its subsystems from the informal point of view; sets, relations and operations, equivalence classes; definitions of number systems and operations; algorithms for operations; prime numbers, divisibility tests; ratios.

45. What is Mathematics? (3). Prerequisite: E.L.M. Exam, intermediate algebra. The intention of this course is to provide an introduction to the history and nature of mathematics for students

in the arts, humanities and social sciences. Topics will vary with the instructor.

51. Elements of Modern Mathematics (3). Prerequisite: E.L.M. Exam, intermediate algebra. Logic, set theory, vectors and matrices, linear programming, permutations and combinations, probability, Markov chains, applications to business and social sciences.

52. Elementary Linear Algebra (3). Prerequisite: E.L.M. Exam, intermediate algebra. Elementary properties of matrices, determinants; systems of linear equations; linear transformations.

70. Mathematics For Life Sciences (4). No credit if taken after Math 72 or 75; one unit of credit if taken after Math 71. Prerequisite: E.L.M. Exam, intermediate algebra. Functions and graphs, limits, derivatives, antiderivatives, differential equations, and partial derivatives with applications in the Life Sciences.

71. Elementary Mathematical Analysis 1 (3). No credit if taken after Math 70, 72, or 75. Prerequisite: E.L.M. Exam, elementary geometry and intermediate algebra. Review of algebra, real numbers, inequalities, function, graph, finite induction, limit, differentiation of algebraic functions and applications to extrema, mean value theorem, l'Hôpital's rule.

72. Elementary Mathematical Analysis 2 (3). No credit if taken after Math 75; two units of credit if taken after Math 70. Prerequisite: Math 71 and trigonometry. Analytic geometry and calculus of polynomials, rational functions, transcendental functions; polar coordinates, conic sections, integration and applications.

75. Mathematical Analysis I (4). No credit if taken after Math 72; two units of credit if taken after Math 71; 3 units of credit if taken after Math 70. Prerequisite: E.L.M. Exam, elementary geometry, intermediate algebra, trigonometry, or Math 6. Inequalities, functions, graphs; limits, differentiation of algebraic functions, the definite integral and applications.

76. Mathematical Analysis II (4). Prerequisite: Math 72 or 75. Transcendental functions, techniques of integration, improper integrals, arc length; conic sections; polar coordinates; introduction to vectors.

77. Mathematical Analysis III (4). Prerequisite: Math 76. Three dimensional calculus; partial derivatives; multiple integrals; infinite series, and applications.

81. Applied Analysis (4). Prerequisite: Math 77. Introduction to ordinary linear differential equations; solutions by power series and Laplace transforms. Vector analysis; line, surface, and volume integrals. Solution of systems of linear equations by matrix methods. Introduction to Fourier series. Introduction to complex variables.

101. Statistical Methods (4). Prerequisite: Math 70, 71, or equivalent. Application of statistical procedures to examples from biology, engineering, and social science; one- and two-sample normal theory methods; chi-square, analysis of variance, and regression; nonparametric methods. Computerized statistical packages are used.

102. Sampling Theory and Methods (3). Prerequisite: one semester of statistics, and Math 70 or 72 or 75. Basic concepts of sampling; probability sampling, stratification, clusters, single and multiple-stage designs; estimation procedures, nonsampling errors; illustrations from agriculture, biology, and social sciences.

103. Linear Statistical Models and Their Application (4). Prerequisite: Math 101. Elements of matrix algebra. Components of experimental design. Common linear statistical models including factorial designs, split-plot, Latin square. Multiple regression analysis, residual analysis, path diagrams. Analysis including both continuous and classification variables. Simple, multiple, and partial correlation.

107. Introduction to Probability and Statistics (3). Prerequisite: Math 77 (or concurrently). Basic concepts required for applications of probability theory; standard discrete and continuous models; random variables; conditional distributions; limit theorems.

108. Statistics (3). Prerequisite: Math 107. Criteria used for selecting particular procedures of data analysis; derivation of commonly used procedures; topics from sampling, normal theory, nonparametrics, elementary decision theory.

109. Applied Probability (3). Prerequisite: Math 107. Introduction to stochastic processes and their applications in science and industry. Markov chains, queues, stationary time series.

110. Symbolic Logic (3) (Similar to Phil 145; consult department). Prerequisite: Math 71 or 75. An informal treatment of the theory of logical inference, statement calculus, truth-tables, predicate calculus, interpretations applications.

111. Theory of Sets (3). Prerequisite: Math 71 or 75. Set theory from an informal axiomatic foundation, relations and functions, cardinal numbers, ordinal numbers, applications.

114. Discrete Structures (3). Prerequisites: C Sci 40 and Math 77 (or concurrently). Introductory mathematical logic, sets, relations, functions, equivalence, induction, graphs and trees, algebraic structures, combinatorics, applications of discrete mathematics to Computer Science.

116. Theory of Numbers (3). Prerequisite: Math 72 or 75. Divisibility, greatest common divisor, Euler's function, continued fractions, congruences, quadratic residues, Diophantine equations, different forms of the Prime Number Theorem, Mobius inversion formula.

118. Graph Theory (3). Prerequisite: Math 77. Trees, connectivity, Euler and Hamilton paths, matchings, chromatic problems, planar graphs, independence, directed graphs, networks.

121. Numerical Analysis I (3). Prerequisite: Math 77 and working knowledge of APL or FORTRAN. Finite difference and Lagrangian interpolation formulas; numerical solution of equations, systems of equations, and differential equations; principles of coding and programming computers.

122. Numerical Analysis II (3). Prerequisite: Math 121. Current topics of interest in interpolation and approximation theory, dynamic programming, and optimization theory, Fourier analysis, numerical linear algebra, numerical solution of ordinary and partial differential equations.

123. Topics in Applied Mathematics (3). Prerequisite: Math 77. Vector spaces and linear transformations, eigen values and eigen functions. Special types of linear and nonlinear differential equations; solution by series. Fourier transforms. Special functions, including gamma, hypergeometric, Legendre, Bessel, Laguerre and Hermite functions. Introduction to partial differential equations.

124. Applied Matrix Analysis (3). Prerequisite: Math 77. Norms, canonical forms, quadratic forms, matrix semigroups and matrix groups, spectral theory, perturbation of spectra, variational principles, Markov processes. Applications to differential equations, optimization problems in physics, engineering, and economics.

128. Complex Analysis (3). Prerequisite: Math 77. Analytic functions of a complex variable, contour integration, series,

singularities of analytic functions, the residue theorems, conformal mappings; applications to engineering and physics.

131. Game Theory and Linear Programming (3). Prerequisite: Math 72 and permission of instructor; or Math 76. Introduction to linear programming, adaptation of the Dantzig simplex algorithm to linear programming problems; applications to diet, production and transportation problems. Games of chance; strategy. Minimax theorem for two-person zero-sum games; relationship to linear programming. Normal form of a game.

132. Mathematical Methods of Operations Research (3). Prerequisite: Math 131. Algebraic and geometric representation of linear optimization models, simplex method, dynamic programming, integer programming, classical optimization theory, non-linear programming and algorithms, applications to the theory of transport, network and inventory models.

132L. Mathematical Methods of Operations Research (1). Concurrent enrollment in Math 132. (Not required for Math 132.) Use of computers in setting up and solving problems in operations research.

136. Coding Theory (3). Prerequisite: Math 114. Mathematical Properties of error correcting codes; information rate, error detecting and error correcting capacities, encoding and decoding algorithms. Linear, cyclic, Hamming, BCH and Golay codes.

140. Applications of Calculus (4). Prerequisite: Intermediate algebra. This course is designed to give liberal arts students the crucial ideas of calculus in an informal way. Applications in biology, medicine, business, economics, psychology, engineering, and athletics will be stressed. Open to all credential candidates except math majors.

142. General Mathematics (4). Prerequisite: Intermediate Algebra, Math 140. The role of arithmetic, algebra, and geometry in the development of modern mathematics will be studied, as well as an informal treatment of rational number system. Introduction to the nature of mathematics for students in arts, humanities, and social sciences. Open to all credential candidates except math majors.

143. History of Mathematics (3). Prerequisite: Math 72 or 75. History of the development of mathematical concepts in algebra, geometry, number theory, analytical geometry, and calculus from ancient times through the 17th century, and selected topics from more recent times.

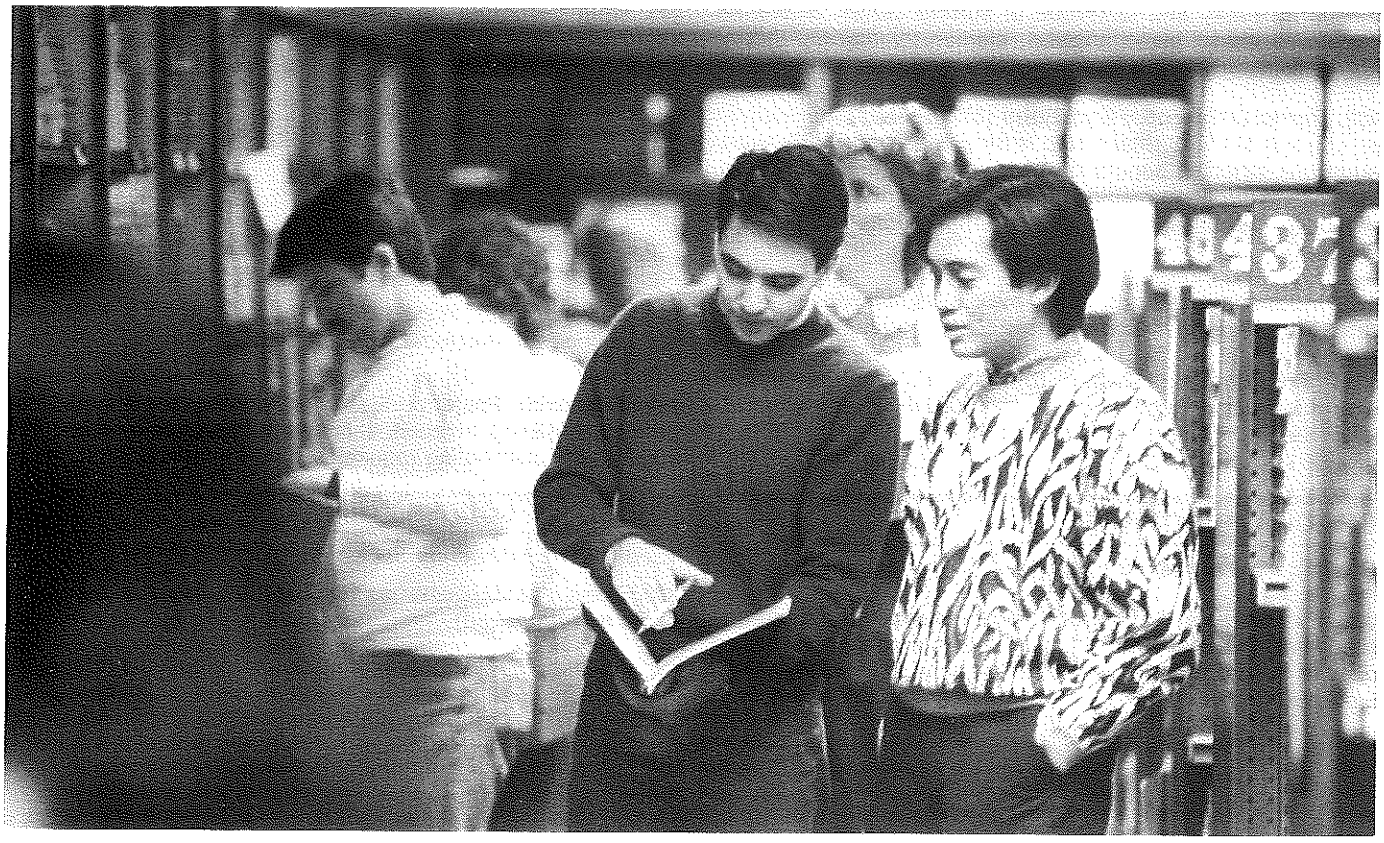
145. Problem Solving (3). Prerequisite: at least one mathematics course in the 100–200 series. A study of formulation of problems into mathematical form; analysis of methods of attack such as specialization, generalization, analogy, induction, recursion, etc. applied to a variety of non-routine problems. Topics will be handled through student presentation.

151. Principles of Algebra (3). Prerequisite: Math 76. Groups, cyclic groups and normal subgroups; rings, integral domains and polynomials; fields.

152. Linear Algebra (3). Prerequisite: Math 151. Linear transformations, matrices, determinants, linear functionals, bilinear forms, quadratic forms, orthogonal and unitary transformations, selected applications of linear algebra.

153T. Topics in Algebra (3). Prerequisite: Math 151. Topics may include such algebraic theories as Galois Theory, permutation groups, modules, lattices, etc.

161. Principles of Geometry (3). Prerequisite: Math 72 or 75. The classical elliptic, parabolic, and hyperbolic geometries



developed on a framework of incidence, order and separation, congruence; coordinatization. Theory of parallels for parabolic and hyperbolic geometries. Selected topics of modern Euclidean geometry.

165. Differential Geometry (3). Prerequisite: Math 77. 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.

168. Geometric Topology (3). Prerequisite: Math 77. Topology of surfaces, the Euler characteristic, homeomorphism, the fundamental group, vector fields on surfaces, knot theory and introduction to differentiable manifolds.

171. Intermediate Mathematical Analysis I (3). Prerequisite: Math 77. The complete ordered field and its usual topology; extensions to the plane; continuity and uniform continuity; characterization of the differential; extended mean value theorem; intermediate value property of derivatives; characterization of Riemann integrable functions as functions continuous almost everywhere.

172. Intermediate Mathematical Analysis II (3). Prerequisite: Math 171. Function theory, continuity, differentiability; partial differentiation, integration in Euclidean n-space.

173T. Topics in Real Analysis (3). Prerequisite: Math 172. Topics will vary according to needs and interests of students. May include elementary measure theory. Fourier series and integrals; Dirac delta function and elementary distribution theory.

181. Differential Equations (3). Prerequisite or concurrently: Math 81 or 123. Definition and classification of differential equations; general, particular, and singular solutions; existence theorems; theory and technique of solving certain differential equations; phase plane analysis, elementary stability theory; applications.

182. Partial Differential Equations (3). Prerequisite: Math 81 or 123, and 171. Classical methods for solving partial differential equations including separation of variables, Green's functions, the Riemann-Volterra method and Cauchy's problem for elliptic, parabolic, and hyperbolic equations; applications to theoretical physics.

190. Independent Study (1–3; max see reference). See *Academic Placement—Independent Study,* pages 96–97.

191T. Proseminar (1–3; max total 9). Prerequisite: permission of instructor. Presentation of advanced topics in mathematics in the field of the student's interest.

GRADUATE COURSES

(See *Course Numbering System,* p. 133.)

202. Fundamental Concepts of Mathematics (3). Prerequisite: Math 151, 161 and 171. Fundamental notions regarding number theory, number systems, algebra of number fields; functions.

210. Foundations of Mathematics (3). Prerequisite: Math 110 or 151. Formal introduction to theories of inference, first order theories, completeness metatheorems, consistency metatheorems, decision problems.

216. Topics in Number Theory (3; max total 6). Prerequisite: Math 116. An investigation of topics having either historical or current research interest in the field of number theory.

221. Advanced Numerical Analysis (3). Prerequisite: Math 121, Linear equations and matrices; parabolic, hyperbolic, and elliptic differential equations; constructive function theory.

223. Principles and Techniques of Applied Mathematics (3). Prerequisite: Math 123. Linear spaces and spectral theory of operators.

224. Optimization Methods (3). Prerequisite: Math 123. Techniques for optimizing static and dynamic systems, calculus of variations, Hamiltonian canonical form, maximum principle, with applications.

228. Functions of a Complex Variable (3). Prerequisite: Math 128, 171. Representation theorems of Weierstrass and Mittag-Leffler, normal families, conformal mapping and Riemann mapping theorem, analytic continuation, Dirichlet problem.

251. Abstract Algebra I (3). Prerequisite: undergraduate abstract algebra. Groups, rings, integral domains, and fields.

252. Abstract Algebra II (3). Prerequisite: Math 251. Rings and ideals, modules, linear and multi-linear algebras, representations.

263. Point Set Topology (3). Prerequisite: Math 172. Basic concepts of point set topology, set theory, topological spaces, continuous functions; connectivity, compactness and separation properties of spaces. Topics selected from function spaces, metrization, dimension theory.

265. Differential Geometry (3). Prerequisite: Math 165, 172. Study of geometry of curves and surfaces in Euclidean space; including an introduction to Riemannian geometry and theory of manifolds.

271. Real Variables (3). Prerequisite or concurrently: Math 172. Theory of sets; cardinals; ordinals; function spaces, linear spaces; measure theory; modern theory of integration and differentiation.

272. Functional Analysis (3). Prerequisite: Math 271. The Lebesgue-Stieltjes integral and its generalizations, integral equations, Hilbert and Banach spaces, linear transformations (bounded and unbounded).

290. Independent Study (1–3; max see reference). See *Academic Placement—Independent Study,* pages 96–97.

291. Seminar (3). Prerequisite: graduate standing. Presentation of current mathematical research in field of student's interest.

298. Research Project in Mathematics (3). Prerequisite: graduate standing. Independent investigation of advanced character as the culminating requirement for the master's degree.

IN-SERVICE COURSES

(See *Course Numbering System,* p. 133.)

302. Topics in Mathematics for Teachers (3; max total 6, if topic not repeated).

Military Science

School of Business and Administrative Sciences
Military Science Program
LTC James W. Henderson, Coordinator
North Gym, Room 211
(209) 294-2887, 294-4810

Army Reserve Officer's Training Corps Program (R.O.T.C.)

We are a program that develops the mental and physical qualifications of students in preparation for positions of leadership within the military and civilian communities. Our instruction is challenging, professional, and enjoyable, and it complements all major areas of study. The course of study offered in Military Science is designed not only to prepare the student for service as a commissioned officer in the United States Army but also to provide him/her with knowledge and practical experience in leadership and management that will be useful in any facet of society.

Students who are uncertain about what the army is all about and what it can offer may enroll in introductory courses for either one or two units. These courses will acquaint the student with how the army fits into society and some of the exciting things officers do. They also show how the army can fit into a student's long and short range individual goals.

Those students who desire to pursue an opportunity for a military career can enroll in a structured curriculum from 12–21 units over a period of two years (see class listings next page). One of the significant and exciting aspects of this curriculum is the requirement for a student to attend a six-week summer camp—with pay—following the first year of the structured curriculum. This camp will enhance the student's ability to lead by providing him/her with actual experience in leading other students who represent some 69 colleges and universities in 18 states.

Faculty

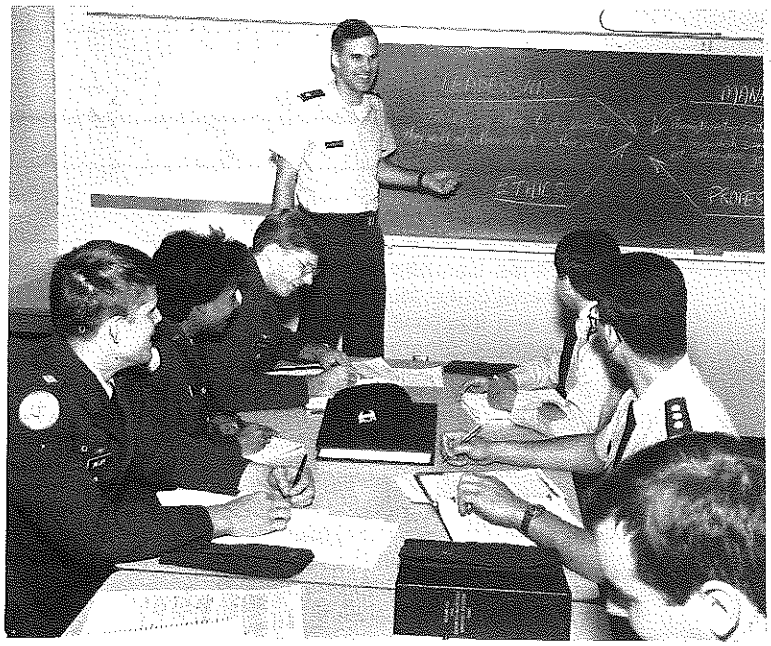
The faculty of the Department of Military Science are highly qualified and experienced professional army officers, who are selected for their instructor qualifications and academic background. Each officer is a graduate of at least two required army schools in their respective fields in addition to an advanced course program. Students will find departmental faculty helpful in guiding them through their academic experience as well as helping them pursue career goals.

Career Opportunities

Upon completion of the R.O.T.C. requirement you are commissioned a second lieutenant in the United States Army. You may be selected to go on active duty if you desire. It should be noted that the recruiters for major corporations actively seek out former military officers to fill management positions because of the great personal motivation, discipline, and maturity which are hallmarks of the military officer. If you desire you may request a Guaranteed Reserve Forces Duty contract. This contract specifically states that you will receive a Reserve or National Guard assignment after completion of your R.O.T.C. requirements. Thus you may pursue your civilian career and still be an officer in the U.S. Army.

Enrollment Requirements

Those students who are simply interested in finding out about our program should enroll in one of our introductory courses (see class listings next page). Those who are considering pursuing the full R.O.T.C. course must meet certain requirements. Information on these requirements can be obtained by telephoning or visiting the **Army R.O.T.C. office on campus (294-2887/4810).**



Financial Assistance

All students formally enrolled in the R.O.T.C. program receive at least $1,000 a year and can earn as much as $10,000 during their college careers. Each student receives $100 (tax free) each month of the school year and about $750 for summer camp. Students may also join a United States Army Reserve or California Army National Guard Unit as an officer trainee and be paid an additional $105 per month. The army also has made available two, three, and four year scholarships—on a competitive basis—which pay all tuition, books and fees in addition to the $100 (tax free) each month.

Extracurricular Activities

Several formal and informal activities are available. For example, weekly leadership laboratories—one hour each week—are conducted along with one weekend field trip each semester. These field trips include such activities as helicopter insertions, map reading, rappelling, and work on various army individual confidence building devices. Apart from formal military activities, Army R.O.T.C. provides an atmosphere where friends pursuing a common career can get together for things such as parties, a formal ball, intramural sports, and participation in special clubs such as a rifle/pistol shooting club, a military tactics organization and a running club.

Faculty

LTC James W. Henderson, *Coordinator*

Randall G. Banky
Donald A. Carey
Robert Pavia
Thomas C. Vigil
Wesley G. Williams

Advisers:

Randall G. Banky
Donald A. Carey
Thomas C. Vigil
Wesley G. Williams

COURSES

Military Science (MS)

1. U.S. Defense Establishment (1). Nature of conflict and war; international power factors and balance of power concepts; organization and functions of the U.S. Defense Establishment; roles of the military departments.

2. Survival Training (1). Survival techniques in a field environment; major emphasis on plant and animal foods, first aid procedures, mountaineering, field crafts, and survival swimming. The course includes five 3-hour field trips.

3. U.S. Army in Vietnam (1). Overview of U.S. Army involvement in Vietnam. Background highlighted with such subjects as pacification, Khe Sanh, draft evasion and My Lai incident. Study the effect of technology (with emphasis on army aviation) on command and control techniques.

11. General Military Skills (2). Basic rope work to include knots and rappelling, basics of orienteering and land navigation, basic marksmanship and military briefings.

12. Basic Leadership and Management (2). Principles of leadership; principles of resource management; group goal attainment focusing on leader, group, and situational needs.

13. ROTC Basic Camp (3). A 6-week summer camp conducted at Fort Knox, Kentucky, designed for students interested in earning a commission, but who were unable to complete the ROTC Basic Course at CSUF. Topics include: basic military skills and leadership principles.

131. Advanced Leadership and Management (3). Personnel management problems and techniques of motivation as applied to a military environment; techniques and methods of instruction; application of basic military skills; military law.

132. Small Unit Leadership (3). Principles of tactics and operations; organization of small units and their employment; field orders and instructions; small unit leadership techniques.

133. ROTC Advanced Camp (3). A 6-week summer camp conducted at Fort Lewis, Washington. Topics include: familiarization with U.S. Army weapons systems, military skills, confidence training, light infantry tactics and leadership and management techniques.

134. Leadership Laboratory (1; max total 4). Practical work to augment classroom instruction. Weekly morning laboratories plus one field trip each semester. Attendance at all functions is voluntary, but lack of participation will adversely affect grades. Must be taken each semester a student is enrolled in Advanced Course.

141. Ethics and Military Professionalism (3). Military Professional Ethics, Military Justice, Command and Staff Functions, Mission and Organization of the U.S. Army and Military Correspondence.

192. Directed Reading in Selected Military Topics (3). Prerequisite: Completion of MS 131, MS 132, MS 141 and Hist 180. Directed reading in Military History and/or the role of the army in the formulation of national policy in consultation with a faculty adviser. The course requires a substantial writing requirement.

MUSIC

School of Arts and Humanities
Department of Music
Phyllis A. Irwin, Chair
Music Bldg., Room 101
(209) 294-2654

B.A. in Music
Minor in Music
M.A. in Music
Single Subject Teaching Credential

A major in music very often prepares students to enter careers in teaching and performance. It always enhances their knowledge of the musical art and increases their sensitivity to the musical world around them.

The Department of Music provides **(a)** undergraduate instruction in music for those planning professional careers as performers and composers as well as those preparing for advanced degrees in performance, composition, and musicology; **(b)** preparation for the teaching credential programs in or involving music; **(c)** graduate training for students planning professional and academic careers or seeking professional growth as teachers in junior colleges or other school systems; **(d)** broad acquaintance with musical art for the layman and nonmusic major. Two degree programs are offered: the Bachelor of Arts and the Master of Arts, each with concentrations in performance, composition, musicology, or music education.

Faculty and Facilities

The Department of Music faculty is composed of individuals whose backgrounds reflect varied areas of specialization: performance, composition, scholarly research and music education. Many members of the faculty have national and international reputations as performing artists and teachers. Others are well known for their articles and books. They are *all* dedicated to the task of providing the best music education possible for students in their classes and studios.

The Music Building consists of faculty studios, offices, classrooms, practice rooms, rehearsal halls, and a recital hall. Special facilities include an electronic studio and a computer assisted instruction laboratory.

Career Opportunities

While many graduates have made successful performing careers in opera, orchestras and popular music ensembles, the majority have established careers as private or public school teachers. Those who complete graduate studies have either advanced in public school careers or have made careers as teachers in higher education.

There are also other types of careers open for music majors and minors in music-related areas. The music industry draws on persons with musical backgrounds for their sales representatives and instrument technicians. Churches employ organists and choir directors, many on a full-time basis. The field of recreation also offers employment to persons with some expertise in music.



Faculty

Phyllis A. Irwin, *Chair*

M. Teresa Beaman
Bob L. Bennett
Kathryn Bumpass
Gary S. Cauchi
W. Ritchie Clendenin
Jack R. Fortner
Steven E. Gilbert
Arthur E. Huff
Phillip M. Lorenz
David R. Margetts
Ella Joy Nelson
Steven E. Schick
Lawrence R. Sutherland
Gary L. Unruh
James H. Winter

Graduate Adviser: Steven Gilbert
Credential Adviser: Arthur Huff
Undergraduate Adviser: Assigned by Chair

Bachelor of Arts Degree Requirements

Each student seeking a Bachelor of Arts degree with a major or minor in music must fulfill *Other Departmental Requirements* (see below) and all requirements listed under *Degree Requirements and General Education,* pages 98–101; 104–111.

Options—Select One:

OPTION I (47–64 units): Preparation for performance, composition, musicology, and careers in music other than public school teaching. Consult departmental advisers for specific assistance in your area(s) of interest.

Under Option I, the student is responsible for fulfilling the Music Core requirements (33–43 units); Option I requirements (concentration a, b, c or d—14–21 units); *Other Departmental Requirements* (see below); General Education (54 units); and electives, including remaining degree requirements (6–23 units), to complete the B.A. degree (124 units). **Note:** units accumulated while fulfilling *Other Departmental Requirements* are included among elective units used to complete the B.A. degree.

Core Requirements *Units*

Music 1A–B, 40, 41, 42, 43, 58, 61, 141, 144, 161A–B–C 33
Music 36S–136S until Piano Proficiency Exam is passed 0–10
33–43

Select one of the following emphases:

a. Performance:
4 semesters with advanced standing in Music 31S–131S through 39S–139S (instrument or voice) 8
5 units in Music 140T, 142, 148, 150A–B–C–D, 160T, 171 5
Music 198 1–2
14–15

b. Composition:
9 units in Music 48 9
6 units in Music 148 with advanced standing in composition 6
1 unit in Music 199 1
2 semesters in piano (Music 36S–136S) after passing Piano Jury Examination, Level 1 4
20

c. Musicology:
Music 142 3
6 units in Music 160T 6
Music 171 2
Music 190 2–3
Music 198, 199 1–2
14–16

d. Studio Piano Teaching
4 semesters in Music 36S–136S (Piano) including 2 semesters with advanced standing 8
Music 119P (Keyboard Pedagogy) 2
Music 130T (Teaching Piano) 2
Music 130T (Functional Piano) 4
Music 176T (Keyboard Lit) 3
Music 199 (Senior Project) 2
21

OPTION II (72–86 units): Waiver program for Single Subject Credential preparing students to teach music in grades K–12.

Under Option II, the student is responsible for fulfilling core requirements (54–64 units); ensemble requirements (18–22 units); and General Education (54 units); and electives to complete the B.A. degree. Additional Credential Requirements (10 units) may be completed before or after completion of the B.A. degree.

Consult the departmental credential adviser and the School of Education and Human Development for information regarding the 30 units of professional education necessary for completion of Single Subject Credential and 5th year requirements.

Core Requirements *Units*

Music 1A–B, 40, 41, 42, 43, 58, 61, 119I, J, K, L, M, N, O, Q, 144, 158, 161A–B–C 42
Music 36S–136S until Piano Proficiency Exam is passed 0–10
Elect from Music 182, 183, 184 3
4 Semesters in Music 31S–131S through 39S–139S, including 2 semesters with Advanced Standing 8
Music 198 or 199 1
54–64

Select one of the following emphases:

Voice, Piano, and Organ
Music 3–103 16
Music 25–125 2
18

String and Harp
Music 3–103 2
Music 18–118 16
Music 25–125 2
20

Brass, Woodwind, and Percussion
Music 3–103 2
Music 21–121 16
Music 25–125 4
22
72–86

Credential Requirements (not necessary for the B.A. degree):
Music 155, 159, 169, 179, T Ed 50 10

Other Departmental Requirements

1. Each student majoring in music must declare an area of concentration (i.e., an instrument, voice, composition, musicology, or music education).
2. At the close of his first semester, each student must pass the preliminary jury examination in his area of concentration before being permitted to continue his major. A further examination must be passed for advanced standing.
3. Each student majoring in music must enroll in a piano class until the departmental piano proficiency examination is passed.

4. Every semester each music major must participate in a major performing organization appropriate to his or her instrument or voice: orchestra, concert or marching band, concert choir. With the written approval of the directors concerned, another performing organization may be substituted. Piano majors may substitute two semesters of keyboard ensemble, accompanying or chamber music. Students completing Option I.d. must include two semesters of Music 16–116, Keyboard Ensemble, as partial fulfillment of this requirement. IN ADDITION: Applicants for the public school credential, before qualifying for the credential, must participate in at least one semester of marching band and one of concert choir. Applicants who are wind and percussion specialists must participate in at least two semesters of marching band and one of concert choir.
5. Participation in all rehearsals and performances of the performing organizations (Music 2–102 through 18–118, 20–120 through 25–125) for which the student registers must take precedence over any conflicting activity.
6. Students in Music 31S–131S through 39S–139S will appear in student recitals when assigned.
7. Each student majoring in music must attend a designated number of recitals or concerts.
8. A senior project is required of each student during his final year. For those whose area of concentration is voice or an instrument the project will be a public recital; for details, consult the Music Department Office.
9. No course used to satisfy General Education CAPSTONE requirements may be used to satisy Music major requirements.

Music Minor

The minor in music requires completion of at least 20 units of music courses, 6 units of which must be upper division. The program must be approved by the department adviser and the department chair. Required units usually include: Music 9 (or 40 and 41); 6 units of Music 31S–131S through 39S–139S; 6 to 9 units in music literature. In addition, students minoring in music must enroll in a major performing organization (see #4 above) each semester of the junior and senior years.

Graduate Program

The Master of Arts degree program in music is designed to increase the candidate's professional competence, to increase the ability for continued self-directed study, and to provide opportunity for greater depth in the chosen area of concentration within the field of music.

The Master of Arts degree program in music assumes preparation equivalent to a CSU, Fresno undergraduate major in music. Foreign students must have achieved a minimum TOEFL score of 550 to gain entrance to the program. A score of 440 or higher on the Graduate Record Examination (G.R.E.) Advanced Test in Music is required for advancement to candidacy. This test should be taken as early as possible, at least once prior to classification.

Master of Arts Degree Requirements

(See also *Admission to Graduate Standing, Advancement to Candidacy, Program Requirements,* and *Criteria for Thesis and Project,* pp. 464–468.)

Under the direction of a graduate adviser, each student prepares and submits a coherent program individually designed within the following framework:

Courses in music, including at least 15 units in 200-series

	Units
(See *specific requirements*)	21
Courses in other subject fields	3
Electives in music or related fields	6
Total	30

Specific Requirements: Music 220; 3 units from Music 237, 247, 257, 267, 277; 3 units from Music 205, 206, 214T, and Music 298 (preceded by at least one semester of Music 210 for performance majors) or Music 299; 10- to 14-unit concentration in music education, musicology, theory and/or composition, or performance. Acceptance to a given area is contingent upon approval of the faculty in that area, including an audition for performance majors. Vocal performance and musicology candidates must demonstrate proficiency in an appropriate foreign language prior to advancement to candidacy. Courses in addition to those above may be specified after examination of the student's record. A maximum of four units in ensemble work (Music 102–125) may be applied to the M.A. degree. Master's degree candidates are encouraged to participate in ensembles appropriate to their field of specialization.

COURSES

Music (Music)

Performing Organizations

All performing organization courses may be repeated for credit and are open to both lower- and upper-division students.

The courses below include the technical, stylistic, and aesthetic elements of musical literature; rehearsal and public performance.

2–102. Community Chorus (1).

3–103. Concert Choir (1–2).

4–104. Chamber Singers (1–2).

5–105. Musical Theatre Workshop (2).

6–106. Jazz Singers (1).

7–107. University Men's Chorus (1). (Former Music 130T)

8–108. University Women's Chorus (1).

11–111. Brass Ensemble (1).

12–112. Percussion Ensemble (1).

13–113. String Ensemble (1).

15–115. Woodwind Ensemble (1).

16–116. Keyboard Ensemble (1).

18–118. Orchestra (2).

20–120. Band Workshop (2).

21–121. Concert Band (1–2).

22–122. Jazz Workshop (2).

25–125. Marching Band (2).

130T. Topics in Performance (1–2; repeatable for credit). Special studies in vocal or instrumental music, including topics such as accompanying, electronic instruments, mixed chamber music, lyric diction.

Instrumental and Vocal Lessons

Music 31S–131S through 39S–139S include studies in technical, stylistic, and aesthetic elements of artistically performing repertory from the standard literature of etudes, solo, chamber, and large ensemble music and are repeatable for credit. For Music majors and minors, concurrent enrollment in an appropriate major ensemble is required. All courses are repeatable for credit.

31S–131S. Brass (2).

32S–132S. Percussion (2).

33S–133S. Strings (2).

35S–135S. Woodwinds (2).

36S–136S. Piano (2).

37S–137S. Harp (2).

38S–138S. Organ (2).

39S–139S. Voice (2).

1A. Ear Training and Sight Singing I (1; max total 2, repeatable for credit). Basic drill in the singing and recognition of intervals, scales, and diatonic melodies, in treble, bass, alto and tenor clefs. Dictation of diatonic melodies and counterpoint in first and second species. *CR/NC* grading only.

1B. Ear Training and Sight Singing II (1; max total 2, repeatable for credit). Prerequisite: Music 1A. Continuation of Music 1A. Extension of melodic sight singing and dictation to include chromatic passing tones and more complex rhythms. Drill in the singing and recognition of the basic varieties of triads and seventh chords. Harmonic dictation; recognition of basic chord patterns and cadences. *CR/NC* grading only.

9. Introduction to Music (3). Not recommended for music majors. Theory necessary for the reading, playing and understanding of music by the layman and the elementary credential candidate.

40. Theory of Music I (3). Prerequisite: Music 9 or the ability to read music. Fundamentals of music. Tonal species counterpoint in two and three voices.

41. Theory of Music II (3). Prerequisite: Knowledge of music fundamentals (scales, intervals, keys, triads); Music 40 preferred. Harmonic and contrapuntal practice of the 17th and 18th centuries. Development of written skills, concentrating on four-voice chorale settings.

42. Theory of Music III (3). Prerequisite: Music 41. Continuation of Music 41, with emphasis on 19th century harmonic and contrapuntal practice. Introduction to analytic-reductive techniques.

43. Theory of Music IV (3). Prerequisite: Music 42. Survey of the compositional practice of the 20th century, with analysis of selected works.

48. Composition (3; max total 9). Prerequisite: permission of instructor. Aural-analytic introduction to and study of origins and developments of major compositional concepts and genres in Western music; assigned exercises and creative writing in a variety of styles and idioms; the problems of concepts in notation.

58. Basic Conducting (2). Prerequisite: Music 41. Fundamentals of conducting and score-reading; standard patterns and stick technique. Required of all Single Subject Teaching Credential candidates.

61. Music Literature (2). Introductory course in music literature, primarily for music majors and minors. Masterpieces of Western music from the Middle Ages through the 20th century.

74. Listener's Guide to Music (3). The role of musicians in and the contributions of music to the lives of cultured people; major composers and their works.

119I. Upper Brass Pedagogy (1). Prerequisite: Music 40, 41. Principles, playing and teaching procedures, and materials for teaching trumpet and horn in the elementary school, high school, and community college. (Former Music 119A)

119J. Lower Brass Pedagogy (1). Prerequisite: Music 40, 41. Principles, playing and teaching procedures, and materials for teaching trombone, baritone and tuba in the elementary school, high school, and community college. (Former Music 119A)

119K. Upper String Pedagogy (1). Prerequisite: Music 40, 41. Principles, playing and teaching procedures, and materials for teaching violin and viola in the elementary school, high school, and community college. (Former Music 119C)

119L. Lower String Pedagogy (1). Prerequisite: Music 40, 41. Principles, playing and teaching procedures, and materials for teaching cello and string bass in the elementary school, high school, and community college. (Former Music 119C)

119M. Single Reed Pedagogy (1). Prerequisite: Music 40, 41. Principles, playing and teaching procedures, and materials for teaching clarinet, saxophone and flute in the elementary school, high school, and community college. (Former Music 119D)

119N. Double Reed Pedagogy (1). Prerequisite: Music 40, 41. Principles, playing and teaching procedures, and materials for teaching oboe and bassoon in the elementary school, high school, and community college. (Former Music 119D)

119O. Percussion Pedagogy (2). Prerequisite: Music 40, 41. Principles, playing and teaching procedures, and materials for teaching percussion instruments in the elementary school, high school, and community college. (Former Music 119B)

119P. Keyboard Pedagogy (2). Prerequisite: Music 40, 41. Principles, playing and teaching procedures, and materials for teaching keyboard instruments in the elementary school, high school, and community college. (Former Music 119E)

119Q. Voice Pedagogy (2). Prerequisite: Music 40, 41. Principles, playing and teaching procedures, and materials for teaching voice in the elementary school, high school, and community college. (Former Music 119F)

130T. Topics in Performance (1–2; repeatable for credit). Special studies in vocal or instrumental music, including topics such as accompanying, electronic instruments, mixed chamber music, lyric diction.

140T. Topics in Theory and Composition (3; max total 9). Prerequisite: Music 40, 41, 42, 43. Technical, stylistic, and aesthetic elements of theory and composition.

141. Seminar in Modal Counterpoint (3). Prerequisite: Music 42, 43. Polyphony of the 15th and 16th centuries; analysis and

composition of melodic lines, simple counterpoint, types of imitation; writing motets with text in two or more parts.

142. Seminar in Canon and Fugue (3). Prerequisite: Music 42, 43. Polyphony of the 17th and 18th centuries; analysis and composition of melodic lines, imitative, strict and invertible counterpoint, canon and fugue.

144. Form and Analysis (3). Prerequisite: Music 42. Principles of musical form and analysis as applied to standard works of the 18th and 19th centuries. Includes an introduction to the Schenker method of music analysis and review of chromatic harmony as necessary. (Former Music 144A)

148. Seminar in Advanced Composition (3; max total 9). Prerequisite: Music 42, 43. Seminar in original composition of a thoroughly contemporaneous nature in media, forms, and styles of student's choice.

150A. Seminar in Electronic Music I (3). Prerequisite: Music 40, 41, and permission of instructor. A survey of the history and literature of electronic music. A systematic introduction to basic analog synthesis, and instruction in the techniques of studio recording and editing.

150B. Seminar in Electronic Music II (3). Prerequisite: Music 150A and permission of instructor. Advanced applications of analog synthesis and recording engineering. Emphasis on the individual creative process.

150C. Seminar in Electronic Music III (3). Prerequisite: Music 150B and permission of instructor. An introduction to computer applications in digital/analog synthesis. Introduction in multi-track mixing and recording.

150D. Seminar in Electronic Music IV (3). Prerequisite: Music 150C and permission of instructor. Advanced computer controlled digital/analog synthesis. Emphasis on the individual creative process.

153. Children's Music (3). Open to non-majors. Introduction to song literature and singing games suitable for children. Development of in-tune singing, ear training and sightsinging skills. (Former Music 176T section)

155. Sound, Rhythm, and Song (3). Prerequisite: Music 40, 41 for students majoring in music; Music 9 for others. Individual research on the place and functions of music in the pre-school and elementary school curriculum; selection, discussion, and analysis of musical materials including state texts; planning activities that enable children to develop aesthetic sensitivity, musical skills, and understanding.

158. Advanced Conducting (2; max total 4). Prerequisite: Music 58. Advanced conducting and score reading; rehearsal techniques; problems in tempo, balance, style, and phrasing; mixed meters and other contemporary problems. Assigned projects in conducting. Required of all Single Subject Credential candidates in music.

159. Marching Band Techniques (1). Prerequisite: Music 41. Offered first semester only. Practical and creative aspects of producing musical shows and marching formations for athletic events, parades and public ceremonies. Required of all Single Subject Teaching Credential candidates in music.

160T. Topics in Music History, Literature and Appreciation (1–3; max total 9). Prerequisite: Music 161A. Study of selected musical genres, composers, and other specialized topics. 160TW *Writing About Music* (Prerequisite: Engl 1) meets the Upper Division Writing Skills Requirement for graduation.

161A. Survey of Music History I (3). Prerequisite: Music 61, permission of instructor. Lectures, discussion, and reports on music from the early Middle Ages to approximately 1680.

161B. Survey of Music History II (3). Prerequisite: Music 61, permission of instructor. Lectures, discussion, and reports on music from approximately 1680 to 1880.

161C. Survey of Music History III (3). Prerequisite: Music 61, permission of instructor. Lectures, discussion, and reports on music from approximately 1880 to the present.

169. Instrumental Techniques and Materials (2). Prerequisite: Music 41. Instrumental music programs in the public schools; principles, procedures, literature and materials. Expenses for off-campus visits will be incurred by student. Required of all Single Subject Teaching Credential candidates in music.

171. Music of Non-Western Cultures (2). Music of Africa, native North and South America, and the East.

176T. Topics in Music Appreciation (3; repeatable for credit). Listeners' guide to music appreciation; structure and expression, formal designs, stylistic tendencies; musical literature, analysis of representative works. Topics include: choral, wind, brass, percussion, string, chamber, keyboard, orchestral, vocal recital, opera, avant-garde, folk and ethnic, jazz and rock, and musical theatre.

179. Choral Techniques and Materials (2). Prerequisite: Music 41, 58. Vocal music programs in the public schools; principles, choral techniques, literature and materials. Expenses for off-campus visits will be incurred by student. Required of all Single Subject Teaching Credential candidates in music.

182. Band Arranging (3). Scoring and arranging for the Band and Wind Ensemble; problems in idiomatic writing for individual instrument and sonorities of instruments in combination. Ranges, transposition, technical capabilities of band and orchestra instruments and the voice.

183. Choral Arranging (3). Scoring and arranging for various sizes and types of choral ensembles; problems in idiomatic writing for the voice and sonorities of voices in combination *a capella* and with accompaniment instrumentation and its relationship to the voice and choral ensembles.

184. Orchestral Arranging (3). Scoring and arranging for orchestral ensembles; problems in idiomatic writing for the instruments and sonorities of instruments in combination. Ranges, transposition, technical capabilities of band and orchestra instruments and the voice.

187. Pop Music: Jazz and Rock (3). Styles of Pop Music with special emphasis on Jazz and Rock and their influence on life styles.

190. Independent Study (1–3; max see reference). See *Academic Placement—Independent Study,* pages 96–97.

191. Readings in Music (1–3). Prerequisite: permission of instructor. Readings in depth and discussions in individual conferences; subject to be selected by student and his adviser. May be preliminary research in connection with thesis topic.

198. Senior Recital (1–2). Prerequisite: Senior standing, approval of major applied music instructor. Preparation and presentation of a satisfactory senior recital. Required of all graduating performance majors; see *Other Departmental Requirements.*

199. Senior Project (1–2). Prerequisite: Senior standing, approval of major adviser. Preparation, completion, and submission of a suitable research paper, study, or composition. Required of all graduating seniors in Options Ib, Ic, II.

GRADUATE COURSES

(See *Course Numbering System,* p. 133.)

205. Seminar in Analysis, I: Tonal Music (3). Principles of musical form and analysis as applied to representative works of the eighteenth and nineteenth centuries.

206. Seminar in Analysis, II: Nontonal Music (3). Development of a descriptive vocabulary suitable for the music of the twentieth century, with special reference to works by Schoenberg, Berg, Webern, and selected American composers.

210. Studies in Performance (2; max total 6). Open only to master's degree students majoring in performance. Prerequisite: Music 220 and permission of department chair. Individually directed studies in performing or conducting instrumental or vocal music; historical and theoretical interpretation applied in preparation for public recitals and concerts of works from the standard literature of all periods in the student's major performance area.

214T. Seminar in the History or Pedagogy of Music Theory (3; max total 9). Critical and bibliographical study of a selected topic in the history or pedagogy of music theory, including emphasis on the teaching of the subject at the senior high school or college level.

219T. Seminar in Music Education (3; max total 9 if no course repeated). Prerequisite: Music 155, T Ed 161 and permission of the instructor. Topics of special concern to the teacher or administrator. Individual research projects and discussion of problems in the area of literature, philosophy, and practices of teaching, administration, and curriculum planning.

220. Seminar in Research Methods and Bibliography (3). Prerequisite: Music 161A, B. Bibliography, sources, and research techniques necessary for graduate study in music. Individual projects and research. Required of all students working for the master's degree in music.

234. Studies in Composition (3; max total 9). Open only to master's degree students majoring in composition. Prerequisite: Music 220. Individually directed studies in composition with contemporary techniques of an extended work equivalent in substance to a sonata, cantata, or other composition of major proportions.

237. Seminar in the Music of the Renaissance (3). Prerequisite: Music 220. Critical and analytical study of the historical sources, selected works and composers of the period from approximately 1425 to 1600 A.D. A term paper will be a central requirement for successful completion of this course.

247. Seminar in the Music of the Baroque (3). Prerequisite: Music 220. Critical and analytical study of the historical sources, selected works and composers of the period from approximately 1600 to 1750 A.D. A term paper will be a central requirement for successful completion of this course.

257. Seminar in the Music of the Classic and Early Romantic Eras (3). Prerequisite: Music 220. Critical and analytical study of the historical sources, selected works and composers of the period from approximately 1750 to 1850 A.D. A term paper will be a central requirement for successful completion of this course.

258T. Topical Seminars in Conducting (1–3; max 6). Prerequisite: Music 158. Advanced studies in selected topics related to conducting. Projects with particular attention to rehearsal techniques, score preparation, and interpretation.

259T. Topical Seminars in Vocal Music (1–3; max 6). Prerequisite: Music 119Q. The study of advanced level song literature, song interpretation and performance practice as applied to standard and special vocal repertoire.

267. Seminar in the Music of the Late Romantic and Contemporary Eras (3). Prerequisite: Music 220. Critical and analytical study of the historical sources, selected works, and composers of the period from approximately 1850 A.D. to the present. A term paper will be a central requirement for successful completion of this course.

269T. Topical Seminars in Instrumental Music (1–3; max 6). Prerequisite: Music 169. The study of advanced level instrumental literature, score interpretation and performance practices as they apply to standard and special instrumental literature.

277. Seminar in American Music (3). Prerequisite: Music 220. Critical and analytical study of the historical sources, selected works and composers in the United States from 1620 A.D. to the present. A term paper will be a central requirement for successful completion of this course.

279T. Topical Seminars in Choral Music (1–3; max 6). Prerequisite: Music 179. The study of advanced level choral literature, performance practices, interpretation and rehearsal techniques pertinent to various choral ensembles.

287. Seminar in Interpretation of Earlier Music (3). Prerequisite: Music 220. Historical study of performance practices from the Middle Ages to the early classic era. Individual research projects and class discussions centered on primary theoretical and musical sources.

290. Independent Study (1–3; max see reference). See *Academic Placement—Independent Study,* pages 96–97.

291. Readings in Music (1–3). Prerequisite: permission of instructor. Readings in depth and discussions in individual conferences; subject to be selected by student and his adviser. May be preliminary research in connection with thesis topic.

298. Project (3). See *Criteria for Thesis and Project,* pages 467–468. Completion of an approved project appropriate to the candidate's area of specialization. To be used in place of Music 299 for majors in performance, composition, and as an option for majors in music education. The graduate recital, for performance majors, will consist of an approved program containing at least one hour of music. May not be used by students majoring in musicology.

299. Thesis (3). Prerequisite: see *Criteria for Thesis and Project,* pages 467–468. Preparation, completion, and submission of an acceptable thesis for the master's degree.

IN-SERVICE COURSES

See *Course Numbering System,* page 133.

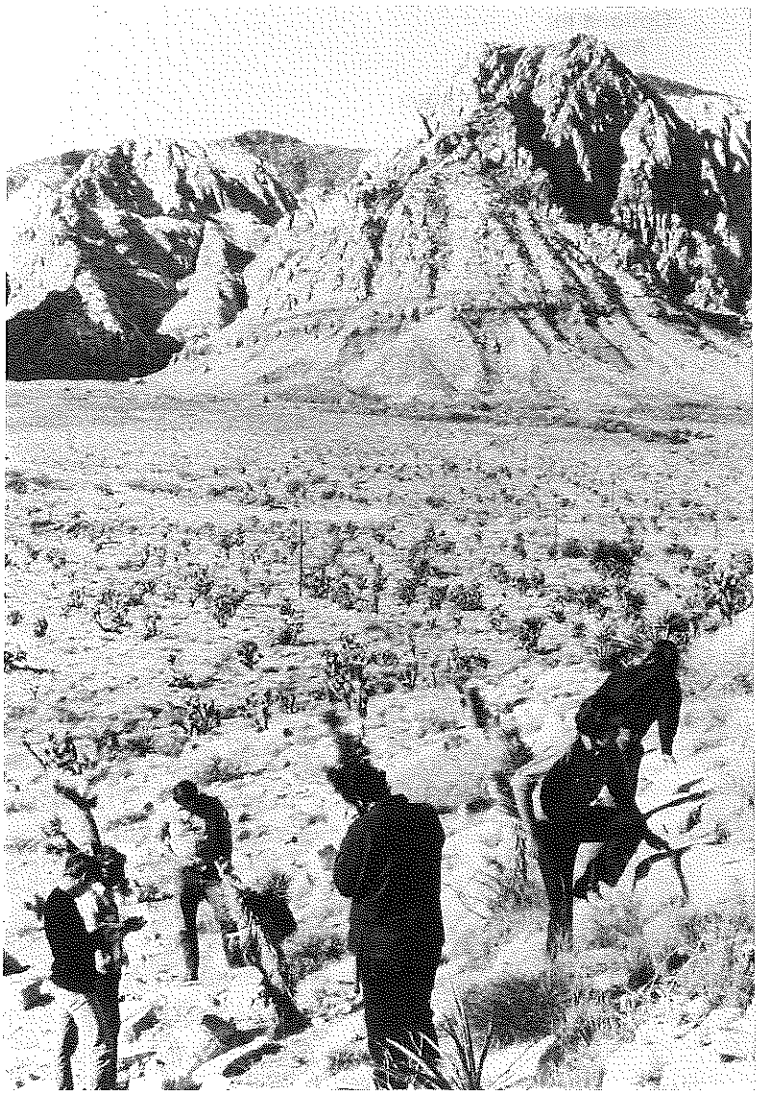
307. Musical Instrument Repair (1; max total 3).

309T. Workshop: Vocational and Avocational Music Topics (1–3).

NATURAL SCIENCE
Interdisciplinary Courses

School of Natural Sciences
Kin-Ping Wong, Dean
New Science Building, Room 101
(209) 294-3936

The School of Natural Sciences provides a number of Natural Science courses which include a variety of subjects. These courses help students gain an understanding of science in conjunction with their related disciplines.



COURSES

Natural Science (N Sci)

1. The Art of Medicine (1; max total 4). Primarily for pre-health-care students. Delivery of health care today. Concepts of the art of medicine presented by community physicians and specialists.

15. Environmental Science: An Integrative Course (2). Concurrent enrollment in Anth 15, Biol 15, Geol 15 required. Portion of *Man and the Natural Environment* Cluster. A study of the interrelationships among the anthropological, biological and geological aspects of man and the natural environment. Team taught. *CR/NC* grading only.

37. Math Confidence (2) (Same as W S 37). Concurrent enrollment in a math class commensurate with the student's math achievement level is recommended but not required. This course is designed to increase confidence in math-related problem solving situations and to increase the student's potential for participation in math-related courses and/or careers. *CR/NC* grading only.

40T. Topics in Natural Sciences (1–4; max total 12). Prerequisite: permission of instructor. Interdisciplinary topics covering such subject matter areas as environmental studies and the impact of science on society.

110. Practicum in Medicine (2). Prerequisite: permission of instructor. Offered in association with the UC Medical Education Program. Premedical students assigned in one or more clinical settings in the community. Emphasis on in-depth association with health professionals for clinical observation and biomedical research experience. (spring semester)

140T. Topics in Natural Sciences (1–6; max total 12). Prerequisite: permission of instructor. Interdisciplinary topics covering such subject matter areas as medical technology and ecology. (May include lab hours)

141. Chemistry and the Consumer (3). Prerequisite: Chem 2C, 8 or 128A. A course designed to give the student an appreciation of the impact of chemistry on society. May include discussions of petrochemistry and the source of chemicals, foods as chemicals, food additives, drugs, agricultural chemicals, chemical ethics, and current topics of interest.

207. Radiotracer Methodology in the Natural Sciences (3). Prerequisite: Graduate standing; two semesters undergraduate physics recommended. For students in biology, chemistry, physics, or other areas using radioisotopes. Covers radiation detection, radiation safety, gamma ray spectroscopy, liquid scintillation, radioimmunoassy, and biological applications in living systems. (2 lecture, 3 lab hours) (Former N Sci 240T section)

240T. Topics in Natural Sciences (1–4; max total 8). Prerequisite: permission of instructor. Interdisciplinary topics in the natural sciences at the graduate level covering such subjects as advanced techniques. Sample topics are *Radiation Techniques in Biology and the Physical Sciences* and *Recent Advances in Psychophysiology.* (May include lab hours)

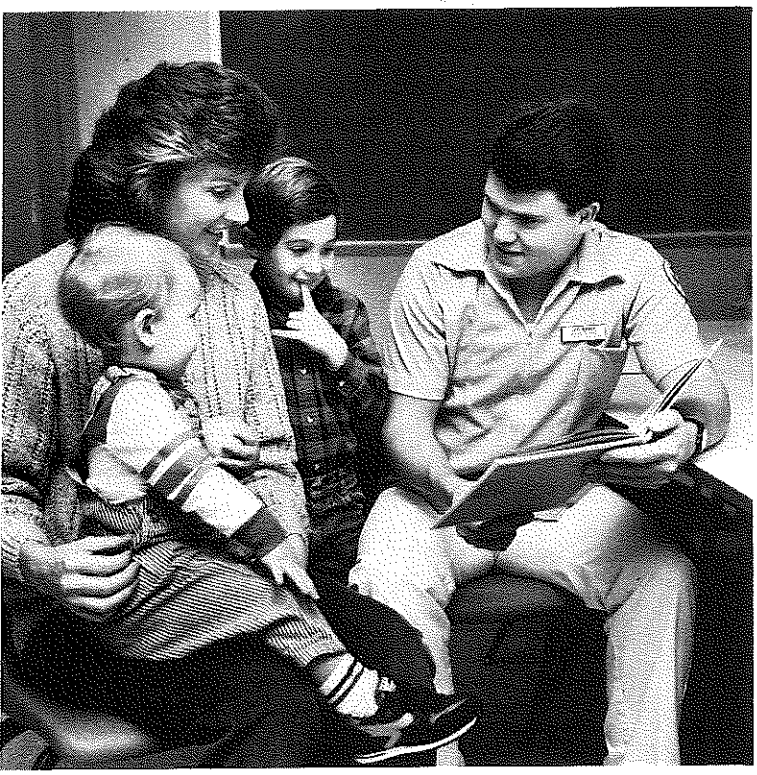
NEXUS Courses.

See *General Education*, page 107.

Nursing

School of Health and Social Work
Department of Nursing
Karen T. Nishio, Chair
Science Bldg., Room 178
(209) 294-2041

B.S. in Nursing
School Nurse Health Services Credential
M.S. in Nursing
Options in:
- **Administration**
- **Education**
- **Clinical Specialization**
- **Nurse Practitioner**



The purpose of nursing is to facilitate the client's ability to actualize his potential resources in promoting, maintaining, and/or restoring health. The process of nursing consists of systematic assessment, planning, implementation, and evaluation of care. Nursing assumes the primary responsibility for providing holistic care to the client, utilizing significant support systems, such as the family and community. The department offers an undergraduate program which leads to the Bachelor of Science degree in Nursing, a post-baccalaureate Health Services Credential Program in School Nursing, with an option to pursue the master's degree in nursing, and a graduate program leading to a Master of Science degree in Nursing.

Undergraduate Program

The program requires six semesters of nursing courses in addition to two semesters of prerequisite requirements. The basic general education requirements are the same for all majors. Upon completion of the program, the student is qualified to take the National Council Licensure Examination (N.C.L.E.X.-R.N.) and apply for the Public Health Nurse Certificate issued by the California Department of Health. CSU, Fresno's nursing program is accredited by the California Board of Registered Nursing and the National League for Nursing.

Clinical Facilities

A wide variety of clinical resources is used, including Fresno Community Hospital and Medical Center, St. Agnes Medical Center, Valley Children's Hospital, Veteran's Administration Medical Center, Kings View Center, Valley Medical Center, Fresno County, Madera County, and Kings County Health Departments, Central Valley Indian Health, and Associated Indian Services.

Advanced Placement in the Nursing Major

All students seeking advanced placement must seek advisement from the department. Students are expected to meet all prerequisites for admission and meet filing deadlines specified for undergraduate students.

Registered Nurses

Registered nurses with an associate degree in nursing may articulate at the junior level in the major. Registered nurses from diploma programs may seek advanced placement through credit by examination (see *Academic Placement—Credit by Examination,* p. 96).

Registered nurses are in a separate admission pool from the generic nursing applicants.

Licensed Vocational Nurses

Licensed Vocational Nurses are offered four options:

1) Generic Nursing Program
2) Transfer/Credit by Examination
3) Thirty-Unit option (non-degree)
4) Thirty-Unit option with subsequent completion of Bachelor of Science degree.

Health Related Personnel

Medical corpsmen, psychiatric technicians, and others are eligible for credit by examination under the university's policy as outlined in the current catalog.

Faculty

Karen T. Nishio, *Chair*

Carol L. Avent
Mary J. Banigan
LeAnn J. Curl
Martha A. Davis
Marlene A. Dehn
M. Joan Fiorello
Filomena C. Flores
Mary R. Ivan
Marilyn-Lu Jacobsen-Webb
Judith S. Keough
Patricia D. Kissell
Fred C. Krell
Selwa H. Makarem
Mariamma K. Mathai
Emperatriz N. Rabago
Michael F. Russler
Eleanor M. Stittich
Margaret C. Thorburn
Elizabeth H. Wilkerson

Policies and Procedures for Admission

Admission to the generic program is a two-step process: 1) Admission to the university, and 2) Admission to the nursing major. Approximately 66 generic and 15 advanced placement RN students are admitted both fall and spring semesters. A separate nursing major application must be submitted to the Office of Admissions where all applications to the major are screened. Applicants must meet all criteria for admission to the university and to the nursing major. ALL PREREQUISITES MUST BE COMPLETED BY THE TIME OF PLANNED ENROLLMENT IN THE NURSING MAJOR. NO PREREQUISITES CAN BE TAKEN CONCURRENTLY WITH THE NURSING MAJOR.

1. Students must be California residents for admission and tuition purposes.
2. Students applying to the university must do the following:
   a. File an application for admission to CSU Fresno with the application fee by the deadline.
   b. Submit required transcripts by document deadline.
   c. Transfer students with fewer than 56 transferable semester units must file A.C.T. or S.A.T. scores and a high school transcript by the document deadline.
3. Transfer students, as well as CSU Fresno students, must submit a nursing major application by the application deadline. Applicants must have recorded grades for at least two natural science prerequisites by the document deadline.
4. A G.P.A. of 2.5 or higher must be achieved in all prerequisite natural science courses (Chem 2A and 2B or Chem 2A and 2C; Phys 64 and 65). Prerequisite science courses may be repeated *ONCE ONLY* in an attempt to improve G.P.A. for admission purposes. A credit grade (*CR*) is not acceptable. Each prerequisite and required course must be completed with a minimum grade of *C*. Credit/no credit grades are not acceptable for prerequisite or corequisite courses.
5. Specific health criteria must be met. Students with recurrent infections or physical limitations that preclude meeting clinical course objectives may be unable to satisfactorily complete the requirements for a B.S. in nursing. Contact nursing department regarding any questions.
6. Transfer students who meet the criteria will be considered on the same basis as a CSU, Fresno student applying for admission to the major.

University and Nursing Applications and Document Deadlines for B.S. Degree

For application form and further admissions information, write to the Office of Admissions, California State University, Fresno. For further information regarding curricula, write to the Department of Nursing, California State University, Fresno, CA 93740.

Fall Admission (application forms available November 1)

- University Application Filing Deadline: November 30
- Nursing Major Application Deadline: December 31 (Applications available from Admissions Office.)
- Document Deadline (transcripts, scores, etc.): February 25
- New transcripts must include all prior course work *including* the previous fall term. Final transcripts must be submitted as soon as possible in summer showing the completion of all remaining prerequisite courses.

Spring Admission (application forms available August 1)

- University Application Filing Deadline: August 31
- Nursing Major Application Deadline: September 30 (Applications available from Admissions Office.)
- Document Deadline (transcripts, scores, etc.): October 14
- New transcripts must include all prior course work *including* the previous spring and summer terms. Final transcripts must be submitted as soon as possible in January showing the completion of all remaining prerequisite courses.

Grades

Criteria for retention, progression, and graduation from the program include a minimum grade of *C* in each nursing course with a letter grade and credit in the credit/no-credit labs/practica and all courses required by the major. If a student needs to repeat either the clinical or theory portion of a nursing course, it is mandatory that the clinical and theory portion be repeated concurrently. A student who receives less than a *C* grade in two nursing courses will not be permitted to continue in the nursing program. Refer to the department for complete admission, progression, and retention policy as stated in the *Student Handbook, Baccalaureate Degree Nursing Program.*

Expenses

Students must be prepared to incur any additional cost such as uniforms, malpractice insurance, health insurance, stethoscopes, course syllabi, etc., and be responsible for transportation to clinical facilities. A current C.P.R. certification is required.

Bachelor of Science Degree Requirements

Nursing Major

Units

1. **Major requirements *—generic students** 62
   Nurs 10, 10L, 11, 110, 110S, 110L, 111, 120, 120L, 121, 121L, 122, 130, 130L, 131, 131L, 140, 140L, 141, 141L, 145, 150, 150L, 151, 180T (2 units)
2. **Major requirements *—RN students only**
   Nurs 141, 141L, 145, 150, 150L, 151, 6 units of nursing electives 36
3. **Prerequisite requirements**
   Courses which *must* be completed *before* entrance into the Nursing Major: 17/18
   Chem 2A and 2B or 2C (General Education—Breadth, Division 1); Phys 64 and 65; FScN 52 or 54.

4. Additional Requirements
   Courses which must be completed by graduation:.....20–21
   a) Introduction to Statistics; A S 153, H S 102, Math 11, or Soc 25 (Recommended)
   b) Micro 20 or 104
   c) Psych 10
   d) Phil 120
   e) Soc 1, 2 or 3 or Anthro 2
   f) Three units of Ethnic/Women's Studies (Division 9)
   g) CFS 38
5. General Education requirements.....54
   (See Notes 1–2 below)

Minimum Total.....130

* See the nursing department for course descriptions not found in this catalog and for advising.

Notes:

1. Up to 6/7 of 17/18 prerequisite units also may be used to satisfy General Education requirements.
2. All the 16–17 additional requirements units may be used to satisfy General Education requirement, including Micro 20 or 104 that fulfills the Division 2 requirement only for nursing majors.
3. Students must complete the Upper Division Writing Skills requirement in order to graduate.
4. Optional *CR/NC* grading is not permitted in the nursing major.
5. Criteria for retention, progression, and graduation from the program include a minimum grade of *C* in each nursing course and all courses required by the major. A student who receives less than a *C* grade in two nursing courses will not be permitted to continue in the nursing program. Refer to the policies on admission, progression, and retention in the *Student Handbook, Baccalaureate Degree Nursing Program.*
6. Students must be prepared to incur ***any*** additional cost, such as uniforms, malpractice insurance, immunizations, physical examinations, health insurance, stethoscope, syllabi, etc., and be responsible for transportation to clinical facilities. A current C.P.R. certification is required.
7. Students are required to meet with their faculty adviser at least once each semester. Contact the department office for your faculty adviser's name, office number, and office hours.
8. A 2⅔ or 3 unit transfer introduction to psychology class will be accepted in lieu of Psychology 10. Also, 4 quarter-unit classes will be accepted as equivalent to 3 semester-unit classes.

Post Baccalaureate Health Services Credential Program—School Nursing

The program is approved by the Commission on Teacher Credentialing and provides basic preparation for practice as school nurse. The department, in conjunction with the School of Education, recommends candidates for the clear credential.

The program of studies consists of a minimum of 30 units:*

	Units
C D 103. Speech Science II	3
C D 128. Observation in Communicative Disorders: Audiology	1
C D 131. Principles in Audiology	3
H S 102. Public Health Statistics	3
C D 114. Education of Exceptional Child	3
or	
PSYCH 168. Exceptional Children	3
or	
A S 111. Mainstreaming Exceptional Child	2
and	
A S 115F. Field Work in Special Education	1
A S 174. Introduction to Counseling	3
or	
A S 224. Seminar in Counseling Techniques	3
**Nurs 136. Health Appraisal	3
**Nurs 137. Teaching of Health Clients (Former Nurs 220) (microteaching required)	3
**Nurs 145. Nursing Theories and Research (Former Nurs 125)	3
**Nurs 185. Seminar in School Nursing	3
**Nurs 186. School Nurse Practicum	3
**Nurs 187. School Nurse Internship	3

* Courses taken in a N.L.N. accredited baccalaureate program may be accepted for the credential at the discretion of the Department of Nursing

**Courses available only through regular enrollment in the university and acceptance into credential program.

Admission Criteria

1. Baccalaureate degree in nursing from a N.L.N. accredited program.
2. Admission to the university at the postbaccalaureate level.
3. Registered nurse license in California.
4. Overall G.P.A. of 2.5 and 3.0 in nursing.
5. Malpractice insurance.
6. California Public Health Nurse Certificate or one year experience in a community health agency; or a preliminary Health Services Credential.
7. Three letters of reference (at least one from a recent employer and nursing faculty).
8. Provide evidence of admission to the university.

Admission Procedure

1. Complete application for admission to post-baccalaureate standing, Admission Office.
2. Complete Credential Program application to Department of Nursing.
3. Attach transcripts of previous academic work to the credential program application.
4. Submit three letters of reference. Forms provided by department.
5. Complete locator card in the School of Education, Credential Analyst's Office, EdP-120.
6. Make an appointment with the credential adviser, Department of Nursing, for program planning.

Articulation with Graduate Program

Students who wish to pursue the master's program in nursing must consult the coordinator, graduate curriculum. Articulation with option in community health nursing/clinical specialist or primary care/pediatric nurse practitioner.

Time Restrictions

All requirements for a Clear Credential must be completed within

5 years of the date of issuance of the preliminary credential.

Note: A minimum of 15 units in the credential program must be obtained on the CSU, Fresno campus. The use of any comparable course is contingent on departmental approval. Course work taken more than 10 years ago is not acceptable to meet program requirements.

A maximum of 9 units is allowed through courses taken on Extended Education or concurrent enrollment.

A health clearance is required prior to enrollment in Nurs 186 and Nurs 187. Clearance is obtained through the Student Health Services.

All admission requirements (credential program application form, admission to the university, documents, and prerequisites) must be completed prior to enrollment in any of the nursing courses.

Timeliness for completion of admissions requirements is as follows:

Fall Enrollment ..... **August 10**
Spring Enrollment ..... **December 10**

Graduate Program

The department offers a N.L.N. accredited program that leads to a Master of Science degree in Nursing. In addition to advanced practice in a clinical area, students elect a functional role as administrator, clinical specialist, educator or practitioner.

The purpose of nursing education at the master's level is to help students apply advanced theory and practice with advanced skills in complex client and community systems. It further seeks to provide students with advanced skills in leadership and research in order to improve the health care of individuals, families, and communities. The program provides a foundation for doctoral study in nursing.

Facilities

The diverse facilities of the community provide a wide variety of stimulating opportunities for individualized pursuit of student goals. Graduate and post baccalaureate students have clinical placements which are consistent with their career goals.

Admission Criteria

1. Admission to California State University, Fresno, Division of Graduate Studies
2. Baccalaureate degree in nursing from an N.L.N. accredited program
3. Registered nurse license in California
4. Overall G.P.A. of 2.5 with 3.0 in nursing
5. G.R.E. score of 450 (verbal) or 430 (quantitative)
6. Malpractice insurance
7. Three letters of reference (at least one from a recent employer, and if possible one from a recent nursing instructor)
8. A minimum of one year of clinical practice as a registered nurse
9. A course in statistics which includes inferential statistics and analysis of variance*
10. An introductory course in research*
11. A physical assessment course that includes theory and practice; or validation of knowledge and skills for graduates or programs with integrated content.

Practitioner Option

12. Health Assessment Practicum (available during first semester—Nurs 164)
13. Chicano-Latino Studies 158

Admission Procedures

1. Request and complete application for admission to graduate standing from Admissions Office, CSU, Fresno.
2. Request official transcripts of previous academic work to be forwarded to Admissions office.
3. Arrange to take Graduate Record Examination. If in Fresno, contact Division of Graduate Studies, CSU, Fresno.
4. Nurse Practitioner students should request and complete special Nurse Practitioner Application available from Nursing Department.
5. Forward three letters of recommendation to:

   GRADUATE PROGRAM COORDINATOR
   Department of Nursing
   California State University, Fresno
   Fresno, California 93740

Admission to the program is limited to the fall semester; students with deficiencies are encouraged to meet the requirements in the previous spring semester.

DEADLINE FOR SUBMISSION OF FORMS FOR ADMISSION TO THE *PRACTITIONER OPTION* IS *MARCH 15.*

FOR ALL OTHER OPTIONS, THE DEADLINE FOR SUBMISSION OF ADMISSION MATERIALS IS *APRIL 1.*

Courses

Under the direction of the graduate coordinator, each student prepares and submits an individually designed program based on the following:

	Units
Core Courses in Nursing: Nurs 223, 224, 225, 228, 229	14
Approved Cognates**	3–6
Role Specialization Courses (see below)	10–13
Thesis (Nurs 299) or Project (Nurs 298)	3
Minimum Total	**30–33**

Role Specialization (Options)

Nursing Administration
Nurs 240, 242, 243, Bus 214 or GPA 210 (cognate)

Nursing Education
Nurs 230, 232, 234, AS 227 (cognate)

Clinical Specialization
Nurs 250, 251, 7 units clinical cognates

*Primary Care Nurse Practitioner****
Family
Nurs 210, 265, 266, 267, 277, 278
Pediatric
Nurs 210, 265, 266, 269, 279, 280
Geriatric
Nurs 210, 265, 266, 271, 281, 282

* Course must be taken within five years. Outdated courses may be validated by examinations administered by the department or through enrollment in a course.
** See graduate coordinator for cognates
*** Total 33 units for nurse practitioner; meets B.R.N. certification.

Note:

All practicum courses require a minimum of three (3) hours of clinical per unit of credit as a minimum to meet course objectives.

Advancement to candidacy is contingent on passing the Department Qualifying Examination. The Department Qualifying Examination will also be used to meet the university writing requirement.

All graduate students are responsible for policies and regulations of the Division of Graduate Studies and Research and those specified in the graduate program in nursing brochure.

Nurse Administrator

The Nurse Administrator option prepares the graduate to assume leadership roles in nursing service organization. The administration seminars and practicum focus on organization and management theories. The student is encouraged to take one cognate in the School of Business in addition to Bus 214 (Organization and Management Theory).

The purpose of the Nurse Administrator option is to provide knowledgeable and responsible nursing leaders who assume the authority and accountability for the development of nursing service policies and foster the participation of nursing staff in planning, implementing, and evaluating practice to insure safe, efficient, and therapeutically effective care.

Nurse Educator

The Nurse Educator option prepares graduates to assume teaching roles within an academic or clinical setting. Students elect specific seminars in nursing education and curriculum instruction, as well as an area of clinical focus such as adult/child, community health nursing, or community mental health nursing. The student actualizes the role of the nursing educator in the practicum in nursing education.

The purpose of the Nurse Educator option is to prepare knowledgeable, visionary, and action-oriented nursing scholars committed to educating today's nurses for tomorrow's changing world, and to generate an academic community concerned with the development and emergence of theoretical and scientific concepts related to nursing practice.

Clinical Nurse Specialist

The Clinical Nurse Specialist option prepares the graduate to assume a leadership role with advanced skills, knowledge and competence in a specific area of clinical nursing. Students in this option actualize the role of the clinical specialist in a clinical setting with a master's prepared nurse preceptor. The student is responsible for writing objectives for the experience prior to the clinical placement. Arrangement for clinical placement is made after consultation with the appropriate faculty.



The purpose of the Clinical Nurse Specialist option is to prepare nurses as knowledgeable practitioners for prescribing and implementing both direct and indirect nursing care and for articulating nursing therapies with other nursing personnel and other health providers.

Nurse Practitioner

The Nurse Practitioner option prepares the graduates to provide primary health care to children, the elderly adult and families. Classroom and clinical experiences focus on health assessment, health maintenance and promotion, counseling, client education, and management of selected health problems. Practice in rural settings and with clients from diversified cultural backgrounds is emphasized.

Graduates meet the requirements for recognition as Pediatric, Geriatric, or Family Nurse Practitioners in California and may apply for A.N.A. Certification.

The purpose of the Nurse Practitioner option is to prepare nurses as specialists in primary care and to improve the availability, accessibility, and quality of primary care services in the central San Joaquin Valley.

Admission Process

1. Submit application for admission to post baccalaureate standing in the university to **Admissions and Records Office, California State University, Fresno. Joyal Administration Building, Room 106, Telephone (209) 294-2261.** Designate NURSING as your major.
2. Submit application for admission to the **School Nurse Coordinator, Department of Nursing, California State University, Fresno; Fresno, California, 93740. Telephone: (209) 294-2041.**
3. Include a copy of all undergraduate and graduate transcripts from accredited institutions with the program application.
4. Submit three letters of recommendation, on forms provided by the Department of Nursing, from persons who are able to make an evaluation of potential for success in the role of school nurse.
5. Complete a School of Education locator card at the **Credential Analyst's office, in Education-Psychology Building, Room 120.**
6. Complete a scheduled interview with the School Nurse Coordinator for review of the above documents, advisement, and initiation of a file.

Note: All candidates are required to sign a statement on the application form regarding conviction or plea of nolo contendere for any violation of law other than minor traffic offenses.

Candidates with conviction records may be refused a Health Services Credential. Those who fit this category may be required to secure a clearance certificate before entering the program. For further information, contact the **Credentials Analyst, in Education-Psychology Building, Room 120, Telephone (209) 294-3084.**

COURSES

Nursing (Nurs)

10. Basic Concepts of Nursing Practice (4). (Course offered, effective fall 1987) Prerequisite: Admission to the Major; Micro 20, CFS 38, Nurs 10L, 11 concurrent. Overview of theoretical and scientific foundations of nursing practice. Introduction to physiological, psychological, sociocultural, and developmental variables affecting individuals throughout the life span. Emphasis on wellness promotion in life continuum and basic concepts of pharmacotherapeutics.

10L. Basic Skills in Nursing I (3). (Course offered, effective fall 1987) Prerequisite: Admission to the Major; Micro 20, CFS 38, Nurs 10, 11 concurrent. Utilization of the concepts learned in Nurs 10 in simulated client situations and selected health promotion in wellness settings. Supervised practice of health assessment techniques, communication skills and non-invasive procedures. (9 clinical hours)

11. Professional Issues (1). (Course offered, effective fall 1987) Prerequisite: Admission to the nursing major; Nurs 10, 10L, Micro 20, CFS 38 concurrent. Basic overview of professional issues influencing nursing from historical perspective, nursing practice, and the evolving health care system. Current theories, trends, and cultural, ecological, ethical, legal and political issues related to nursing practice.

102. Nursing of Adults I (6). 3 theory—9 clinical hours. (Course deleted, effective spring 1988) Prerequisite: Nurs 100, 100L, 101, 101L; Nurs 104, 104L concurrently. Application of theory and nursing process to facilitate health promotion/restoration in adults.

103. Nursing of Adults II (3). (Course deleted, effective fall 1988) Prerequisite: Nurs 102, 102L, 104, 104L; Nurs 103L, 106, 106L concurrently. Nursing processes in health maintenance for the adult; continuation of concepts, principles, and processes of Nurs 102.

103L.* Clinical Practice in Nursing of Adults II (3). (Course deleted, effective fall 1988) Nurs 103 concurrently. Continuation of Nurs 102L. Application of nursing process in the health maintenance and care of adults throughout the health-illness continuum. (9 clinical hours)

104. Community Mental Health Nursing (3). (Course deleted, effective spring 1988) Prerequisite: Nurs 100, 100L, 101, 101L; Nurs 102, 102L, 104L concurrently. Eclectic presentation of theories and concepts as they apply to the nursing of persons experiencing mental health disorders.

104L. Clinical Practice in Community Mental Health Nursing (3). (Course deleted, effective spring 1988) Nurs 104 concurrently. Application of nursing theory in caring for patients/clients with major mental health problems with special focus on interpersonal skills and the nurse's role in current treatment modalities. (9 clinical hours)

106. Principles of Leadership and Management in Nursing (2). (Course deleted, effective fall 1988) Prerequisite: Nurs 102, 102L, 104, 104L, 105A, 105B; Nurs 103, 103L, 106L concurrently. Application of organizational theories and concepts in the delivery of nursing care in a variety of settings.

106L.* Clinical Practice of Leadership and Management in Nursing (3). (Course deleted, effective fall 1988) Nurs 106

* 103L & 106L scheduled two times a week on alternate weeks.

concurrently. Application of special skills in organization, delegation, coordination and evaluation in the delivery of nursing care in a variety of settings. (9 clinical hours)

110. Basic Concepts in Nursing II (4). (Course offered, effective spring 1988) Prerequisite: Nurs 10, 10L, 11, Micro 20, CFS 38; Nurs 110S, 110L, 111 concurrent. Integration of basic pathophysiology, pharmacotherapeutics, and assessment of clients across life span with emphasis on primary and secondary interventions, utilization of nursing process in care of clients with common health deviations.

110L. Practicum in Basic Concepts of Nursing II (3). (Course offered, effective spring 1988) Prerequisite: Nurs 10, 10L, 11; Nurs 110, 110S, 111 concurrent. Application of nursing process to clients with common health deviations. Identify risk factors associated with stressors and formulate nursing measures directed toward primary and secondary interventions. (9 clinical hours)

110S. Basic Skills in Nursing II (1). (Course offered, effective spring 1988) Prerequisite: Nurs 110, 110L, 111 concurrent. Integration of knowledge and skills necessary for application in specific nursing diagnostic areas; emphasis on understanding the principles underlying the techniques and procedures required by clients with common health deviations. (3 clinical hours)

111. Clinical Issues I (1). (Course offered, effective spring 1988) Prerequisite: Nurs 10, 10L, 11; Nurs 110, 110S, 110L concurrent. Clinical issues/problems relative to care of clients across the life span. Enhances the socialization of students by discussion/analysis of issues that influence nursing care of individuals.

128A. Concepts in Community Health Nursing (3). (Course deleted, effective spring 1989) Prerequisite: senior standing in the major, H S 114; Nurs 128AL concurrently. Systems and developmental theories and concepts as they apply to community health nursing. Emphasis on interrelatedness of biopsychosocial and environmental forces affecting consumer health and rehabilitation.

128AL. Clinical Practice in Community Health Nursing (3). (Course deleted, effective spring 1989) Nurs 128A concurrently. Application of systems and developmental theories; concepts of families, groups and communities. Students are expected to function relatively autonomously and to develop their decisionmaking capabilities in this experience. (9 clinical hours)

128B. Senior Clinical Focus (2). (Course deleted, effective fall 1989) Prerequisite: Nurs 128A, 128AL; Nurs 128BL concurrently. Designed to strengthen core concepts which are inherent in all areas of nursing. Students and instructor plan the course content together around holistic nursing concepts such as self-responsibility, caring, lifestyling, problem-solving, teaching/learning, leadership, and change.

128BL. Practicum in Senior Clinical Focus (3). (Course deleted, effective fall 1989) Nurs 128B concurrently. Utilizing the preceptor model, the student applies core concepts of Nurs 128B to clients/families/communities which he/she selects in rural/urban health settings. Students develop individualized learning objectives. (9 clinical hours)

136. Health Appraisal (3). Health appraisal integrates psycho-social and patho-physiological processes including techniques of history taking and health assessment in nursing practice and knowledge of normal findings as well as common deviations.

137. Teaching Strategies for Health Care Client (2–3). (Course offered, effective fall 1987) Prerequisite: Upper-division status. Exploration of nurses' role as a teacher in health care setting. Principles of teaching and learning applied to teaching of individuals and groups. Opportunities for microteaching will be provided. (Laboratory optional) (Former Nurs 220)

145. Nursing Theories and Research (3). (Course offered, effective fall 1987) Prerequisite: Statistics, Nurs 130, 130L, 131, 131L; Nurs 140, 140L, 141, 141L concurrent. Application of nursing theories and the research process to nursing practice are explored. Focus includes historical evolution of contemporary theories in nursing, critique of current research, and computer applications to research. (Former Nurs 125)

180T. Topics in Nursing (1–3 units; max total 12 if no topic repeated). Selected topics such as aging, assertiveness training for nurses, psychosocial aspects of nursing, etc. Some topics may have clinical component.

185. School Nurse Seminar (3). Prerequisite: Nurs 136, Psych 168 or C D 114 or A S 111 and A S 115F; Admission to Health Services Credential Program. Role of nurse in school health program; school health practice within legal/administrative parameters and effective use of resources.

186. School Nurse Practicum (3). Prerequisite: A S 174 or A S 224; audiologist certificate; Nurs 185 prior to or concurrent. School health services in elementary school; direct supervision by credentialed nurse required; scheduled conferences with preceptor and faculty. (9 clinical hours)

187. School Nurse Internship (3). Prerequisite: Nurs 186. Provide full range of school health services in secondary school; supervision by credentialed nurse required. Participate in special projects. Periodic conference with preceptor and faculty. (9 clinical hours)

190. Independent Study (1–3; max see reference). See *Academic Placement—Independent Study,* pages 96–97.

GRADUATE COURSES

(See *Course Numbering System,* p. 133.)

210. Primary Care Techniques (2). (Course offered, effective fall 1987) Prerequisite: Nurs 136 or equivalent, pathophysiology, admission to the Graduate Program in Nursing. Refinement of interviewing, history taking, and assessment skills. Primary care laboratory techniques and interpretation of laboratory findings. Health screening and selected secondary prevention strategies. Application of pathophysiology to the assessment process. Pharmacology for nurse practitioners.

223. Advanced Research Methodology in Nursing (3). Prerequisite: Admission to Graduate Program in Nursing; statistics H S 102 or equivalent. In-depth study of research principles and techniques. A major requirement is the completion and submission of a research proposal.

224. Theories in Nursing (3). (Course offered, effective fall 1987) Prerequisite: Admission to Graduate Program in Nursing. Selected nursing theories are described and evaluated. Theory construction, theory critique with comparative analysis of extant nursing theories, the relationship between theory and research, and the utility of nursing theory for practice, education, and administration are explored.

226. Analysis of Nursing Issues (2). (Course offered, effective fall 1987) Prerequisite: Admission to Graduate Program in Nursing. The evolution of major issues relevant to nursing will be analyzed within the context of social, political, economic, and historical perspectives. Dialectic debate will be utilized to facilitate critical thinking on current and emerging issues in nursing.

228. Seminar in Advanced Clinical Nursing (3). (Course offered, effective fall 1987) Prerequisite: Nurs 224. Conceptual models of family and community systems are analyzed in relation to health promotion, restoration, and maintenance. Neuman's Health Care Model is evaluated in conjunction with other theories. Epidemiological and ecological frameworks with implications for primary, secondary, and tertiary nursing interventions are addressed. (Former Nurs 201)

229. Practicum in Advanced Clinical Nursing (3). (Course offered, effective fall 1987) Prerequisite: Nurs 224. Corequisite: Nurs 228. Applications of individual, family, and community systems theories and health appraisal skills in clinical practice settings. Transcultural and intergenerational factors are addressed. Creative strategies to client systems problem solving are implemented through application of theoretical models across interdisciplinary practice settings.

230. Seminar in Nursing Education (3). (Course offered, effective fall 1987) Prerequisite: Nurs 224. Analysis of educational issues in nursing; theories and methods of teaching in classroom and clinical instruction. (Former Nurs 231)

232. Curriculum Development in Nursing (3). (Course offered, effective fall 1987) Prerequisite: Nurs 224, 230; A S 227. Corequisite: Nurs 234. Analysis of basic curricular concepts, theories, and philosophies in designing nursing curricula. Incorporation of Neuman's Health Care Model and other nursing theories with nursing curricula are examined. (Former Nurs 222)

240. Professional and Legal Aspects of Health Care for the Nurse Executive (2). (Course offered, effective fall 1987) Prerequisite: Admission to Graduate Program in Nursing. Professional standards, quality-assurance regulations, and legal concerns related to executive nursing management are examined. Emphasis is on assisting the student in developing strategies for nursing executive decision making and problem solving.

242. Seminar in Nursing Administration (2). (Course offered, effective spring 1988) Prerequisite: Nurs 224, 228, 229, 240. Corequisite: Nurs 243, Bus 214. Principles and practices related to executive nursing management and marketing of health care organizations are identified. Human and financial resources management in health-care organizational systems is examined. Advanced management concepts relevant to the nurse executive manager are analyzed.

265. Nurse Practitioner Role in Primary Prevention (1). (Course offered, effective spring 1988) Prerequisite: Nurs 210, 224. Corequisite: Nurs 228, 229. Theoretical base for primary prevention: health maintenance, health promotion, health screening, health teaching, and anticipatory guidance for nurse practitioners. Case management techniques utilizing algorithms/protocols.

267. Practicum in Secondary Prevention for Family Nurse Practitioner (4). Prerequisite: Nurs 228, 229, 265. Corequisite: Nurs 266. Supervised clinical practice in a primary-care setting with emphasis on secondary prevention for clients of all ages. Students work directly with preceptor and faculty member. Complete assessment and case management. (One hour clinical conference per week.)

269. Practicum, Secondary Prevention, Pediatric Nurse Practitioners (4). Prerequisite: Nurs 228, 229, 265. Corequisite: Nurs 266. Supervised clinical practice in a pediatric primary-care setting with emphasis on secondary prevention. Students work directly with a preceptor and faculty member. Complete assessment and case management. (One hour clinical conference per week.)

277. Family Nurse Practitioner Role in Tertiary Prevention (1). Prerequisite: Nurs 266, 267. Corequisite: Nurs 278. Theoretical base for tertiary prevention for families in primary care settings. Assessment and management of chronic conditions requiring reconstitution. Development of protocols/algorithms for tertiary prevention. Integration of knowledge related to primary, secondary, and tertiary prevention.

278. Practicum in Tertiary Prevention for Family Nurse Practitioner (3). Prerequisite: Nurs 266, 267. Corequisite: Nurs 277. Supervised clinical practice in a primary-care setting with emphasis on care of clients of all ages requiring tertiary prevention. Students work directly with a nurse practitioner and/or physician preceptor in a primary-care setting. (One hour clinical conference per week.)

279. Pediatric Nurse Practitioner Role in Tertiary Prevention (1). Prequisite: Nurs 266, 269. Corequisite: Nurs 280. Theoretical base for tertiary prevention for children in primary-care settings. Assessment and management of chronic conditions requiring reconstitution. Development of protocols/algorithms for tertiary prevention. Integration of knowledge related to primary, secondary, and tertiary prevention.

280. Practicum in Tertiary Prevention for Pediatric Nurse Practitioner (3). Prerequisite: Nurs 266, 269. Supervised clinical practice in a primary-care setting with emphasis on care of children requiring tertiary prevention. Students work directly with a nurse practi-tioner and/or physician preceptor in a primary-care setting. (One hour clinical conference per week.)

281. Geriatric Nurse Practitioner Role in Tertiary Prevention (1). Prerequisite: Nurs 266, 271. Corequisite: Nurs 282. Theoretical base for tertiary prevention for older adults in primary-care settings. Assessment and management of chronic conditions requiring reconstitution. Development of protocols/algorithms for tertiary prevention. Integration of knowledge related to primary, secondary, and tertiary prevention.

282. Practicum, Tertiary Prevention, Geriatric Nurse Practitioner (3). Prerequisite: Nurs 271, 266. Corequisite: Nurs 281. Supervised clinical practice in assessment and management of acute self-limiting and stable chronic conditions of individuals/families.

290. Independent Study (1–3; max total 3). See *Academic Placement—Independent Study,* pages 96–97.

298. Project (3). See *Criteria for Thesis and Project,* pages 467–468. A project is defined as a systematic development of a plan for, or critical evaluation of, a significant undertaking or a creative work in nursing such as modularized curriculum and clinical protocols. Abstract required.

299. Thesis (3). Prerequisite: See *Criteria for Thesis and Project,* pages 467–468. Nurs 223. Preparation, completion, and submission of an acceptable thesis, based on an approved proposal, for the master's degree.

IN-SERVICE COURSES

(See *Course Numbering System,* p. 133.)

302T. Selected Topics in Nursing (1–6; repeatable with different topics).

Philosophy

School of Arts and Humanities
Department of Philosophy
Warren L. Kessler, Chair
San Ramon 5, Room 103
(209) 294-2621

B.A. in Philosophy
B.A. in Philosophy—Religious Studies
Minor in Philosophy



Philosophy is one of the fundamental domains of human thought. It grows out of basic life questions, including questions of ethics, religion, politics and science. The study of philosophy has had an historic role in the core of sound education, because it helps sharpen skills of careful, independent thinking and aids people of all ages in defining their most important values and beliefs. The examination of great philosophical ideas, and the emphasis on clear reasoning and personal development that are involved in philosophy serve as a strong foundation for life, regardless of one's career objectives.

The Department of Philosophy offers students the following opportunities for a rich and rewarding undergraduate experience: the traditional B.A. philosophy major, the religious studies option, or the philosophy minor. The department provides an ample opportunity for individual attention and student participation in its activities, e.g. Philosophy Club, symposia, etc. Students may also minor in philosophy.

Faculty and Facilities

The department has a diverse and well trained faculty with special interests ranging from logic and scientific method to Existentialism and philosophy of religion. All members of the department share the conviction that the best way to teach philosophy is through an intense but sympathetic interchange between the teacher and the student. Our conference room is a pleasant and frequently used meeting place for students and faculty.

Career Opportunities

The undergraduate major provides an excellent foundation for a variety of professional careers as well as for graduate study in philosophy. Law schools, seminaries and various governmental and business training programs emphasize the critical and communication skills required to complete a B.A. in philosophy. Thus, graduating majors are often in a competitive position for occupations that at first glance are not obviously related to the study of philosophy. In fact, people who have majors or minors in philosophy can be found in almost all areas of endeavor, from medicine, law and the ministry, to teaching, social work, and fine arts.

Faculty

Warren L. Kessler, *Chair*

Ann E. Berliner
Hague D. Foster
Jack A. Pitt
James W. Slinger
James M. Smith

Adviser: James W. Slinger
Religious Studies Option Adviser: Ann E. Berliner

Bachelor of Arts Degree Requirements

	Units
1A. Philosophy Major Requirements	32
a) Phil 25, 45 or 145	(3–4)
b) Phil 101 and 103	(6)
c) Select 2: Phil 105, 146, 150, 156, 157 or approved 159T	(6)
d) Select 1: Phil 115, 117, approved 119T or 125	(3)
e) Select at least 2: Phil 190 and/or 192	(3)
f) Phil 170T or Phil 172T	(3)
g) Approved philosophy electives	(7–8)
1B. Philosophy Major—Religious Studies Option Requirements: The Department has prepared a special program for those who wish to engage in a combined study of philosophy and religion. This Option emphasizes the comparative and ecumenical study of religion. Students with a general interest in religion might consider this option. Those who wish to pursue a religious vocation or do graduate work in religious studies will find it especially valuable.	32
a) Phil 25, 45, or 145	(3–4)
b) Phil 130, 131	(6)
c) Phil 133W and/or 134	(6–3)
d) Phil 136, 137, 138	(3–6)
e) Phil 172T or 170T	(3)
f) Select 1: Phil 101, 102, 103, 105, 107	(3)
g) Select 1: Hist 103A–B–C, Hist 116, Anthro 150W or other approved courses outside the philosophy department	(3)
h) Phil 190, 192 or approved philosophy electives	(3–4)
2. General Education Requirements:	54
3. Electives and remaining degree requirements (see *Degree Requirements,* pp 98–101); may be used toward a dual major or minor:	38–46 *
Total	124

* This figure takes into consideration that a maximum of two General Education BREADTH courses may also be applied to satisfy philosophy major requirements (see *General Education,* pp. 104–111). These courses may be selected from Phil 1, 10, 25, 45, 120, 131. See the philosophy department chair for details.

Notes:

1. No course used to satisfy General Education CAPSTONE requirements may be used to satisfy philosophy major or philosophy—religious studies major requirements.
2. *CR/NC* grading is not permitted in courses used to fulfill the philosophy major requirements.
3. General Education and elective units may be used toward a dual major or minor (see *Dual Major,* p. 98 or departmental minor). Consult the appropriate department chair, program coordinator or faculty adviser for further information.
4. Students intending to pursue graduate study in philosophy, law or religious studies should seek a faculty adviser's help in planning adequate preparation.
5. Visit the Philosophy Department Office or your faculty adviser for the list of approved *T* classes for the major.

Philosophy Minor

The minor in philosophy consists of 16 units in philosophy, of which at least 6 units must be upper division.

COURSES

Philosophy (Phil)

1. Introduction to Philosophy (4). Introduction to the basic issues, disputes and methods of traditional and contemporary philosophy, including theory of knowledge, ethics, metaphysics, religion and social theory. Development of skills in analysis, logical thinking and self-expression.

10. Self, Religion, and Society (3). Conceptions of human nature; nature and varieties of religion; personal and social implications and values of religion.

25. Methods of Reasoning (4). Principles and methods of valid inference. Typical topics: forms of deductive inference, basic types of inductive inference, common pitfalls in moral reasoning, problems in reasoning due to the nature of language, and common fallacies found in arguments in everyday life.

45. Elementary Deductive Logic (4). Basic concepts and methods of deductive logic with emphasis on truth-functional logic. Development of skills in deductive techniques.

100. Philosophy of Life (3). Survey of principal perspectives and contributions of philosophers to problems and issues concerning the nature and quality of human life. Topics discussed include: meaning of life, examination of life styles, God and the supernatural, death and immortality, nature of morality.

101. Ancient Philosophy (3). Development of Western Philosophy from its beginning; the emergence of critical theory, doctrines and schools of thought in Greek and Roman culture. Topics considered may include: "pre-Socratic" philosophy; the work of Plato and Aristotle; Epicurus and the Atomists; Stoicism.

102. Medieval Philosophy (3). Consideration of Western Philosophy—its development, principal figures and schools of thought—from late classical times through the Middle Ages: Neo-Platonism, Augustine to Anselm; Abelard; Theology, "scholastic" thought and revival of Aristotle; Aquinas; the rise of nominalism; William of Ockham.

103. Bacon to Kant (3). Development of early modern philosophy: the search for new scientific methods—Bacon, Descartes, Spinoza, Newton and Locke; empiricism and skepticism—Berkeley and Hume; rationalist metaphysics—Leibniz; influences on moral and political thought—the Enlightenment; Rousseau; Kant's critical philosophy.

105. Twentieth Century Philosophy (3). Principal developments in philosophy after 1900. Figures and movements include: logical atomism, logical positivism, linguistic analysis, pragmatism, phenomenology, existentialism, G. E. Moore, Russell,

Wittgenstein, Whitehead, Dewey, Santayana, Husserl, Heidegger, Sartre, Austin, Ryle, Strawson, Carnap, Ayer.

106T. Topics in History of Philosophy (1–3; max total 9 if no topic repeated). Consideration of special historical issues or individual philosophers.

107. Existentialism (3). Examination of roots of existentialism in Kierkegaard and Nietzsche; study of such 20th century existentialists as Sartre, Heidegger, Jaspers, Buber. Typical problems examined: nature of mind, freedom, the self, ethics, existential psychoanalysis.

108. Roman Philosophy (3). Examination of the major figures and schools of thought in the Roman world, tracing the influence of classical Greek philosophy, through the Hellenistic and Roman cultures. Special emphasis Epicureans, Stoics, and Skeptics consideration of early Christian and non-Christian thinkers.

115. Ethical Theory (3). Introduction to the fundamental concepts and problems of moral theory. Examination of various ethical theories, including relativism, egoism, utilitarianism, intuitionism, and non-cognitivism; the meaning of ethical terms.

117. Philosophy of Art (3). Investigations of selected topics in the philosophy of art; the nature of the artistic process and the work of art; expression and creativity; aesthetic judgment in criticism and experience; the relation of art to moral and political theory.

119T. Topics in Valuation and Obligation (1–3; max total 9 if no topic repeated). Investigations of selected topics in ethics, value theory, political and social philosophy, aesthetics.

120. Contemporary Conflicts of Morals (3) (Same as A Eth 100). Introduction to ethical theory and its application to contemporary moral problems. Discussion to include: business ethics, medical ethics, sexual morality, abortion, mercy killing; pot, drugs, and alcohol; crime and punishment, civil disobedience, revolutionary violence, rights of women and minorities.

121. Ethics in Criminal Justice (3). Philosophical issues concerning society's treatment of criminal behavior. Topics discussed include: what types of deviant behavior should be regarded as criminal?, morality and law; punishment or rehabilitation; safe vs. repressive society.

122. Introduction to Professional Ethics (3) (Same as A Eth 101). Survey of ethical issues and standards facing a range of professionals in their careers, including engineering, law, medicine, the media, science, agriculture, education and business. Introduction to basic ethical theories and methods of reasoning about moral dilemmas.

125. Social and Political Philosophy (3). Representative view of function and value of social and political institutions; analysis of fundamental concepts involved, for example, the common good, authority, justice, natural law, natural rights, the state, power, freedom, equality, responsibility and democracy.

127. Philosophy of Law (3). Nature and functions of law; methods of justifying legal systems; logic of legal reasoning; analysis of fundamental legal concepts.

129. Marxism (3). Examination of basic ideas of Marx inherent in his writings and a consideration of later developments now called "Marxist."



130. Philosophy of Religion (3). The nature and function of religious faith, belief, and practice; relations between religion and morals; existence of God; problem of evil; nature and significance of religious experience.

131. Comparative Religion (3). Survey of the major religions of mankind, their history and teachings, with emphasis on Hinduism, Buddhism, Confucianism, Taoism, Judaism, Christianity, and Islam.

133W. Literature of the New Testament (3) (Same as Engl 115W). Prerequisite: Engl 1. Discussion and close written analyses of selected texts from the New Testament. Meets Upper Division Writing Skills Requirement for graduation.

134. Literature of the Old Testament (4) (Same as Engl 116). Discussion and written analyses of selected texts from the Hebrew Bible. Special attention to the sources and styles of biblical literary techniques. (Former Phil 134W)

136. Buddhism (3). Introduction to Buddhism. Life and teachings of Gautama Siddhartha Buddha; development of Buddhism after death or mahanirvana of the Buddha.

137. Hinduism (3). Introduction to the development and ideas of Hinduism.

138. Chinese Thought (3). Classical religions, ethical and political thought, in ancient China; probable emphasis on Confucianism and Taoism.

139T. Topics in Religious Issues (1–3; max total 9 if no topic repeated). Investigations of selected topics in philosophy of religion and comparative religion.

145. Symbolic Logic (3) (similar to Math 110; consult department). Prerequisite: Phil 25 or 45 or consent of instructor. Theory of deductive inference; includes propositional logic, predicate logic, relations, identity, definite description, nature of axiom systems.

146. Philosophy of Language (3). Nature and uses of language; theories of meaning; concepts of reference, predication, truth, name, ambiguity, vagueness, definition, metaphor; relationships between methodology in philosophy and theories of language.

150. Foundations of Knowledge (3). Nature, sources, and limits of human knowledge; roles of perception, reason, memory, authority, and intuition in the justification of beliefs in all areas; for example: science, math, ethics, religion, the past, other minds.

156. Philosophy of Mind (3). Analysis of problems concerning the nature of mind and mental phenomena: relation between mind and body, nature of the self and personal identity, free will, action and behavior, thinking machines, knowledge of other minds; concepts of mind, intention, desire, emotion.

157. Freedom, Fate, and Choice (3). Nature of human action, free will and determinism, free will and moral responsibility; analysis of basic concepts; for example, will, action, freedom, determinism, fatalism, chance, choice, decision, intention, reason, desire, belief; implications for everyday life.

159T. Topics in Logic, Epistemology, and Metaphysics (1–3; max total 9 if no topic repeated). Investigations of selected topics in logic, epistemology, and metaphysics.

165T. Special Topics (1–3; max total 9 if no topic repeated). Topics of current or interdisciplinary interest or requiring special background.

> "We sell ourselves short if we go through life without ever focusing our thoughts"
>
> *— Professor, Philosophy*

170T. Seminar in Philosophical Issues (1–4; max total 12 if no topic repeated). Prerequisite: one upper-division philosophy course. Intensive investigation of selected problems, major figures, or an historical period in philosophy. Extensive writing and supervised research.

172T. Seminar in Religious Issues (1–4; max total 12 if no topic repeated). Prerequisite: one upper-division philosophy course. Intensive investigation of problems in philosophical theology, comparative religion, and culture. Extensive writing and supervised research.

190. Independent Study (1–3; max see reference). See *Academic Placement—Independent Study,* pages 96–97.

192. Directed Reading (1–3; max total 6). Prerequisite: permission of instructor. Supervised readings in a selected philosopher or field of philosophy. Combined units of Phil 190 and 192 may not exceed 6 units.

199. Fieldwork in Philosophy and Law (4–6). Prerequisite: senior standing, permission of instructor. Practical community workstudy experience in legal or paralegal setting. Student works under sponsorship of law firm or law-related agency. Meets periodically with instructor, submits written report on relevant issues in ethics, jurisprudence or philosophy.

Physical Education

School of Health and Social Work
Department of Physical Education
Joanne W. Schroll, Chair
South Gym, Room 111
(209) 294-2016

B.A. in Physical Education
Options in: Adapted, Allied Career, Athletic Training, Teaching
M.A. in Physical Education
Single Subject Teaching Credential in Physical Education
Adapted Physical Education Specialist Credential
Athletic Trainer Certification



The Department of Physical Education has the unique opportunity to contribute to one's overall physical fitness by providing experiences that develop cardiovascular endurance, strength, flexibility and relaxation. Concomitant contributions are in the areas of skill acquisition, scientific knowledge, and worthy use of leisure time.

The curriculum for the B.A. degree in physical education is designed to meet individual and professional goals. The flexibility of the program provides for the preparation of physical education teachers, the preparation of coaches, the preparation of professionals in various fields related to physical education, preparation of athletic trainers, and the preparation of students for advanced study and research.

The emphasis in athletic training allows students to become involved in a growing and successful program. Upon completion of the program the student will be eligible for certification by the National Athletic Trainer's Association. The program has high academic and performance standards that include a minimum of 1,800 hours of field work in a two-year internship program. The internship includes working in one of the new training rooms where service is provided for all eighteen intercollegiate sports offered within the athletic program. Students interested in this program must consult the athletic trainer adviser.

The Master of Arts degree program in physical education is designed to provide advanced study for the purpose of extending competence in the areas of science, theory, leadership, and research techniques. Class size and format accommodates individual attention and student interaction with other students and faculty. Students may take up to 21 units in a selected area of emphasis and may opt for a thesis or non-thesis program.

Career Opportunities

Historically, a graduate with a B.A. in physical education was employed as a teacher and/or coach in a school setting. In recent years, however, a variety of career opportunities has emerged for the physical education major. With increasing frequency, commercial, industrial, and government entities are becoming employers of physical education majors. Aquatics centers, racquet clubs, dance studios, wellness and fitness centers, sports medicine clinics, agencies for the handicapped, and rehabilitation centers would be some examples. Fitness and movement instruction for preschool youngsters and the elderly are other possible career opportunities. Physical education majors with certification in athletic training have opportunities with professional teams and in private enterprise, in addition to the traditional educational setting.

Activity Classes

A broad variety of activities for differing ability levels are offered for students interested in physical activity. The program is developed to aid not only those interested in majoring in physical education but also the students interested in gaining physical skills and/or fitness. Activity courses are offered in aquatics, recreational dance, individual activities, and team sports. Unique experiences are provided in areas such as back packing, bicycling, fencing, karate, skiing, and yoga as well as in the more traditional activities. Individualized instruction is available for all students including those with physical limitations. Eight units of credit in physical education activities, dance and/or athletics may count toward the baccalaureate degree; physical education and dance majors may count 12 units.

Facilities

The facilities for physical education include two gymnasiums, six racquet ball/handball courts, 12 tennis courts, a wrestling/gymnastics area, an apparatus and weight area, an all-weather track, multipurpose fields for softball, football, soccer and golf, an archery range, a swimming pool, dance room, exercise physiology lab, and athletic training room.

Faculty

Joanne W. Schroll, *Chair*

Tim R. Anderson	Rose M. Lyon
Sally L. Ayer	Mary L. Mott
O. Duane Ballard, Jr.	Leilani Overstreet
Bonnie Jo Bevans	Donna Rae Pickel
Rhita Flake	Billie L. Poston
Richard W. Francis	William Reichenstein
Eddie J. Gregory	Patricia L. Thomson
Ara Hairabedian	Robert B. Van Galder
Melva E. Irvin	R. Jack Wilcox

Undergraduate Adviser: Consult Department Chair
Graduate Adviser: Pat L. Thomson
Credential Adviser: Melva E. Irvin
Athletic Trainer Adviser: Edward L. Ferreira
Adapted Adviser: Rose M. Lyon

Bachelor of Arts Degree Requirements

	Units
1. Major Requirements	53
Core Program (Required for all options)	(24)
P E 30, 31, 115K, 147, 153, 156A–B, 159A	(29)
Option (Select one):	(29)
Teaching Option	(29)
P E 108, 115D, 145A, 145D, 152, 157A	
Elect 2 from: P E 125C, 135B, 145B, 145C (One must be 145B or 145C)	
Elect 2 from: P E 125A, 125B,125D; 135E, 135H (One must be 135E or 135H)	
Adapted Option	(29)
P E 115D, 125C, 135E or 135H, 145A, 145B or 145C, 145D or Dance 150, 152, 157A, 159B, 160	
Allied Career Option	(29)
Elect 3 from: P E 106A, 108, 110, 146, 150, 152, 162	
Elect 3 from: P E 115D, 125A–B–C–D, 135B–E–H, 145A–B–C–D	
Elect 11–12 additional approved units from P E or other departments	
Athletic Training Option	(29)
P E 106A, 106B, 106C; 157A	
P E 106D, 107 (taken concurrently for four semesters)	
Elect 2 from: P E 125A, 125B, 125D	
Elect 1 from: P E 115D, 125C, 135B	
2. Additional Requirements	11–20
Teaching, Adapted and Allied Career Options	(11)
Phy 33, FScN 54 or 147; and H S 113	
Athletic Training Option	(20)
Phy 64, 65, H S 90, 113; FScN 54 or 147; Psych 102	
3. General Education	54
4. Electives and remaining degree requirements (see *Degree Requirements,* pp. 98–101.)	0–15*
Total	124–127

* This figure takes into consideration that P E 31 may also be used to satisfy the General Education Breadth, Division 10 requirement, that HS 90 may also be used to satisfy the additional 3 units of General Education, and that Psych 102 may be used toward partial fulfillment of the General Education-Capstone, Juveniles and Adolescence cluster requirement. Consult department chair or faculty adviser for details.

Notes

1. Mandatory advising is required of all majors in this degree program. See the department chair for the name of your assigned adviser.
2. With the assistance of the departmental adviser students may choose a sequence of courses which will prepare them for working with specific age groups or special populations, coaching, athletic training, teaching physical education, or allied careers.
3. Each student must pass a series of physical performance tests administered by the department in order to complete the major or to be admitted to the teaching credential program. Specific information regarding tests may be obtained from the department office, South Gym, Room 111.
4. Prerequisite skill tests are required for the following courses: P E 115D, 135H, 145A, 145B, 145C, 145D.
5. Students majoring in physical education may count a *maximum* of 12 units of activity courses (ATHL, PE AC, Dance) toward the 124–127 units required for a Bachelor's Degree in Physical Education.
6. *CR/NC* grading is not permitted in courses for the physical education major, including "Additional Requirements."
7. General education and elective units may be used toward a minor (see departmental minor). Consult the appropriate department chair, program coordinator, or faculty adviser for further information.
8. Completion of the Bachelor of Arts degree in the physical education teaching option meets the requirements of the Single Subject Waiver program.

Physical Education Teaching Credential Requirements

	Units
Single Subject Credential in Physical Education	154
B.A. Degree with Major in Physical Education Teaching Option	124
Teacher Education Courses	30
Adapted Physical Education Specialist Credential	
B.A. Degree with Major in Physical Education Adapted Option	124
Courses in Addition to the Major to be Completed Prior to Student Teaching	(15)
Teacher Education Courses	30

Notes

1. Students interested in obtaining a teaching credential are strongly advised to confer with the physical education department credential adviser at the beginning of the junior year.
2. Students must apply and be admitted to the School of Education and Human Development to begin education requirements. For prerequisites and other admission requirements, see the Single Subject Credential program as listed under the teacher education department.
3. To complete the major or to be admitted to the credential program, each student must pass a series of physical performance tests administered by the physical education department.
4. The required courses, or their approved equivalents, in the B.A. degree and credential programs must be completed by all single subject credential candidates.
5. Verification that the waiver program has been completed and a recommendation for admission into the professional preparation program are the responsibility of the department

credential adviser. These may be granted only after the prescribed B.A. degree waiver program has been completed.

Master of Arts Degree Requirements

	Units
1. Major Requirements	30
Graduate courses in physical education	(24–27)
Approved graduate or upper-division courses in other departments	(6–9)[3]
2. Specific Requirements	

All students must take P E 230 and P E 231. All students must take a departmental written screening examination before advancement to candidacy. The University Writing Skills Requirement is included in the screening examination.

The student must choose one of the culminating experiences listed below:

1. Thesis P E 299
2. Project P E 298
3. Comprehensive examination

Notes

1. The Master of Arts degree program in physical education assumes undergraduate preparation equivalent to a CSU, Fresno major in physical education.
2. Under the direction of a graduate adviser, each student prepares and submits a coherent individually designed program.
3. An additional 3 units are required for non-thesis students.
4. See also the general graduate requirements listed under the *Division of Graduate Studies and Research,* pages 466–469.

COURSES

Note: Activity courses may be repeated for credit except as noted. Students majoring in physical education may count a maximum of 12 units of dance technique/physical education/ athletic courses toward the total units required for the bachelor's degree; other students may apply a maximum of eight units to the total degree requirements.

Aquatics (PE AC)

101. Advanced Lifesaving (2). Prerequisite: 500 yard swim in 10 minutes or less.

102. Snorkeling (1; not repeatable for credit). Prerequisite: 200 yard swim.

103. Swim for Fitness (1).

104. Swimming for Beginners (1).

107. Water Safety Instructor Course (2; not repeatable for credit). Prerequisite: 500 yard swim in 10 minutes or less; current advanced lifesaving certification.

Recreational Dance (PE AC)

111A. Elementary Folk Dance (1; not repeatable for credit).

112A. Elementary Social Dance (1).

112B. Intermediate Social Dance (1).

113A. Elementary Square Dance (1; not repeatable for credit).

Individual Activities (PE AC)

116. Adapted Physical Activity (1). Individually designed activity for disabled students.

117A. Elementary Archery (1).

117B. Intermediate Archery (1).

118. Backpacking (2; not repeatable for credit). Limited to novice backpackers. (Estimated cost to student approximately $50 for supplies, transportation)

119A. Elementary Badminton (1).

119B. Intermediate Badminton (1).

119C. Advanced Badminton (1).

120A. Elementary Bicycling (2). Introduction to bicycling as a lifetime sport. Bicycle selection, care, and maintainance. Traffic laws and bicycle safety. Student must provide his own ten-speed bicycle. Two all-day rides on Saturday. Medical clearance required. (Former PE AC 120)

120B. Cycling for Fitness (2).

121A. Elementary Strength Training (1). (Former PE AC 121)

121B. Intermediate Strength Training (2).

122A. Elementary Bowling (1). (Approximate course fee, $20)

122B. Intermediate Bowling (1). (Approximate course fee, $20)

124A. Elementary Conditioning Exercises and Aerobics (1). (Former PE AC 124)

124B. Intermediate Conditioning Exercises and Aerobics (1).

127A. Elementary Fencing (1).

127B. Intermediate Fencing (1).

130A. Elementary Golf (1).

130B. Intermediate Golf (2). (Approximate course fee, $12)

131A. Elementary Gymnastics—Men (1).

131B. Intermediate Gymnastics—Men (1).

132A. Elementary Gymnastics—Women (1).

132B. Intermediate Gymnastics—Women (1).

137A. Elementary Ice Skating (1). (Approximate course fee, $35)

137B. Intermediate Ice Skating (1). (Approximate course fee, $35)

139. Jogging (1).

140A. Elementary Karate (1). Japanese style of Shotokan Karate.

140B. Intermediate Karate (1). Japanese style of Shotokan Karate.

142. Physical Training (2). A wide variety of individual exercises and team competition utilizing a military model.

146A. Elementary Racquetball (1).

146B. Intermediate Racquetball (1).

150. Self Defense (1).

151. Self Defense for Women (1).

152. Skiing (2). Limited to novice skiers. (Approximate course fee, $50)

154A. Elementary Tennis (1).

154B. Intermediate Tennis (1).

154C. Advanced Tennis (1).

160. Yoga-Hatha (1).

Team Activities (PE AC)

165. Basketball (1).

168. Soccer (1).

170. Flag Football (1).

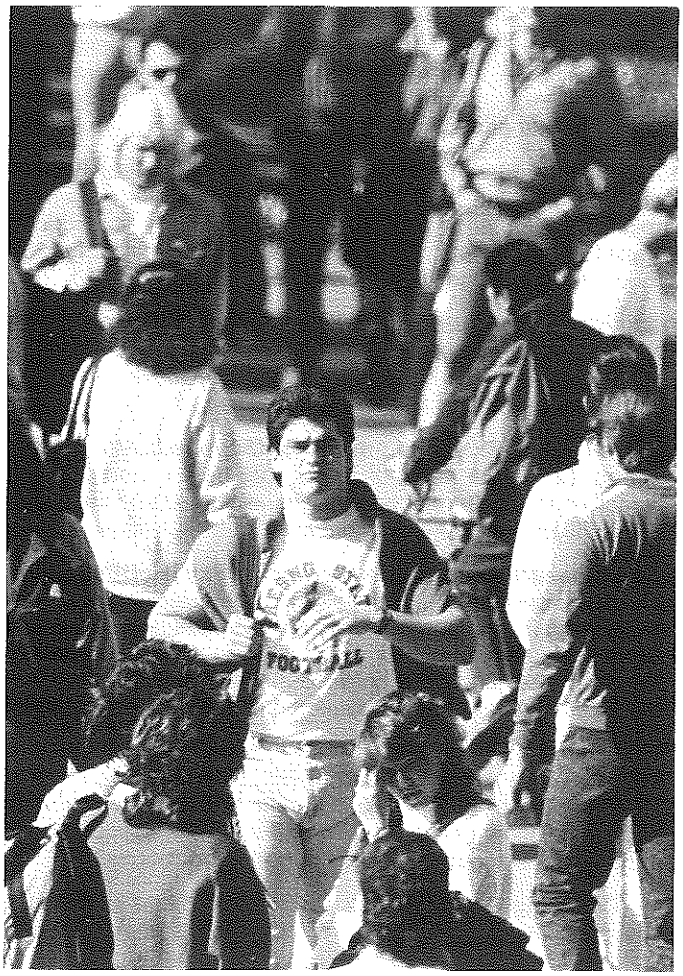
171A. Elementary Volleyball (1).

171B. Intermediate Volleyball (1).

171C. Advanced Volleyball (1). U.S.V.B.A. rules will be followed.

173. Softball (1).

180T. Topics in Physical Education (1–2). Participation in and investigation of selected physical activities not in current curriculum.



Physical Education (P E)

30. History and Foundations of Physical Education (3). History, foundations and legal aspects of physical education programs; personal, social, and professional requirements; demands on the physical education teacher and athletic coach.

31. Concepts of Human Movement (3). Experiencing and studying concepts in selected aspects of human motor performance. Topics include fundamental movements, mechanical principles, perceptual theory, cultural effects, physiological factors and learning theory as they affect human movement. (2 hours lecture, 2 hours lab)

105. Fundamental Principles of Exercise (3). Fundamental principles of anatomy, physiology, and biomechanics upon which to base the teaching and coaching of physical activities. (Note: Not to be taken by physical education majors.)

106A. Care and Prevention of Athletic Injuries (3). Designed for prospective coaches, trainers, health and physical educators; to aid in the recognition, evaluation, and care of athletic injuries. Techniques in taping, prevention, and rehabilitation of injuries.

106B. Advanced Care and Prevention of Athletic Injuries (3). Prerequisite: P E 106A, P E 156A, H S 113. Advanced study in athletic training including organization and administration, injury recognition, evaluation, and rehabilitation.

106C. Therapeutic Exercise and Modalities in Athletic Training (3). Prerequisite: P E 106A, 156A, H S 113. The development and application of rehabilitation programs and the use and application of the various modalities used in the treatment of athletic injuries.

106D. Seminar in Athletic Training (1; max total 4). Prerequisite: To be taken concurrently with P E 107. Current procedures in acute injury management, rehabilitation and training room organization and supervision.

107. Internship in Athletic Training (1; max total 4). Prerequisite: P E 106A, H S 113, Phy 33 or 64. To be taken concurrently with 106D. Practical experience in the field of athletic training.

108. Organization of Intramural Sports-Recreational Games (2). Organization, administration, and promotion of intramural activities.

110. Women in Sport (3) (Same as WS 110). Role of women in athletics with emphasis on history and current events; inquiry into the development and perpetuation of female stereotypes in sport.

111. The Olympic Games (3). History, development, significance, and future of the Olympic Games; Olympian as a microcosm of cross cultural and interpersonal understandings and relationships. (Former PE 180T section)

112C. Officiating Track and Field (1). Analysis and interpretation of rules for track; procedures, mechanics, and practice in officiating. (1–2 hour lecture-lab)

112E. Officiating Volleyball (1). Prerequisite: experience in volleyball. Rules, officiating techniques and practice in officiating. (1–2 hour lecture-lab)

115D. Theory and Analysis of Gymnastics (3). Prerequisite: gymnastics skill tests. Analysis of skill performance, theory of progressions, class organization, spotting techniques, development of routines, legal aspects and safety. (2 lecture, 2 lab hours)

115K. Theory and Analysis of Fitness and Conditioning (3). Prerequisites: P E 156A–B. Study, practice, analysis and development of fitness and weight control programs. (2 lecture, 2 lab hours)

125A. Coaching Football (3). Principles underlying participation in competitive football.

125B. Coaching Basketball (3). Principles underlying participation in competitive basketball.

125C. Coaching Track and Field (3). Principles underlying participation in competitive track and field.

125D. Coaching Baseball (3). Principles underlying participation in competitive baseball.

135B. Theory and Analysis of Wrestling and Combative Activities (3). Rules, philosophy, scoring, training, skill analysis, and progression in wrestling and other combative activities. Analysis and practice of skills. (2 lecture, 2 lab hours)

135E. Theory and Analysis of Basketball/Flag Football/ Softball (3). Prerequisite: skill tests in basketball, flag football, and softball. Analysis and performance of skills and strategies. Theory of skill progressions, class organization, officiating, and evaluation. (2 lecture, 2 lab hours)

135H. Theory and Analysis of Soccer/Volleyball (3). Prerequisite: volleyball skill test. Analysis and performance of skills and strategies. Theory of skill progressions, class organization, officiating, and evaluation. (2 lecture, 2 lab hours)

144. Instructional Laboratory (1). Limited to major students. Designed to provide an opportunity to work in an instructional situation.

145A. Theory and Analysis of Aquatics (3). Prerequisite: aquatics skill test. Study and practice of varied levels of swim strokes; elements of diving; skills basic to lifesaving; skill progression; water polo, scuba diving, synchronized swimming, training for competition, basic elements of adapted aquatics. (2 lecture, 2 lab hours)

145B. Theory and Analysis of Tennis/Badminton (3). Prerequisite: tennis skill test. Study and practice of strokes and tactics; rules; history; skill progression for various levels. (2 lecture, 2 lab hours)

145C. Theory and Analysis of Golf/Archery (3). Prerequisite: Golf skill test. Study and practice of values and fundamentals in golf and archery. Organization and conduct in physical education programs. (2 lecture, 2 lab hours)

145D. Theory and Analysis of Folk, Square and Social Dance (3). Prerequisite: folk dance skill test. Analysis and practice of basic skills of folk, square, and social dance. Development of understanding and appreciation of these forms of dance in various cultures. Study and practice of leadership skills in recreational dance. (2 lecture, 2 lab hours)

146. Movement Education Clinic for Educationally Handicapped Children (3; max total 9; repeatable for credit). Prerequisite: permission of instructor. Clinical experience in diagnosis and evaluation of movement skills and needs of educationally handicapped children followed by individual prescriptive program development and instruction. Experience to include program planning, execution, and ongoing evaluation.

147. Physical Growth and Development (3). Prerequisite: Phy 33. Physical growth and development from prenatal period through old age with emphasis on motor development.

148. Biophyscial Aspects of Aging (3). Theories of aging, biological mechanisms of the aging process, and the role of physical activity in those physiological functions influenced by age.

150. Perceptual Motor Development (3) (Same as Rec 150). Prerequisite: P E 147. The study of perceptual motor development, with consideration of the organization and integration of sensory information and motor response and the theoretical approaches to developmental programs.

152. Physical Education for Children (3). Theory, analysis, and study of movement experiences, skills, and materials, appropriate for children. (2 hours lecture, 2 hours lab) (Former P E 152A)

153. Principles of Physical Education: Philosophical, Psychological, and Sociological (3). Prerequisites: P E 30, 31. Examination of personal and cultural experiences in creative and competitive sport, exercise, and dance events from philosophical, psychological, and sociological perspectives.

156A. Kinesiology (3). Prerequisites: Phy 33 or 64–65, P E 31. Human movement: biological and mechanical bases, application of skeleto-muscular considerations and principles of mechanics to human movements.

156B. Physiology of Exercise (3). Prerequisites: Phy 33 or 64–65, P E 31, and FScN 54. Physiologic bases of movement, work, and exercise; physiologic concepts related to such processes as respiration, circulation, muscle function, metabolism, heat regulation, and to their roles in physical activity.

157A. Adapted Physical Education (3). Prerequisite: P E 156A. The design, implementation, and evaluation of individually prescribed adapted physical education programs for the handicapped in school and special settings. (2 lecture, 2 lab hours)

157B. Prescriptive Teaching in Adapted Physical Education (2). Prerequisites: P E 157A, P E 159B. The design, implementation, and evaluation of individually prescribed adapted physical education programs for the handicapped in school and special settings. (1 lecture, 2 lab hours)

158A. Physical Education for the Severely Handicapped (2). The study of motor, behavioral, and learning characteristics of the severely handicapped and the development of appropriate movement and sports activities.

158B. Physical Education for the Orthopedically Handicapped (2). The study of motor, behavioral, and learning characteristics of the orthopedically handicapped and the development of appropriate movement and sports activities.

159A. Measurement and Evaluation in Physical Education (3). Prerequisite: P E 30. The study of the selection, construction, evaluation, and administration of both norm referenced and criterion referenced tests for use in judging various aspects of physical performance and knowledge. The application of electronic word processing, statistical methodology, and the interpretation of statistics.

159B. Sensory Motor Evaluation (2). Prerequisites: P E 150, P E 159A. The study of evaluation methods and tests used to appraise sensory-motor functioning, and the application or adaptation of these devices to fit specific populations.

162. Coaching Concepts (3). Current problems of coaches in the school setting; techniques of motivation, organization, and public relations.

180T. Topics in Physical Education and Sport (1–3; max total 12). Topics relating to analysis, performance, theory, current trends, and research in human movement specific to motor learning in programs of physical education and sport not available through current curricula offerings for the undergraduate or graduate student.

190. Independent Study (1–3; max see reference). See *Academic Placement—Independent Study,* pages 96–97.

199. Supervised Work Experience (1–2; max total 4). Prerequisite: upper-division status, G.P.A. 2.5 last 30 units, consent of department chair and instructor.

GRADUATE COURSES

(See *Course Numbering System,* p. 133.)

221. Body Mechanics (3). Prerequisite: P E 156A. Analysis of posture and body mechanics; methods and techniques for the examination and treatment of faulty body mechanics and other anomalies; and exercises for achieving and maintaining correct body mechanics.

222. Analysis of Athletic Performance (3). Prerequisites: P E 156A and 156B. Consideration of the factors affecting performance in various sports. Application of laws of physics, principles of exercise, physiological, and psychological considerations to human performance. Intensive research in the analysis of sports skills.

223. Scientific Basis of Motor Learning (3). Seminar in the study of human movement from a physio-psychological perspective. Emphasis on learning theories, motor educability, and kinesthetic awareness in human movement via sport, dance, and games.

230. Statistical Inference in Physical Education (3). Theory and nature of statistical inference; seminar in the study of statistical methodology relating to the selection of the most appropriate statistical method, the correct application of the statistical technique, and the interpretation of findings.

231. Research in Physical Education and Recreation (3). Seminar in research methodology; identification of researchable problems in physical education and related areas; use of library resources, data gathering and analyses, critiquing of recorded research, writing of research reports.

233. Advanced Exercise Physiology I: Metabolic and Neuromuscular Physiology (3). Prerequisite: P E 156A, 156B, Chemistry 2A, 2C. Detailed study of the biochemistry of energy metabolism, biophysical and functional concepts related to interaction of nerve and muscle, and response to training. Theoretical concepts supported by extensive practical experience in the human performance lab. (2 hours lecture, 3 hours lab)

234. Advanced Exercise Physiology II: Cardiovascular and Respiratory Physiology (3). Prerequisite: P E 156A, 156B. In-depth study of cardiovascular and respiratory concepts related to exercise, training, health, disease, and aging. Theoretical concepts are supported by extensive practical experience in the human performance lab. (2 hours lecture; 3 hours lab)

240. Facilities and Equipment in Physical Education (3). Functional planning of indoor and outdoor facilities for schools and recreation centers. Design and layout of school physical education-athletic facilities. Evaluation of school plants in the Fresno and valley area. Budget considerations in planning for the purchase of equipment.

241. Administration in Physical Education (3). Examination of innovative ideas in the fields of education and physical education which relate to physical education administration. Emphasis on discovering ways to incorporate recent information to establish programs.

242. Program Development in Physical Education (3). Study of the current education scene to provide students with an understanding of the role that school physical education plays in today's education. Identification of sound procedure and practice in organizing and conducting relevant programs of physical education.

250T. Topics in Physical Education (3; max total 6 if no topic repeated). Advanced studies in theoretical research in selected topics.

260. Historical Concepts of Physical Education (3). Interpretation of exercise and sport in western thought and practice, from 3000 B.C. to the present.

261. Philosophy/Issues in Physical Education and Sport (3). Critical examination of current issues; philosophical seminar focused on recent and classical literature in physical education and sport. Required of M.A. candidates; successful completion satisfies graduate qualifying examination requirement.

262. Social Implications of Sport (3). Cultural and social factors related to play, games, and athletic contests; social parameters in the conduct and management of school athletic programs; emphasis on research studies.

263. Psychology of Sport (3). An examination of the concepts in sports psychology, motivational variables, emotional states and personality variables; mental states, behavioral techniques, and strategies; and issues in sports psychology.

290. Independent Study (1–3; max see reference). See *Academic Placement—Independent Study,* pages 96–97.

298. Project (3–6; max total 6). Prerequisite: See *Criteria for Thesis and Project,* pages 467–468. Preparation, completion, submission and/or demonstration of an original project. Creativity shall be a prime factor. Abstract required, i.e., choreograph gymnastic performance, organize square/folk dance program, compose audio-visual representation of sport forms.

299. Thesis (2–6). Prerequisite: See *Criteria for Thesis and Project,* pages 467–468. Preparation, completion, and submission of an acceptable thesis for the master's degree.

IN-SERVICE COURSES

(See *Course Numbering System,* p. 133.)

310. Analysis of Team Activities (1–3; max total 12 if no area repeated).

320. Analysis of Individual Activities (1–3; max total 12 if no area repeated).

Physical Therapy

School of Health and Social Work
Physical Therapy Program
Darlene L. Stewart, Coordinator
Science Bldg., Room 188
(209) 294-2625

B.S. in Physical Therapy



Physical therapy is a health profession that is involved with restoration of function of persons who have suffered loss or disturbance of locomotion due to disease or injury to the neurological, musculoskeletal, cardiopulmonary, and integumentary systems. The physical therapist, through evaluation and treatment planning, utilizes physical agents, heat, light, electricity, ultrasound, and a variety of therapeutic exercise techniques to bring about physical restoration of function.

The Physical Therapy Program leads to a Bachelor of Science degree with a major in physical therapy and a Certificate of Internship in Physical Therapy. It is a four-year curriculum plus a post-baccalaureate clinical internship at the end of the last year. Completion of the degree and internship are required to sit for the state examination to be licensed.

Faculty and Facilities

The Physical Therapy Program consists of seven faculty, each of whom has special expertise in major areas of physical therapy. The curriculum design is a regional integrated approach to patient management with special emphasis on problem solving. Clinical laboratory experience is conducted by physical therapists in local facilities. Internships are available in selected facilities throughout the state.

The program philosophy focuses on preparation of a physical therapist who will function effectively in a general acute care setting. It encourages self-discipline and individual self-assessment for planning for continued professional growth.

The Physical Therapy Program is a popular major and receives more applicants than can be accommodated. The program accepts 32 students in the fall of each year. Class size is limited due to the clinical component of the program curriculum and by accreditation standards. Therefore, the program has supplemental criteria for selection into the major. These criteria appear on the next page.

Career Opportunities

Physical therapists work in a variety of settings. Some are: a hospital, rehabilitation center, private practice, extended care facility, home health agency, public and private schools for the handicapped, and sports medicine clinics. Recent studies indicate that the current manpower shortage will continue and that there will continue to be a strong job market for physical therapists. The starting salaries are very good, as are opportunities for advancement.

General information about the Physical Therapy Program can be obtained from the **Admissions Office, Physical Therapy Clerk, Joyal Administration Building, California State University, Fresno; Fresno, California 93740, (209) 294-2664.**

Faculty

Darlene L. Stewart, *Coordinator*

Sondra Dunkle
Janet K. Duttarer
Joanne M. Laslovich
Gary L. Lentell
Robert K. Martin
Jonathan T. Spry

General Program Adviser: JoAnn Jaurigue
Pre-Physical Therapy On-Campus Adviser: Darlene L. Stewart
Physical Therapy Major Advisers: Sondra Dunkle, Janet Duttarer, Joanne M. Laslovich, Robert K. Martin, Jonathan T. Spry

Bachelor of Science Degree Requirements

	Units
1. **Major requirements:** Ph Th 115, 116, 120, 121, 122, 124, 130, 131, 132, 133, 134, 142, 143, 144, 151, 152, 153, HSW 101, Phy 160	60
2. **Prerequisite requirements** (prephysical therapy preparation)	*38
a. Courses which *must be completed by the fall semester prior to applying to the program:* Chem 2A–2B * (see Note 1), Zool 10 *, Psych 10 * (see Note 2) Phy 64–65, Phys 2B, CFS 39	(28)
b. Courses which *must be completed by the spring semester prior to entering the program:* Phy 155, HS 102 * (see Note 3), Psych 166 (normally these classes are taken at CSU, Fresno)	(10)
3. **General Education** requirements for physical therapy majors (see Note 4)	52
Total	131
Post-baccalaureate Certification Requirement *(units are not applicable to the B.S. Degree)* Ph Th 175	8

* The following prerequisite courses also may be used to satisfy General Education courses: HS 102 (Core, Math 4 substitute, as appropriate), Chem 2A–2B (BREADTH, Division 1), Zool 10 (BREADTH, Division 2), Psych 10 (BREADTH, Division 3).

In effect, 16 of the 38 prerequisite units may be used to satisfy both General Education and prerequisite requirements concurrently. As a result, if courses are taken judiciously, the minimum unit requirement for the physical therapy major is 131 units.

Notes:

1. Chem 2C (4 units) may be substituted for Chem 2B (3 units); Chem 1A–1B (10 units) may be substituted for Chem 2A–2B/2C (6–7 units).
2. Many students take a three-unit class at another college that is the equivalent of Psych 10 (4 units) at CSU, Fresno. In this case, the remaining unit is automatically waived.
3. Students are expected to have completed intermediate algebra in high school which allows HS 102 to satisfy the General Education—Core, Math 4 requirement. (See *General Education—Core,* pp. 104–105.) All General Education requirements with the exception of Capstone must be completed prior to entering the major.
4. Physical therapy majors are required to complete Capstone. Select from Nexus, CapS or a cluster.
5. *CR/NC* grading is not permitted in the physical therapy major with the exception of Ph Th 151, 152, 153, 175.
6. General Education prerequisite requirements and elective units also may be used toward a dual major or minor. (See *dual major,* p. 98 or *departmental minor.*) Consult the appropriate department chair, program coordinator or faculty adviser for further information.

Supplemental Criteria For Selection Into The Major

An application for admission to the university must be completed to determine the student's eligibility. A separate application must be submitted to the Admissions Office on or before February 1 of the year the student wishes to enter the program. All required prerequisites must be completed by the end of the spring semester prior to entering the major. A very limited number of students are admitted to the program each fall. Applications to the Physical Therapy Program will be screened during the spring semester.

The following admissions criteria will be reviewed by the screening committee:

(1) The student must apply to the university.
(2) Completion of the prerequisite units as listed above.
(3) A grade of *B* or better in each of the prerequisite courses. A required course may be repeated only once for admission consideration if a grade of *C* or lower has been received.
(4) Completion of General Education requirements except 3 units of Capstone which may be taken during the major.
(5) Evidence of knowledge of physical therapy through employment, volunteering or observation in a physical therapy department for a minimum of 100 hours. Fifty hours must be in a general acute care setting; 50 hours may be in a special area of practice.
(6) Participation in a personal interview.

Recommended foundation courses are high school chemistry, physics, algebra, geometry, and biology.

Meeting the above criteria does not guarantee acceptance into the major.

Students transferring from community colleges and other colleges or universities who meet the above criteria will be considered on the same basis as California State University, Fresno, students applying for admission to the major.

Criteria for retention and progression in the program include a grade of *C* or better in each physical therapy course and completion of all courses in the major.

Students must carry malpractice insurance, must purchase an appropriate laboratory coat, and must provide their own transportation to hospitals and clinics for off-campus classes and clinical laboratories. Students must also provide for all expenses while taking the post-baccalaureate clinical internship at the end of the senior year. Expenses include tuition through summer school extension, housing, meals, and travel. For supplemental application form write to the **Admissions Office, California State University, Fresno; Fresno, California 93740** and include a self-addressed legal size envelope for requested return information.

COURSES

Physical Therapy (Ph Th)

100. Career Options in Health Care (2). Recommended for health professions students, but open to all students. May be

taken concurrently with Ph Th 105. An exploration of career opportunities in health care professions.

105. Medical Terminology for Health Professionals (2). Recommended for Physical Therapy majors, but open to all students. Study of word parts, definitions, spelling, analysis, synthesis, and use of medical vocabulary.

115. Applied Anatomy and Kinesiology I (4). Prerequisites: Phys 64, 65, 155. Structure and function of the neuromusculoskeletal systems with emphasis on concepts of movement, biomechanics, and surface anatomy. Includes dissection labs and prosected material. (3 lecture, 3 dissection lab hours)

116. Applied Anatomy and Kinesiology II (4). Prerequisites: Ph Th 115. Continuation of Applied Anatomy and Kinesiology I. (3 lecture, 3 dissection lab hours)

120. Professional Orientation (2). An introduction to the professional practice of physical therapy including roles and functions within the health care delivery system and professional responsibilities.

121. Patient Management Skills I (3). Selected theory and clinical application of therapeutic modalities and procedures in the treatment of physical disabilities, including physical agents, exercise, and massage. (1 lecture, 6 lab hours)

122. Patient Management Skills II (2). Prerequisite: Ph Th 121. Continuation of Patient Management Skills I. (1 lecture, 3 lab hours)

124. Research Methods in Physical Therapy (3). Prerequisite: H S 102 or Math 11. Study and application of research design and critical reading of research literature.

130. Evaluation and Clinical Management of Musculoskeletal Conditions I (4). A study of musculoskeletal disabilities with emphasis on evaluation techniques, methods of therapeutic intervention, and program planning. Includes selected lectures by medical practitioners in the medical-surgical management of orthopedic conditions. (3 lecture, 3 lab hours)

131. Evaluation and Clinical Management of Musculoskeletal Conditions II (4). Prerequisite: Ph Th 130. A continuation of Evaluation and Clinical Management of Musculoskeletal Conditions I. (3 lecture, 3 lab hours)

132. Evaluation and Clinical Management of Neurological Systems I (6). Evaluation and therapeutic intervention in the clinical management of normal and pathological conditions of the neuromusculoskeletal systems. Includes normal growth and development and selected medical lectures. (4 lecture, 6 lab hours)

133. Evaluation and Clinical Management of Neurological Systems II (3). Prerequisites: Ph Th 132. Continuation of Evaluation and Clinical Management of Neurological Systems I. (2 lecture, 3 lab hours)

134. Evaluation and Clinical Management of Selected Body Systems (4). Evaluation and therapeutic intervention in the clinical management of normal and pathological conditions of the cardiopulmonary and other selected body systems. (3 lecture, 3 lab hours)

142. Humanistic Approaches to Patient Management (3). Prerequisite: Permission of instructor. Investigation of theories and concepts which influence patient management effectiveness and compliance.

143. Organization and Administration of Physical Therapy Services (3). Principles of planning, organizing and administering physical therapy services in a variety of health care settings, exploration of medical/legal and regulatory aspects in the practice of physical therapy including future trends and issues in practice.

144. Trends and Issues in Practice (3). An investigation of emerging trends in physical therapy practice and other health related professions. Subjects to be covered may vary.

151. Clinical Lab I (2). Prerequisites: Ph Th 120, 121. The application of physical therapy skills and procedures in health care facilities. (Must be taken *CR-NC* grade only)

152. Clinical Lab II (2). Prerequisite: Ph Th 151. A continuation of Clinical Lab I. (Must be taken *CR-NC* grade only)

153. Clinical Lab III (2). Prerequisite: Ph Th 152. Continuation of Clinical Lab II. (Must be taken *CR-NC* grade only)

175. Post-Baccalaureate Clinical Internship (8). Prerequisite: Ph Th 153. Summer offering only as final experience for majors. The internship is 18 weeks of clinical experience at selected facilities throughout the state. Certification of completion of internship is required before the graduate is eligible to take the state examination for licensure. (Must be taken *CR-NC* grade only)

180T. Topics in Physical Therapy (1–3; max total 12 if no topic repeated). Prerequisite: permission of instructor. Advanced techniques in physical therapy and new trends relating to the care of patients.

190. Independent Study (1–3; max see reference). See *Academic Placement—Independent Study,* pages 96–97.

IN-SERVICE COURSES

(See *Course Numbering System,* p. 133.)

302T. Selected Topics in Physical Therapy (1–6; repeatable with different topics). Selected topics in Physical Therapy for practicing clinician in the health fields.

Physics and Physical Science

School of Natural Sciences
Department of Physics
John R. Donaldson, Chair
Science Bldg., Room 169
(209)294-2371

B.A. in Physics
B.S. in Physics
Minor in Physics
Minor in Physical Science
M.A. in Physics
M.S. in Physics
Single Subject Teaching Credential in Physical Science
Single Subject Teaching Credential in Physical Science (Physics Option)

The fascination of physics is that it is so fundamental: the continuing attempt to understand how things work! It combines observational and experimental grappling with nature to get the facts of behavior, with the creative synthesis of these facts into theories and laws of nature, often beautiful in their simplicity and universality. Albert Einstein said, "They (the laws of theoretical physics) should form the basis from which a picture of all processes of nature can be derived by thoughtful deduction—and these include also the processes of life." He also said, "The deeper we search, the more we find there is to know, and as long as human life exists, I believe it will always be so."

More specifically, physics includes the study of the fundamental particles that make up nuclear particles, of electromagnetic, gravitational, atomic and nuclear forces, of energy, of light and heat, of electronics and the structure of materials, of the interiors of the earth and the stars.

Faculty and Facilities

Our faculty came here to teach. In addition, some faculty have developed continuing research projects, usually involving students.

Classes are small; our upper-division and graduate classes run from 1 to 15 students. Physics majors get to know each other and our professors personally, often with friendships continuing after graduation.

We have a new medium-energy laser, which greatly increases our capabilities in modern optics, including non-linear optics, and a new, very flexible X-ray facility that creates many new possibilities in X-ray fluorescence spectroscopy and opens several other fields to us. Our clean room has just been improved. In addition, we have well-equipped laboratories for thin film studies, low temperature work, electronics and microcomputer applications, and atomic and nuclear spectroscopy. Further, we have easy access to both mainframe and microcomputers.

Career Opportunities

Half of our bachelor's degree graduates have gone directly into various graduate schools, and the other half have gone to work in industry or government. Our record for admission to medical schools has been outstanding: every physics major who has applied has been accepted over at least the last decade. Four of our graduates are now practicing physicians, one is a dentist, and two more are in medical school.

Now the outlook is even better, with the demand for industrial physicists increasing and a shortage developing for high school physics teachers, at the same time the image and pay of teachers is improving rapidly. Employment usually turns out to be not just a job, but an opportunity for interesting, educational, and exciting work—**PHYSICS IS FUN!**

Similarly, many of our master's degree graduates have gone on to doctoral studies elsewhere, and others have gone into industry, government, or teaching.

From these students we hear of increasing levels of responsibility, work on the forefront of knowledge, and some entry into management.



Faculty

John R. Donaldson, *Chair*

Sheldon J. Brown
Manfred Bucher
Jon R. Dews
Donald E. Holmes
Floyd L. Judd
Vanvilai Katkanant
Brandt Kehoe
James T. Shockley
Hugh A. Williamson
Michael J. Zender

Graduate Adviser: Michael J. Zender
Preoptometry Adviser: Floyd L. Judd
Premedical Adviser: Donald E. Holmes

Bachelor of Arts (in Physics) Degree Requirements

	Units
1. Physics requirements: (see Note 1)	40
(a) Physics core: Phys 5A–B, 99, 102, 104, 105A–B, 120A–B	(29)
(b) Physics upper-division electives (see Note 2)	(11)
2. Additional requirements: (see Notes 1, 4, 5) Math 75, 76, 77; Chem 2A–B; C Sci 20 or 40 or E E 70; P Sci 106 or 108 or Math 81 (see Notes 2, 4 and 5)	23–26
3. General Education requirements: (see Note 3)	54
4. Electives and remaining degree requirements (see *Degree Requirements,* pp. 98–101); may include a minor: (see Note 3)	4–19 *
Total	124

Bachelor of Science (in Physics) Degree Requirements

	Units
1. Physics requirements: (see Note 1)	50
(a) Physics core: Phys 5A–B, 99, 102, 104, 105A–B, 107A, 110, 115, 120A, 130, 140, 162, 170A	(46)
(b) Physics upper-division electives (see Note 2)	(4)
2. Additional requirements: (see Notes 1, 4, 5) Math 75, 76, 77, 81; Chem 1A–B; C Sci 20 or C Sci 40 or EE 70	28–30
3. General Education requirement: (see Note 3)	54
4. Electives and remaining degree requirements (see *Degree Requirements,* pp. 98–101); may be used toward a minor: (see Note 3)	0–9 *
Total	129

*This figure takes into consideration that one General Education-Core class and a maximum of two BREADTH classes from one department also may be applied to satisfy physics major requirements (see *General Education,* pp. 104–111). Under this provision, up to 12 units of courses required for the physics major also may be used to satisfy General Education requirements. Consult the physics department chair or your faculty adviser for additional details.

Notes:

1. *CR/NC* grading is not permitted in the physics major with the exception of Phys 99. Additional requirements, however, may be taken *CR/NC* (see *CR/NC* Grading, pp. 90–91).
2. Courses outside the Department of Physics may be substituted for physics upper-division electives with prior approval of the department chair.
3. General Education and elective units may be used toward a minor (see departmental minor). Consult the appropriate department chair, program coordinator or faculty adviser for further information.
4. Courses which satisfy additional requirements may also be used to satisfy requirements in General Education, a dual major or a minor, as appropriate.
5. Students without a strong foundation in mathematics should consider substituting Math 71 and 72 for Math 75.

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 the total to 15–17 units per semester. A total of 129 units must be completed for the Bachelor of Science degree. (See *Degree Requirements,* pp. 98–101.)

1st Year: Phys 5A, 99, Math 75, 76, Computer Programming, Chem 1A–B
2nd Year: Phys 5B, 102, 104, Math 77, 81
3rd Year: Phys 105A–B, 110, 120A, 162, 170A plus upper-division electives
4th Year: Phys 107A, 115, 130, 140 plus upper-division electives

Physics Minor

A minor in physics for a bachelor's degree requires 18 units of which 8 must be upper division, including Phys 102.

Credential Program

The Physical Science Waiver Program is designed specifically for students planning to teach in California secondary schools. A total of 140 units will earn a B.A. in physics and a preliminary credential, with eligibility to begin teaching.

	Units
I. Core: Phys 5A–B, 102, 105A, 120A, Geol 1, Chem 1A–B, 8	36
II. Breadth: Phys 110, P Sci 106, 168, C Sci 20, Geog 111	16

Graduate Programs

The Department of Physics offers graduate courses of instruction and research leading to either the Master of Arts or the Master of Science degree. Each is explained below.

For general information, read *Graduate Studies and Research* in this catalog, and in particular the sections on *Admission to Graduate Standing, Advancement to Candidacy* and *Program Requirements.* The minimum entrance requirement is a G.P.A. of 2.5 over the last 60 units and scores of at least 600 on the Quantitative or 1000 on the Verbal plus Quantitative parts of the G.R.E. General Examination. For specific questions, consult the chair of the department or the graduate adviser.

Teaching assistantships may be available, as well as general financial aid.

Master of Science Degree Requirements

The M.S. degree in physics is designed to build a firm basis for later Ph.D. studies. Of course, this same curriculum has proven

to be very valuable in many industries. Both routes are open to our graduates.

Under the direction of a graduate adviser, a coherent program is prepared and submitted, directed toward the student's goal in graduate study and designed within the framework outlined below. Of the required 18 graduate units, the 15 unit specified core comprises the standard first year courses required in most Ph.D. curricula.

To summarize the required courses, 203A–B is advanced mechanics, (text, *Classical Mechanics* by Goldstein), 220A–B is advanced electricity and magnetism (text, *Classical Electrodynamics* by Jackson), 222 is advanced quantum mechanics (text, *Quantum Mechanics* by Schiff), 290 is independent study and 299 is thesis, either experimental or theoretical. It is noteworthy that the texts are those standard across the country at major universities. For more exact descriptions, see the list of courses.

More than one-third of the program may be designed according to the specific interests of the student, in consultation with faculty. Our faculty are active in the fields of chaos theory, X-ray fluorescence, thin film studies, nuclear spectroscopy, and experimental and theoretical solid state physics. Recently improved laboratory facilities are available for student exploration of these and other fields, specifically including laser-based research in modern optics. Our computer facilities are excellent.

Undergraduate education equivalent to a physics major at CSU, Fresno is necessary for admission.

	Units
Physics courses, including Phys 203A–B, 220A–B, 222 and at least 3 units of Phys 290 or 299	20
Electives in physics or related fields	10
Total	30

Note: Each student is required to complete either a thesis or at least 3 units of Phys 290 and a comprehensive examination, as a culminating experience.

Master of Arts Degree Requirements

The M.A. in physics is a degree with a flexible curriculum, which may be tailored to fit the interests and needs of teachers, prospective teachers, and those intending to go into industrial employment. It is not the appropriate program for those intending to pursue doctoral programs in physics.

This program offers an opportunity for students of diverse backgrounds to become more current in physics. It is understood that students from fields related to physics can expect to take longer to achieve the master's degree, but the opportunity is there.

Under the direction of a graduate adviser, a coherent program is prepared and submitted, directed toward the student's goal in graduate study and designed within the framework outlined below. It is expected that a substantial portion of the courses taken will be 275T (Topics courses), 290 (Independent Study), or 299 (Thesis).

	Units
Courses in physics, including 15 units in 200-series	20
Electives in physics or related fields	10
Total (minimum)	30

Note: Each student is required to complete either a thesis or at least 3 units of Phys 290 and a comprehensive examination, as a culminating experience.

Physical Science

Some of the departments in the School of Natural Sciences offer courses in the physical science area. Some of these courses may be used to satisfy requirements for general education, credential programs, or professional development.

Physical Science Minor

The minor in physical science consists of 20 units of selected courses with at least 6 of these units in upper-division courses. Those core courses that are required are Geog 5, Geol 1, P Sci 21, and P Sci 106. The approved courses from which the remaining 8 units may be taken are Chem 2A–B, Phys 2A–B, 135, 136, P Sci 103, 108, and 168.

Credential Program

See the coordinator for teacher education or the physics department director of teacher education.

COURSES

Physics (Phys)

1. Fundamentals of Physics (4). Prerequisite: Math 4 or equivalent. The theory and application of physical principles relative to the world around us, especially in relation to the human body. Measurement, force and motion, energy, fluids, sound and light, heat, electricity, the atom and the nucleus. (3 lecture, 3 lab hours)

2A. General Physics (4). Prerequisite: two years of high school algebra or Math 4. Topics and concepts in mechanics, properties of matter, energy, heat and sound. (3 lecture, 3 lab hours)

2B. General Physics (4). Prerequisite: Phys 2A. Topics and concepts in light, electricity, magnetism, atomic structure, relativity, quantum nature of light and matter, nuclear structure and radiation. (3 lecture, 3 lab hours)

5A. Principles of Physics I (5). Prerequisite: Math 76 (or concurrently). Topics and concepts in classical physics including statics, kinematics, Newton's laws, conservation laws, rigid body motion, simple harmonic motion, mechanics of solids and fluids, heat and thermodynamics. (4 lecture, 3 lab hours)

5B. Principles of Physics II (5). Prerequisite: Phys 5A, Math 77 (or concurrently). Topics in classical physics including electrostatics, electric fields, currents, magnetic fields, electromagnetic induction, Maxwell's equations, radiation, geometrical and physical optics, and acoustics. (4 lecture, 3 lab hours) (Note: Students who desire a survey of the entire scope of general physics should continue through Phys 102.)

10. Conceptual Physics (3). Prerequisite: Math 4 or equivalent. The central ideas of classical and modern physics and their relationship to the everyday environment. Emphasis is on demonstrations and non-computational exercises that involve critical thinking on a semi-quantitative basis.

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.

99. Joy of Physics (1). Great experiments of physics; amazing demonstrations; science *vs.* pseudo-science; critical think-

ing. Required of all new and transfer physics majors, preferably during the first semester at CSUF. (*CR/NC* only)

102. Modern Physics (3). Prerequisite: Phys 5B. Fundamental concepts of atomic and nuclear structure, transitions and radiation. Includes discussions of relativistic mechanics, quantum mechanics, solid state physics. Special topics as they pertain to modern developments in physics, engineering, and chemistry.

104. Experimental Techniques in Solid State Physics (3). Prerequisite: Phys 5B. Basic concepts in solid state physics. Measurements of conductivity, energy gap in semiconductors, drift mobility, Hall coefficients, photoconductivity, magnetic susceptibilities, exciton spectra, dielectric loss. Experience in X-ray diffraction, vacuum technology, thin-film deposition, and low temperature techniques. (1 lecture, 6 lab hours)

105A–B. Analytical Mechanics (3–3). Prerequisite: Phys 5B. (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. Intermediate Electricity and Magnetism (3–3). Prerequisite: Phys 105A, Math 81. (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). Prerequisite: Phys 5B, Math 81. Theory of optical phenomena; wave theory of light with applications to optical instruments; interference and diffraction phenomena, dispersion, polarization, coherence and laser phenomena. Practical experience in using lasers and optical instruments. (2 lecture, 3 lab hours)

115. Quantum Mechanics (3). Prerequisite: Phys 102, 105A, 170A (or concurrently), Math 81. Historical background, postulates, meaning and methods of quantum mechanics; applications to atomic phenomena.

116. Quantum Physics of Atoms (3). Prerequisite: Phys 115 or Chem 115. Quantum mechanics applied to atomic and nuclear physics.

120A–B. Scientific Measurements and Instrumentation (3–3). Prerequisite: Phys 5B. Electronic measurements and the physics of modern analog and digital circuits used in general scientific instrumentation. (2 lecture, 3 lab hours)

125. Laboratory Instrumentation (3) (See Chem 125). Not open to chemistry majors. Prerequisite: Chem 8 or 128A, Chem 105. Basic electricity, electronics, light and optical systems as applied to the design, use and limitations of instrumentation typical to the analytical and bioscience laboratory. (1 lecture, 6 lab hours)

130. Advanced Laboratory (2). Prerequisite: Phys 102, 120A. Advanced experiments in atomic and nuclear physics. Radiation safety. Gamma-ray, X-ray, and particle detection and spectroscopy. X-ray fluorescence analysis, Mossbauer, coincidence, Compton scattering and radiation attenuation experiments. Statistics, error analysis. Projects. (6 lab hours)

135. Physics of Medical Instrumentation (3). A course in diagnostic, emergency and laboratory instrumentation, designed for students and personnel in the medical, paramedical and biological fields with emphasis on electronic devices. The subject matter includes basic electronic principles, biomedical recording, oscilloscopes, electrocardiography, encephalography, fetal monitors, etc.

136. Radiation Physics (3). Prerequisite: Phys 2B or 102. The interaction of radiation with matter: photoelectric, Compton and pair production processes, neutron and charged particle interactions, linear energy transfer, quality factor, attenuation coefficients, shielding. Biological effects, RBE, internal dose, permissible exposures, beneficial application. Instrumentation.

140. Thermodynamics and Kinetic Theory (3). Prerequisite: Math 81. Fundamental concepts and laws of classical thermodynamics. Rudiments of kinetic theory and statistical thermodynamics with application to physical and chemical systems.

145. Geophysics (3). Prerequisite: Phys 2A–B or 5A, Math 75. Basic principles of physics applied to the solution of geological problems, rotation and figure of the earth, the gravity field, seismology and the earth's interior, geomagnetism, and the thermal history of the earth.

162. Solid State Physics (3). Prerequisite: Phys 102 or Chem 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. Mathematical Physics (3–3). Prerequisite: Math 81. Application of mathematical methods to the solution of problems in physics.

175T. Topics in Contemporary Physics (1–4; max total 12). Designed to provide students with special work in such areas of physics as biophysics, modern optics, plasmas, high energy physics, solid state, chaos theory, nuclear structure, astrophysics, low temperature phenomena. Some topics may have labs.

180. Seminar in Physics (1; max total 3). Prerequisite: senior or graduate physics major or permission of department chairman.

190. Independent Study (1–3; max see reference). See *Academic Placement—Independent Study,* pages 96–97.

GRADUATE COURSES

(See Course Numbering System, p. 133.)

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.

220A–B. Advanced Electricity and Magnetism (3–3). Electromagnetic theory and its applications; electrostatics, boundary-value problems in electrostatics, dielectrics, multipoles, magnetostatics, Maxwell's equations, electromagnetic radiation, optical properties of materials, wave guides and resonant cavities.

221. Atomic and Nuclear Physics (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. (Former Phys 221A)

222. Quantum Mechanics (3). Non-relativistic quantum theory; quantum mechanical pictures and representations, angular momentum, perturbation theory, applications to central force

problems, scattering, solid state, and atomic systems. (Former Phys 222A)

275T. Topics in Contemporary Physics (1–3; max total 6). Advanced topics in such areas as modern optics, plasma physics, high energy physics, solid state physics, astrophysics, nuclear physics, biophysics, relativity. Some topics may have labs.

290. Independent Study (1–3; max see reference). See *Academic Placement—Independent Study,* pages 96–97.

299. Thesis (2–6; max total 6). Prerequisite: See *Criteria for Thesis and Project,* pages 467–468. Preparation, completion, and submission of an acceptable thesis for the master's degree.

PHYSICAL SCIENCE COURSES

Physical Science (P Sci)

ASTRONOMY

21. Elementary Astronomy (3). Prerequisite: Math 4 or equivalent. Basic concepts, theories, history and laws of astronomy as these apply to the solar system, stellar evolution, quasars, pulsars, black holes, and hypotheses on the origin and development of the cosmos. Class includes demonstration, night observation and laboratory-demonstration.

22. Solar System Astronomy (3). Prerequisite: Phys 2A. Astronomical coordinate systems; astronomical instrumentation; planetary motion and Kepler's Laws; the planets; comets, meteors, and meteorites; the sun; and the solar wind.

23. Stellar Astronomy (3). Prerequisite: Phys 2A. Methods of measuring stellar distances, photometry, stellar spectra, H-R diagram, stellar structure, stellar evolution, the Milky Way galaxy, exterior galaxies, and cosmology.

103. Extraterrestrial Life (3). Contemporary astronomical theories of the evolution of galaxies, stars, and planetary systems with attention focused primarily on the question of whether or not life exists beyond the earth.

OTHER

106. History of Physical Science (3). The development of great ideas and discoveries in physical science from antiquity to the present; special emphasis upon early Greek scientific thought.

168. Environmental Impact of Energy Demands by Society (3). Analysis of energy crisis; introduction to various forms of energy, energy conversion processes and environmental effects; present energy supply and energy projections; future energy demands and ways of evaluating alternatives.

180T. Topics in Physical Science (1–3; max total 9). Detailed discussion of special topics within the realm of physical science.

IN-SERVICE COURSES

305. Physical Science for Secondary School Teachers (3; max total 6 in any one field)

350. Physical Science for Elementary School Teachers (3–6; max total 6 in any one field)



Political Science

School of Social Sciences
Department of Political Science
Philip F. Beach, Chair
Social Science Bldg., Room 129
(209) 294-2988

City and Regional Planning Program
Wayne V. Merchen, Coordinator
Social Science Bldg., Room 106
(209) 294-3912

B.A. in Political Science
B.A. in Public Administration
Minor in Political Science
Minor in Public Administration
Minor in Urban Studies
M.A. in International Relations
Master of City and Regional Planning (M.C.R.P.)
Master of Public Administration (M.P.A.)



Courses and programs offered by the Department of Political Science are intended to help all students become more effective participants in a democratic society, as makers of public policy and as individuals affected by those policies. Our programs prepare political science and public administration majors for a wide variety of careers.

Students may elect to concentrate within Political Science on American government and politics, international politics, comparative government or political theory. A "core program" required of all majors provides students with a sampling of all these subjects, following which he/she may opt for that area found to be of most interest. The Public Administration Program is designed to prepare students for administrative positions in public service agencies and includes instruction in such subjects as personnel administration, budget preparation, public relations, and techniques of management appropriate to the administration of public policy. For those who achieve a high measure of proficiency in their undergraduate programs, the department offers advanced work leading to the master's degree in international relations, public administration, and city and regional planning. A minor in political science is chosen by students as a means of obtaining skills and knowledge important to their primary area of interest. Fields where this combination is often found include criminology, business, history, economics, communication arts and sciences and journalism.

The urban studies minor is designed to provide exposure to the analysis of urban and regional problems and to serve as an excellent supplement to other academic degree programs offered throughout the university. The academic minor in urban studies provides an interdisciplinary focus on urban concepts, issues and problems in order to offer the opportunity for increased understanding of urban processes. The minor also provides preparation for employment opportunities in fields which serve urban residents, or for graduate work in one of the several areas related to urban studies. A special major in urban studies may be designed to meet the needs of students with an interest in this area.

Faculty

Political Science faculty, in most instances have had experience practicing what they teach. For example, faculty offering courses in Latin American government, Middle Eastern politics, European, Soviet or Far Eastern studies have lived, studied, taught or done research in these areas. Other professors dealing with aspects of American government and administration either have held responsible positions in government or acted as consultants to various office holders or agencies. Several have been active in political campaigns, even to the extent of themselves running for office. All bring to their classes extensive backgrounds that permit them to combine the theories of political science and public administration with the practical applications of those theories.

The background of the City and Regional Planning faculty reflects a blending of academics and applied professional experience. Faculty members have advanced degrees in planning and extensive experience in both private and public agency planning practice. They continue their public involvement with planning issues as volunteers and consultants. The range of faculty specialties and interests is broad and includes public agency planning, historic preservation, transportation, environmental law, urban design, photography, regional planning, economic analysis and development, social and environmental planning, architecture, and public policy development. Faculty are members of the American Planning Association and its professional arm, the American Institute of Certified Planners.

Most upper-division classes are small enough to allow extensive student-faculty interaction. The usual course involves a mixture of lecture and class discussion and encourages the expression of a variety of viewpoints about political issues. With smaller classes come greater opportunities for individualized instruction and assistance. Interaction among students and between students and professors is encouraged through the student-run Political Science Association (P.S.A.). This club sponsors talks by leading political figures, candidate debates and social events throughout the year.

Internships

The department offers several programs through which students may gain practical experience while gaining academic credit. A Political Science internship involves working in the office of an elected official or, when possible, in an election campaign. Past interns have served in responsible positions with state assemblymen, state senators, members of congress and in a number of campaigns for local, state and national office. The comparable program in public administration and city and regional planning place students in positions, often paid, with local government offices and agencies where they may be involved with city planning and zoning issues, public relations efforts, special research topics or budget preparation, to mention several possibilities. In addition, the department regularly sends selected students to the state capitol to participate in the Sacramento Semester Program under which they work with members of the Legislature, officers of the Executive or with lobbyists to gain a fuller understanding of the political process first hand. Finally, arrangements also may be made for better students to serve as staff to members of congress in Washington, D.C. for a semester.

Career Opportunities

What do you do with a degree in political science or public administration? The skills gained through study on these subjects are highly valued in many areas, including Business. Graduates have found positions with governmental agencies and officers, with companies or organizations that deal extensively with government or as members of the print and electronic media as reporters. Careers with the state department and foreign service have proven rewarding to many with a special interest in international politics or comparative government. Those interested in a career in the law have found a solid grounding in political science valuable. The department has more pre-law students as majors than any other program at the university.

City and Regional Planning graduates find careers in a wide variety of fields. Historically, the largest group has been employed in public agencies such as local planning and development departments or in transportation, housing, natural resource management, and economic development agencies at the state and federal level. Graduates have also found employment in specialized planning areas such as social and health service agencies and education services. Some have pursued careers in public administration and politics. The availability of jobs in public agencies varies according to current political philosophy of government and the economy. Limited opportunities to teach at the university level are available to planning graduates who complete a doctoral degree or have extensive planning experience.

In the private sector there are opportunities for application of a wide variety of planning skills with planning consulting firms, environmental research groups, land development firms, building organizations, public utilities, real estate, architectural design firms, and in market analysis.

Information about career and employment opportunities regularly comes to the department from many sources and is available to students. The City and Regional Planning faculty and the university's Placement Office offer assistance to students in making career choices and locating job positions in a variety of planning related fields.

Faculty

Philip F. Beach, *Chair*

Don R. Broyles	Wayne Merchen
Marn J. Cha	Bernard E. McGoldrick
Gholam H. Dargahi	Heyward E. Moore
Alfred B. Evans, Jr.	David H. Provost
Russell C. Fey	John A. Rotstan
Max B. Franc	Karl A. Svenson
Harold H. Haak	Harold Tokmakian
Lyman H. Heine, Jr.	Freeman J. Wright

Political Science Advisers: Philip F. Beach, David H. Provost
Public Administration Advisers: John A. Rotstan, Freeman J. Wright
Pre-Law Adviser: Karl A. Svenson
City and Regional Planning Program Coordinator: Wayne Merchen
Graduate Advisers: Philip F. Beach (M.P.A.), Marn J. Cha (M.A.), Russell Fey, Wayne Merchen, and Harold Tokmakian (M.C.R.P.)

Bachelor of Arts Degree (Political Science) Requirements

The requirements for the Bachelor of Arts degree in Political Science are:

	Units
1. **Major requirements:** (See notes 1 and 2)	36
a) Core: Pl Si 1, 90, 110 or 111, 120, 140, 150	(18)
b) Upper-division Political Science Electives: (exclude 101, 102, 187)	(18)
2. **General Education requirement:**	54
3. **Electives and remaining degree requirements** (see Degree Requirements, pp. 98–101); may be used toward a dual major or minor:	34
Total	124

Notes:

1. *CR/NC* grading is not permitted in the political science major.
2. Political science majors may not use Pl Si 1 and/or 120 for G.E. Breadth, Division 8.
3. No course used to satisfy General Education CAPSTONE requirements may be used to satisfy political science major requirements.
4. General Education and elective units may be used toward a dual major or minor (see *Dual Major,* p. 98 or departmental minor). Consult the appropriate department chair, program coordinator, or faculty adviser for further information.
5. The department highly recommends that the student select upper-division electives in at least three of the following disciplines: anthropology, Black studies, economics, English, geography, history, Chicano-Latino studies, philosophy, sociology or city and regional planning. Consult adviser for specifically recommended courses.

Bachelor of Arts Degree (Public Administration) Requirements

The requirements for the Bachelor of Arts degree in public administration are:

	Units
1. Major requirements: (See notes 1 and 2)	36
a) *Core:* Pl Si 1, 90, 181, 182	(12)
b) *Upper-Division electives:*	(24)
Elect from:	
1. Pl Si 110, 111, 114, 115, 170	(3)
2. Pl Si 150, 151, 159T	(3)
3. Pl Si 160, 163, 169T	(3)
4. Pl Si 183, 188T, 189T	(9)
5. Pl Si 186, 187, 190, 191	(6)
2. General Education requirement:	54
3. Electives and remaining degree requirements (see *Degree Requirements,* pp. 98–101); may include a dual major or minor:	34
Total	124

Notes:

1. CR/NC grading is not permitted in the public administration major with the exception of Pl Si 187.
2. Public administration majors may not use Pl Si 1 for G.E. Breadth, Division 8.
3. No course used to satisfy General Education CAPSTONE requirements may be used to satisfy public administration major requirements.
4. General Education and elective units may be used toward a dual major or minor (see *Dual Major,* p. 98 or departmental minor). Consult the appropriate department chair, program coordinator, or faculty adviser for further information.
5. The department highly recommends that the student select upper-division electives in at least three of the following disciplines: anthropology, Black studies, economics, English, geography, history, Chicano-Latino studies, philosophy, psychology, sociology or city and regional planning. Consult adviser for specifically recommended courses.

Minors

The following minor requirements are in addition to the general education requirement in social science.

Political Science	Units
Pl Si 1, 110 or 111	6
Political Science electives (upper division), excluding Pl Si 101, 102, 158, 187	9
Electives (upper division) in anthropology, economics, English, geography, history, philosophy, psychology, or sociology	6
	21

Public Administration	
Elect from Pl Si 1, 181, 182, 188T	12
Elect from Pl Si 110, 111, 114, 150, 151, 170	3
Elect from Pl Si 160, 163, 183, 189T	3
Electives (upper division) in anthropology, economics, English, geography, history, philosophy, psychology or sociology	3
	21

Urban Studies *(Interdisciplinary)*

Coordinator: Wayne V. Merchen, City and Regional Planning Program.

Faculty Advisers: Mary A. Ludwig, Anthropology Department; Edward E. Nelson, Sociology Department; James S. Kus, Geography Department; John A. Rotstan, Political Science Department.

Required Courses	Units
*Concepts and Issues**	9
Anthropology 108, Urban Anthropology; Geography 160, Urban Geography; or Sociology 163, Urban Sociology	(3)
Political Science 169T, History of Urban Political Development or Political Science 181, Public Administration	(3)
City and Regional Planning 100, Introduction to Community Planning	(3)
*Analytical Methods.**	6
Sociology 175, Social Research Methods; City and Regional Planning 103, Urban Design	
Electives:	6
With the approval of a program adviser, elect six units, with no more than three lower-division units and no more than three units from any one program, from the following list of courses: Anth 108, 172; Bl S 135; B A 120, 154; Crim 1, 2; Econ 1A, 1B; Eth S 1, 4; Fin 180, 186; Geog 109, 128, 129, 146, 160; Hist 137; CLS 3; Pol Sci 90, 103, 163; Soc 2, 25, 111, 131, 163; C R P 111, 135, 149T. Senior students may elect internship by registering for S Sci 185, 1 to 3 units.	
Total	21

* Students with a course equivalent to one in this category, taken in their major, may, with the approval of a program adviser, substitute additional units from the electives below for the units required here.

United States Constitution Requirement

The United States Constitution (including California State Constitution and local government) requirement for graduation should be fulfilled by Pl Si 2 or 101. Pl Si 1 does not fulfill the United States Constitution requirement.

Master of Arts Degree In International Relations

The program leading to a Master of Arts degree in international relations is designed chiefly, but not exclusively, for students preparing for careers involved with global and international politics (e.g., political aspects of: international business, agriculture, health services, education, U.S. foreign service, etc.). The interdisciplinary nature of the program is derived from: (1) the five seminars in Political Science each of which requires the student to master concepts and materials from other disciplines closely related to global politics, and from (2) the nine-unit component of the program which each student selects from the approved list of extra-departmental courses related to his or her career objectives.

The program's flexibility, however, also accommodates the needs of those students who plan to use the master's degree for teaching careers or to pursue a Ph.D. in political science, or both. After completion of 15 of the required 30 units of the program, each student is requested to submit to the graduate adviser a written statement of career objectives so that remaining requirements may be tailored to the needs and desires of the individual.

Requirements for Master of Arts In International Relations

Admission to the program is open to all graduates of a duly accredited college or university who meet the requirements for admission (see admissions, pp. 68–74). Background deficiencies in Political Science usually may be remedied by fulfillment of prerequisites required by Political Science 200 and/or 210. Any prerequisites required by extra-departmental courses must also be fulfilled unless waived by the department or program concerned.

All candidates for the Master of Arts degree in international relations must complete the 15 units of graduate seminars specified as the core program. Nine units of approved electives from outside the department are also required along with an additional six units within the discipline of political science.

The additional six units of political science may be earned in one of the following four ways, depending on the interests and career objectives of the candidate:

A. Students declaring their intention to pursue a Ph.D.: a master's thesis amounting to six units of credit is required.

B. Students declaring their intention to teach political science at other than the university level may meet the six-unit requirement by:
   (1) thesis, or
   (2) project equivalent to six units of thesis.

C. Students declaring their intention to pursue careers in fields other than political science may meet this six-unit requirement by:
   (1) thesis, or
   (2) approved project equivalent to six units of thesis, or
   (3) six units of additional course work in political science and choice of written or oral comprehensive examination.

D. Sudents declaring their intention to pursue a career in the U.S. Foreign Service may meet this six-unit requirement by:
   (1) thesis, or
   (2) approved project equivalent to six units of thesis, or
   (3) six units of additional course work in political science (courses must be in international relations and/or comparative politics) and choice of written or oral comprehensive examination.

A thesis or project must be primarily in the field of international relations and under the direction of the political science department. One reader or assistant project adviser may be chosen from outside Political Science where the topic makes this appropriate.

Exclusive of the core courses and thesis or project, a maximum of 3 units may be gained through Independent Study. Basic competence in written translation from a foreign language into English is a prerequisite for the M.A. degree in international relations. Foreign students may offer English in fulfillment of this requirement.

Specific Requirements for M.A. in International Relations: One of the following plans is available to the student in consultation with the graduate adviser:

Plan A (Students declaring their intention to pursue a Ph.D.)

	Units
1. Core Program	15
2. Thesis	6
3. Elective from approved list of extra-departmental courses	9
Total	30

Plan B (Students declaring their intention to teach political science at other than university level)

1. Core Program	15
2. Thesis or Project	6
3. Electives from approved list of extra-departmental courses	9
Total	30

Plan C (Students declaring their intention to pursue careers outside political science)

1. Core Program	15
2. Thesis, project, or six additional units of course work in political science	6
3. Electives from approved list of extra-departmental courses	9
4. Written or oral comprehensive examination if 6 additional units in political science are chosen	
Total	30

Plan D (Students declaring their intention to pursue a career in the United States Foreign Service)

1. Core Program	15
2. Thesis, project, or six units of electives in political science drawn from the International Relations and/or comparative Government series	6
3. Electives from approved list of extra-dept'l courses	9
4. Written or oral comprehensive examination if 6 additional units in political science are chosen	
Total	30

Graduate Public Administration Program

The Graduate Public Administration Program offers a multi-discipline Master of Public Administration (M.P.A.) degree. The M.P.A. program is built on the belief that effective leadership of public agencies requires a basic set of abilities and public values irrespective of the particular characteristics of the agency. Consistent with this belief, all students in the program complete a common core program of 18 units within the 36 units required for the M.P.A. The remaining 18 units the student will select, in consultation with his or her adviser, from graduate public administration courses and courses offered by other departments and programs. These 18 units can be used to further develop a general competence in public administration or to provide the student with a specialization suitable to public administration. To finish the program a student may elect to write a thesis or to take a comprehensive examination. The entire program can be completed by taking courses at night and on weekends.

The curriculum of the program follows the guidelines established by the National Association of Schools of Public Affairs and Administration (N.A.S.P.A.A.) and was designed following consultation with over a dozen senior public administrators in the Fresno area. Consistent with the N.A.S.P.A.A. guidelines, the program seeks to prepare administrative specialists who understand the place and role of public agencies and their staffs in the political, social, and economic systems of the United States; who have the analytic tools, both quantitative and qualitative, to diagnose problems and analyze alternative courses of public action; who have the leadership abilities to develop and make effective use of the talents and abilities of agency staffs; who have the abilities required to formulate, implement, and evaluate

public policies which are responsible and effective; and who are able to manage an agency in such a way as to make responsible and efficient use of its resources now and in the future.

Curriculum for the Master of Public Administration Degree

	Units
Core: GPA 120G, 200, 210, 240A, 240B, 260	18
Subcore: GPA 225 or Bus 261, GPA 230, 250, 280T, Bus 250	3–12
Approved electives or additional subcore	3 or more
Practitioner's Seminars: GPA 289T	0–6
Thesis or comprehensive examination	0–3
Minimum Total	36

All students must take 18 core units, and either six subcore units or three subcore units and three units of GPA 289T. The remaining 12 units may be used to take additional subcore courses, additional GPA 289T, approved electives, or a combination of subcore, GPA 289T, and electives. Elective courses may be used to fulfill a specialization appropriate to public administration. The courses to be used for the specialization are to be chosen in consultation with the student's adviser and must be approved by the M.P.A. program director.

In considering specialization or elective courses the following regularly offered courses can be considered by appropriately prepared M.P.A. candidates: City and Regional Planning 200, 202, 204, 215; Criminology 203, 252, 255; Health Science 210, 213; Political Science 210, 240, 250; Social Work 200, 203, 212**, 236; and Speech 268. There are numerous other specialization and elective courses potentially suitable for M.P.A. candidates, please consult adviser.

Admission

Applicants may qualify for admission to the program and thereby take program courses by achieving classified graduate standing. Classified standing requires:

1. An acceptable baccalaureate degree from an institution accredited by a regional accrediting association;
2. Good standing at the last college attended;
3. Submission to the university of transcripts of college work; scores from the Graduate Record Examination Aptitude Test (G.R.E.) or the Graduate Management Admission Test (G.M.A.T.); a written statement indicating why the applicant wishes to pursue an M.P.A. degree; and, if any, evidence of work performance in a public or nonprofit agency (see 4 (d) below).
4. Recommendation for admission by the Admissions Committee of the Graduate Public Administration Program. Candidates will be recommended on the basis of the promise they show for successfully completing the program and achieving a successful career in public management and administration. Candidates will be evaluated using a combination of **(a)** grade point average (those with averages of less than 2.75 overall or 3.0 on the last 60 semester units attempted must have compensating strength in other areas); **(b)** aptitude for academic work (those with scores of less than 475 on either part of the G.R.E. or on the G.M.A.T. must have compensating strength in other areas); **(c)** professional goals of the applicant; and **(d)** successful performance in public or nonprofit agency employment as demonstrated by the character of work accomplished, distinctions achieved, and letters of recommendation from persons who can knowingly and comparatively evaluate the on-the-job performance of the candidate over a period of time (this basis for evaluation may be waived for candidates showing great strength in **(a)** or **(b)** above). Applicants whose native language is not English must also achieve a minimum score of 550 on the Test of English as a Foreign Language.
5. Applicants, otherwise admissible to classified standing, who have not been employed full-time for at least six months in a public or nonprofit organization nor completed a surpervised internship of at least 120 hours in such an agency, will be allowed to take courses for one semester as a conditionally classified student. Pl Si 186–187 (5 units) internship experience must be completed before enrollment in second semester courses.

City and Regional Planning Program

The Master's Degree Program in City and Regional Planning is designed as preparation for a professional career in planning at a responsible level. Emphasis is on the development of a general theory and philosophy of planning applicable to a wide variety of public and private institutions. Undergraduate degree programs in fields related to planning, such as anthropology, geography, political science, public administration, economics, sociology, social welfare, architecture, landscape architecture or engineering provide a suitable background for the M.C.R.P. degree program. Degrees in other fields also may be found acceptable following an evaluation of the candidate's records and career goals.

The central San Joaquin Valley provides a variety of settings for individual and class studies. The rich agricultural area with many small service communities, the multiple use areas of the Sierra Nevada, and the diverse neighborhoods and cultural groups of the Fresno metropolitan area are representative of the varied-environments in which graduates will work.

Two paths leading to a Master of City and Regional Planning degree are offered: a thesis program and a non-thesis program. The first is designed for the student who wishes to pursue significant independent research as a part of the graduate program; it also serves as preparation for additional graduate work at the doctoral level. The non-thesis program provides an opportunity for applied research and problem-solving at the city and regional scale as preparation for professional practice.

The 48-semester unit program is composed of a planning core and related supportive electives. In the first year, students follow a sequence which builds a common body of knowledge in planning theory, research methods, design, management, and professional practice. Special opportunities for practical experience are provided through practicum projects involving clients from surrounding communities and required internships in a variety of planning related offices. Beginning with the second semester, and continuing into the second year, students are encouraged to develop an elective sequence which focuses on their area of interest.

Curriculum for the Master of City and Regional Planning Degree

Each applicant for admission to the City and Regional Planning program is evaluated on the basis of academic record, educational and vocational background, performance on the Graduate Record Examination Aptitude Test, and commitment to planning as a profession. Prospective students must make arrangements for a personal interview with a faculty member as a part of the admission process. Students outside the central San Joaquin Valley should consult the department for alternative procedures. (Applicants must first meet the standards of the university and the Division of Graduate Studies and Research. See *Division of Graduate Studies and Research, Admission to Graduate Stand-*

ing, Advancement to Candidacy, Program Requirements, and Thesis and Thesis Alternatives, pp. 462–471.)

Under the supervision of a faculty adviser, each student submits an approved program within one of the following frameworks:

Plan A—Thesis Program	*Units*
Core curriculum (see specific requirements)	31
Elective Sequence (see elective sequence)	11
Thesis	6
Total	48

Specific Requirements: C R P 200, 201A–B, 202, 203A–B, 204, 215, 280T, 299, and an approved course in management and budgeting.

Plan B—Non-Thesis Program	*Units*
Core curriculum (see specific requirements)	31
Elective Sequence (see elective sequence)	17
Total	48

Specific Requirements: C R P 200, 201A–B, 202, 203A–B, 204, 215, 280T, and an approved course in management and budgeting. Each candidate for the M.C.R.P. under Plan *B* must successfully complete a comprehensive examination covering both the central concepts and techniques of city and regional planning and the elective sequence.

Other Requirements and Limitations

At least one course in statistical methods must be completed with a mark of *CR* or *C* or better prior to or concurrently with enrollment in C R P 201A. Such a course may not be utilized as an elective in a planning program. International studies courses required of foreign students by the university may not be utilized as electives in a planning program.

Elective Sequence

Each student, in consultation with a faculty adviser, develops an elective sequence of courses acceptable to the program which focuses on an area of interest. Suggested areas include community planning practice, environmental analysis/design, and public administration. Other focuses may be developed under the direction of a faculty adviser. A recommended program for a 12 unit elective sequence in public administration is as follows: GPA 210, 240A–B, and 260 (GPA 120G and GPA 200 may be taken as a part of the City and Regional Planning core program.)

COURSES

Political Science (Pl Si)

1. Modern Politics (3). An introduction to modern politics through the study of subjects such as political interests, parties, and movements; democracy, communism, and nationalism; the individual and the state; power and government.

2. American Government and Institutions (3). Meets the United States Constitution requirement and the federal, California state and local government requirement. Not open to students with credit in Pl Si 101. The development and operation of government in the United States; study of how ideas, institutions, laws, and people have constructed and maintained a political order in America. Not available for *CR/NC* grading.

8. Human and Civil Rights (3). Examination of the ethical, ideological, religious and legal foundations of human and civil rights; development of human rights in the Western and non-Western world; the nature and manner of discrimination and oppression; protection and enforcement of civil and human rights.

10T. Contemporary Issues in Politics (1-3; max total 9 if no topic repeated). Significant contemporary uses in political theory, world politics, comparative government, American government, local government, public administration, or public opinion.

70. Introduction to Law (3). Examination of roles and functions of law; jurisprudence (theory of law); legal education and the court system—structure and rationale; criteria for selecting judges; factors influencing judicial decisions; resistance and compliance; changes and challenges to the judicial system.

90. Methods of Analysis of Quantitative Political Data (3). An introduction to hypothesis testing in political science, with applications to the analysis of quantitative political data; the formulation of research problems and hypotheses; accuracy and precision in measurements; problems of evidence and inference; basic techniques of statistical analysis.

101. American Constitution, Institutions and Ideals (3). Meets the United States Constitution requirement. Not open to students below second semester sophomore or with credit in Pl Si 2. Executive, legislative, and judicial functions of our government under the constitution; federal, California state and local governmental relationships. Not available for *CR/NC* grading.

102. California Government and Institutions (1). Not open to students with credit in Pl Si 2, 101. 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. Not available for *CR/NC* grading.

103. California Politics (3). Emphasis on the historical development of politics in California and the factors and institutions important to contemporary politics: characteristics of the electorate, voter registration, primaries and general elections, candidates and campaigning, party organizations and leaders, interest groups, and current issues.

Political Theory (Pl Si)

110. Seminar in History of Political Thought to Machiavelli (3). Development of political thought from Plato to Machiavelli: law, justice, the state, authority, forms of government, and church-state relations in light of the philosophy of history.

111. Seminar in History of Political Thought Since Machiavelli (3). Freedom and individual rights, democracy, majority rule, equality, law and authority, power, constitutionalism, property, social class and structure, and revolution traced through the writings of Hobbes, Locke, Rousseau, Hume, Burke, Bentham, Hegel, Tocqueville and Mill.

112. Politics and Christianity (3) (Same as A Eth 104). Inquiry into major facets of Christianity as an integral part of the Western humanistic tradition of politics. Emphasis on Christian theories of man, the state, freedom and democracy. Politics to be interpreted in the broadest sense of all human association in pursuit of power, order, art, science and culture.

114. Seminar in American Political Thought (3). Analysis of democracy, majority rule and minority rights, constitutionalism, federalism, representation, pluralism, property, separation of powers, and judicial review based on the perspectives of representative early and contemporary American thinkers.

115. Approaches to Political Science (3). Historical development of Political Science as a discipline; emphasis on theories of classical analysis compared with contemporary political and administrative sciences.

119T. Topics in Political Theory (1–4; max total 8). Possible topics include theories of democracy; the Marxian tradition; political thought of specific authors, historical periods and countries; peace and war; church-state relations; the nature of politics and of political science.

International Relations (Pl Si)

120. International Politics (3). Dynamics of political interactions of nations; nationalism, imperialism and interdependence; national power and diplomacy; types of conflict, including war; peaceful settlement of disputes; current issues involving competing foreign policies, national development, energy and national liberation movements.

121. American Foreign Affairs (3). Prerequisite: Pl Si 2. Formulation and execution of American foreign policy; constitutional framework; role of the President and the executive branch, Congress, pressure groups and public opinion; contemporary problems and policies.

125. Soviet Foreign Policy (3). Sources of Soviet foreign policy, historical and ideological; continuity and change in methods, strategy and tactics; policy formulation and application in specific geographic and subject matter areas.

126. International Law and Organization (3). The sources and subjects of international law; state jurisdiction and responsibility; international agreements; the regulation of force and the peaceful settlement of disputes through international law and organization, including the League of Nations, the United Nations, and regional organizations.

128T. Topics in International Relations (1–4; max total 8 if no topic repeated). Politics of military power; arms limitation and control; peace theory; ecopolitics; regionalism and cooperation; shifts in balance of power; nationalism; imperalism; neutralism and nonalignment; foreign policies of specific nations.

Comparative Government (Pl Si)

140. Approaches to Comparative Politics (3). Prerequisite: Pl Si 1. Exploration of theories, models, and conceptual frameworks for the comparative study of political systems and subsystems; methodological rather than an area emphasis.

141. Soviet Politics (3). Government and politics of the Soviet Union. Soviet Marxist-Leninist ideology; the Communist Party in the Soviet political system; the structure and operation of governmental institutions; contemporary policies and policy problems.

142T. Area Studies in Western Europe (1–4; max total 8 if no topic repeated). Government and politics of Western Europe (Britain, France, Germany, and Italy), Northern European Countries (Finland, Denmark, Norway, Sweden); or government and politics, of selected countries.

143T. Area Studies in Eastern Europe (1–4; max total 8 if no topic repeated). Government and politics of Eastern Europe; or government, politics, and institutions of selected countries.

144T. Area Studies in Africa and Middle East (1–4; max total 8 if no topic is repeated). Government and politics of Sub-Sahara Africa, Middle East; or government, politics, and institutions of selected countries.

146T. Area Studies in Latin America (1–4; max total 8 if no topic repeated). Possible topics include politics of South America; politics of Central America and Caribbean countries; roles of selected groups in Latin American politics.

149T. Seminar in Comparative Government (1–4; max total 8 if no topic repeated). Parliamentary systems, problems and goals of developing nations, federal systems, comparative local government, parties and pressure groups, and multi-party systems.

American Government (Pl Si)

150. Public Policy Making (3). The relationship of persons, groups, and institutions to the making and implementing of public policy in the United States; consideration of the participants and the modes of analysis and thought influencing public policy.

151. Political Participation and Political Parties (3). Political parties; nature and extent of citizen political activity; election of public officials; political organization of government.

156T. Topics in Political Behavior (1–4; max total 8 if no topic repeated). Voting behavior, political alienation, leadership, political perceptions and knowledge, environmental effects on political participation, group processes, and political socialization.

157. Political Science Internship Seminar (2). Pl Si 158 concurrent enrollment. Advanced analysis of citizen-government linkage from a theoretical perspective.

158. Internship in Political Science (2–6 max total 6). Concurrent enrollment in Pl Si 157 (may be waived if student has completed one or more upper-division courses in American or California government), permission of instructor. Maximum credit toward the political science major, 3 units. Supervised work experience in legislative offices and/or political campaigns to provide student with an opportunity to fuse theory and practice.

159T. Seminar in American Government and Politics (1–4; max total 8 if no topic repeated). Congressional committee operations, policy making by the courts, political implications of civil service, executive initiation of legislation, minority groups and politics, political implications of news reporting; jurisprudence and legal philosophy; legal institutions; conflict resolution.

Local Government (Pl Si)

160. State and Local Governments (3). The organization, structure, powers, and functions of state and local governments.

163. Municipal Government (3). 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.

169T. Seminar in Metropolitan Government and Politics (1–4; max total 8 if no topic repeated). Regional and area intergovernmental relations, urban renewal, human relations agencies, and taxation methodologies.

Public Law (Pl Si)

170. Constitutional Law, the Federal Structure (3). Judicial Review, Separation of Powers, Federalism and the Commerce clause through leading Supreme Court Decisions.

171. Constitutional Law, Civil Liberties and Civil Rights (3). Freedom of Expression, Freedom of Religion, Due Process of Law, and the Equal Protection of the Law through leading Supreme Court Decisions.

179T. Seminar in Public Law (1–4; max total 8). Administrative law, international law, judicial administration, jurisprudence, legal institutions.

Public Administration (Pl Si)

181. Public Administration (3). General analysis of the field of public administration; administrative theories; policy and administration; behavioralism; budgeting, planning, and legal framework.

182. Administrative Analysis: Management and Organization (3). Administrative organization; methods; systems and procedures; problem solving; systems analysis; reports and records; resources management.

183. Comparative Administration (3). Theories of comparative public administration; cross-national comparisons of administrative processes; institutions, policy formation, and behavior with consideration of cultural, social, and economic environments.

186. Public Administration Internship Seminar (2). Prerequisite: Pl Si 181. Seminar to be taken concurrently with Pl Si 187. Advanced analysis of public administration theory and administrative practices from a theoretical perspective.

187. Internship in Public Administration (2–6 max total 6). Concurrent enrollment in Pl Si 186 (may be waived if student has completed one or more upper-division courses in public administration or is concurrently enrolled in Pl Si 181), permission of instructor. Maximum credit toward public administration major, 3 units. Supervised work experience in public agencies to provide the student with an opportunity to fuse theory and practice.

188T. Topics in Public Administration (1–4; max total 9 if no topic repeated). Treatment of current topics and problems in fiscal administration, public personnel administration, and planning.

189T. Seminar in Public Administration (3; max total 6 if no topic repeated). The values and philosophy of administration; management and dynamics of change; public relations and communication problems in public administration; planning problems and techniques; systems approach to resource management.

190. Independent Study (1–3; max see reference). See *Academic Placement—Independent Study,* pages 96–97.

191. Directed Readings (1). Directed readings and supplemental and original source material for enrichment of regular offerings in the subdiscipline.

Core Program for Master of Arts Degree in International Relations, (Pl Si)

200. Seminar in Methods and Political Systems (3). Prerequisite: Pl Si 1 or 115 or equivalent, permission of instructor. Systematic analysis of major political cultures and economic systems. Emphasis upon methods of cross-cultural research from an interdisciplinary viewpoint such as convergence, interdependence and comparative indices.

210. Seminar in Politics and Values (3) (Same as A Eth 201). Prerequisite: Pl Si 110 or 111 or equivalent; permission of instructor. Critical analysis of philosophical and ethical questions arising from current and future models and policies in a multi-cultural world. Issues to be explored include human rights, political liberties, freedom and technology, justice and economic values, politics and ethics.

220. Seminar in Politics and Conflict (3). Prerequisite: permission of instructor. Analysis of sources of international violence, e.g., war and terrorism. Modes of conflict resolution and peaceful settlements will be applied to arms control and disarmament, security systems, international law and organization.

240. Seminar in Politics of Human and Natural Resources (3). Prerequisite: permission of instructor. Analysis of global interdependence in such areas as ecology, energy and agriculture. Emphasis upon impact of demographic trends upon relations between rich and poor nations and upon the roles of international authorities in global resource policies. Review of current literature.

250. Seminar in Politics and Policy (3). Prerequisite: permission of instructor. National and international policy-making from a methodological and comparative perspective. Issues such as centralization and decentralization, interdependence and dominance explored at local, regional and global levels. Includes survey of bureaucratic and administrative models and behavior at national and international levels.

280. Seminar in Public Administration (3). Prerequisite: permission of instructor. Problems in administrative analysis and organization, tools and techniques of administrative research, interpretation and application of research findings. Not part of Core Program.

290. Independent Study (3). See *Academic Placement—Independent Study,* pages 96–97.

298. Project Equivalent to Thesis (6). See *Criteria for Thesis and Project,* pages 467–468. Significant undertaking of a pursuit appropriate to international politics. Must demonstrate originality and independent thinking and be accompanied by written scholarly apparatus. Project examples: documentary film; extensive curricular design; computer design of military strategies.

299. Thesis (6). See *Criteria for Thesis, and Project,* pages 467–468.

Graduate Public Administration (GPA)

120G. Quantitative Applications for Public Administration (3). The gathering, evaluation, and use of quantified information in the design and evaluation of programs and administrative activities. Data collection; measurement; sampling; data analysis,

including regression, structural equation models, and linear programming; computer applications. (Former GPA 220)

200. Administration and Society (3). How administration acts and is acted upon by institutional forces and values; role of history, cultural, ethical, political, social and economic values and institutions; an emphasis on: bureaucracy, economy and democracy, centralization vs. decentralization, professionalism and society; alternatives to bureaucracy.

210. Public Organization Behavior and Dynamics (3). A study of how human behavior, motivations, personality, interpersonal and group dynamics operate in complex organizations; an emphasis on management styles, planned change, organization development, conflict management, leadership and communication skills.

225. Accounting for Public Management (3). (Students contemplating additional courses in Accounting should enroll in Bus 205.) Concepts, principles, and practices of accounting applicable to the administration of public programs and agencies. Current practices in recording and valuation. Analysis and interpretation of financial statements. Budgeting, internal reporting, and management controls.

230. Public Revenue and Expenditure Analysis (3). Prerequisite: Econ 1A and 1B or permission of instructor. The use of economic analysis in the resolution of major problems in revenue collection and expenditure choices. Critical examination of: burdens and effectiveness of taxation measures; conflicts between efficiency and equity; users charges; cost calculations; and cost-benefit analysis.

240A. Public Management Methods and Processes (3). A survey of theories, concepts and methods of public management; an integrated overview of the role of budget, revenue analysis, accounting, auditing, human resources planning, information systems, organization methods, human behavior, values in management functions and processes.

240B. Public Management Methods and Processes (3). Prerequisites: GPA 120G, 240A. An in-depth analysis of selected topics, issues and methods in public management; such as resource management, systems analysis, productivity analysis, project management, needs assessment, conflict resolution, attitude and opinion evaluation, administrative law, and communications.

250. Ethics and Public Administration (3) (Same as A Eth 202). Prerequisites: GPA 210. The moral dimensions of public administrative decision-making. The nature of public and private morality; psychological and ethical egoism; relativism; utilitarianism and deontological theories; rights and goods in the public service context; sensitive applications of rules in public agencies.

260. Public Policy Administration (3). Prerequisites: GPA 120G, 200, 210, 240A. A study of policy initiation, formulation and implementation and a public manager's role in them; management processes and functions in the policy process; policy justification and advocacy, policy analysis, and implementation evaluation.

280T. Topics in Public Administration (3; max total 6 if no topic repeated). Selected topics meeting student needs and interests that are not met in other university courses.

289T. Practitioner's Seminar (1; max total 6 if no topic repeated). Prerequisite: Some seminars may have course prerequisites. Selected topics in the administration of public programs and agencies examined from the prospective and experience of practitioners.

290. Independent Study (1–4; max total 6). See *Academic Placement—Independent Study,* pages 96–97.

299. Thesis (3). Prerequisite: See *Criteria for Thesis and Project,* pages 467–468. Preparation, completion, and submission of an acceptable thesis for the Master's degree.

City and Regional Planning (C R P)

100. Introduction to Community Planning (3). Prerequisite: junior standing. Introduction to and critical analysis of theory and practice of community planning; traditional and alternative roles of planning in contemporary society; perspectives on community problems; evaluation of concepts, literature, and history. (Former U R P 100)

103. Introduction to Urban Design (3). Suggested for graduate students emphasizing design. Prerequisite: junior standing. Introduction to physical design and environmental communication. Urban design principles and application; formulation of design programs and solutions; supervised studio projects. (two 3-hour studios) (Former U R P 103)

110T. Topics in Urban Planning Techniques (1–3; max total 6). Selected topics such as analytical techniques; means for management of urban development, including transportation, public facilities, and activities in the private sector; public policy concerning issues of local and regional significance. (Former U R P 110T)

111. Planning for Historic Preservation (3). The implementation of planning policy, guided by the General Plan and its Historic Preservation element, utilizing the techniques of historic preservation to achieve the broad public goal of rehabilitation and conservation of older areas of a community. (Former U R P 110T section) (Former U R P 111)

135. Environmental Law (3). Contemporary environmental problems and their interrelationships. The conceptual, constitutional and administrative framework for environmental protection and management. Legislation and case law for the protection and enhancement of the environment with emphasis on natural resources. (Former U R P 149T section) (Former U R P 135)

149T. Topics in Environmental Design (3; max total 6). Prerequisite: junior standing. Selected topics on factors that influence environmental design problems, including environmental crisis areas and impact of public policies; design framework formulation and problem solving needed to achieve a quality environment. (Former U R P 149T)

190. Independent Study (1–3; max total see reference). See *Academic Placement—Independent Study,* pages 96–97. (Former U R P 190)

191. Directed Readings (1–3; max total 6). Supervised independent reading in a selected topic related to city and regional planning. (Former U R P 191)

GRADUATE COURSES

(See *Course Numbering System,* p. 133.)

109GT. Presentation Techniques in Urban and Regional

Planning (1; max total 3). Concurrent enrollment in C R P 200 series courses. Topics in techniques and practice of oral, narrative and graphic presentation as related to city and regional planning. (One 2-hour lab) (Former U R P 109GT)

200. Seminar in Planning Theory and Process (3). Prerequisite: permission of instructor. Pursuit and analysis of the essence of planning, study of traditional and contemporary theories of community development, the planning process. (Former U R P 200)

201A–B. Seminar in Planning Research (3–3). Prerequisite: permission of instructor. (A) Planning research methodology and technique including scientific method, statistical analysis of data sampling, regression analysis; application of computer technology; sources of data. (B) Application of research methodology and technique to planning problems; special emphasis on the formulation of research designs. (Former U R P 201 A–B)

202 Seminar in Urban Design (3). Prerequisite: permission of instructor. Examination of urban design theory and principles, with attention to design philosophy and the underlying concepts that include man-environment relations, design communications, the design process; implementation techniques; case studies. (Former U R P 202)

203A–B. Practicum in Community Planning (3–3). Prerequisite: permission of instructor. (A) Studio and field project design and implementation methods; supervised projects; (B) Application of theories and principles to a team project. (Former U R P 203A–B)

204. Seminar in the Elements of Community Structure (3). Prerequisite: permission of instructor. Analysis of the characteristics and interrelationships between selected elements of the physical structure of the community including land use, transportation, housing, and public facilities. (Former U R P 204)

212T. Seminar: Topics in Urban Development (3; max total 9). Prerequisite: C R P 200. Selected topics in the application of public policy to the solution of urban problems, including the renewal of blighted areas, the conservation and preservation of historic areas, the development and financing of new communities. (Former U R P 212T)

215. Seminar in Land Development Controls (3). Prerequisite: C R P 200. The application of the police power—zoning, subdivision regulations and other techniques—used to implement land development plans and policies; historical and contemporary case studies. (Former U R P 215)

220. Seminar: Planning for Housing (3). Prerequisite: C R P 200. Housing problems in America; the role of local, state and federal government and private enterprise; planning for adequate housing, carrying out policies and programs. (Former U R P 220)

230. Seminar in Planning for the Region (3). Prerequisite: C R P 200. Regional planning—approaches and methods; goal and policy implications of resource development, utilization and conservation; strategies for planning; case studies. (Former U R P 230)

236. Seminar in Environmental Impact Assessment (3). Prerequisite: permission of instructor. Environmental impact assessment as a procedure to protect and enhance the quality of the environment; the legal framework; content and preparation of the EIS/EIR; long-range planning for environmental protection; case studies. (Former U R P 236)

239T. Seminar in Regional and Environmental Planning (1–4; max total 12). Prerequisite: permission of instructor. Selected topics in regional and environmental planning, including land, air and water resources; consideration of federal, state, and local environmental laws and policies; case studies. (Former U R P 239T)

249T. Topics in Environmental Design (1–3; max total 9). Prerequisite: C R P 202. Selected topics such as man-environment relations; site planning; the development of community form; physiographic and cultural influences on urban design; problems in policy making, implementation, and controls; cognitive mapping; design of prototypical environments. (2 hours studio weekly per unit) (Former U R P 249T)

250. Seminar in Transportation Planning (3). Prerequisite: permission of instructor. A systems view of transportation; alternative modes; interrelationships with urban structure; models; policy implications. (Former U R P 250)

260T. Seminar: Topics in Urban Development Process (1–3; max total 9). Prerequisite: permission of instructor. Selected topics such as theory of regional and urban spatial organization; theory of modeling and gaming simulation; application of modeling and simulation techniques to the urban development process; case studies, supervised projects. (Former U R P 260T)

280T. Professional Planning Practice (2–4; max total 7). Maximum total 7 units applicable toward the degree, provided that units in excess of 4 must be earned in topics taken concurrently with related elective seminar. Prerequisite: C R P 200, 201A, 203A. Individually supervised professional practice: preparation and implementation of comprehensive urban, regional or special purpose plans; study of interrelationships and roles of government, public agencies and private enterprise. (Former U R P 280T)

281T. Seminar in Planning Practice (1; max total 3). Prerequisite: Concurrent enrollment in C R P 280T, permission of instructor. Seminar to explore characteristics and problems of professional planning practice; written evaluations of work experience. (Former U R P 281T)

282T. Field Study of Selected Planning Topics (1–6; max total 12 if no topic repeated). Prerequisite: permission of instructor. Field study of urban and regional phenomena in relation to urbanization, urban systems, housing, and resource development. (Former U R P 282T)

290. Independent Study (1–3; max see reference). See *Academic Placement—Independent Study,* pages 96–97. (Former U R P 290)

291. Directed Readings in Urban and Regional Planning (1–3; max total 6). Supervised independent reading in a selected topic related to urban and regional planning. (Former U R P 291)

299. Thesis (2–6; max total 6). Prerequisite: see *Criteria for Thesis and Project,* pages 467–468. Preparation, completion, and submission of an acceptable thesis for the master's degree. (Former U R P 299)

Psychology

School of Natural Sciences
Department of Psychology
Alexander Gonzalez, Chair
Education-Psychology Bldg., Room 234
(209) 294-2691

B.A. in Psychology
Minor in Psychology
M.A. in Psychology
M.S. in Psychology
Services Credentials in:
- **Pupil Personnel**
- **School Counseling**
- **School Psychologist**

Education requirements for:
- **Marriage, Family, & Child Counselor**



Psychology is concerned with the scientific study of human behavior and consciousness and the applications of these findings to the areas of home, school work, and social relations. It covers topics such as learning, cognition, motivation, personality, psychophysiology, sexuality, group processes, cultural factors, and abnormal behavior. Psychology is an area for students interested in learning about the behavior of humans and other organisms.

The Department of Psychology provides a variety of opportunities for students. We have an undergraduate major that can be tailored as a strong liberal education, a pre-professional degree, or as preparation for graduate study in psychology. In addition, we have two advanced degrees providing professional training in psychology. Our program gives considerable emphasis to psychology as an empirical science, including research design, data analysis and interpretation, and computer skills.

Our undergraduate major is one of the strongest and most respected in the State University System as a preparation for graduate work in psychology. Our better students do well in the Ph.D. programs into which they are often accepted. As a liberal arts major, our undergraduate program provides a solid background for students choosing to enter business or other more specialized vocations immediately after graduation.

Faculty and Facilities

All full-time and some part-time members of the department hold Ph.D. degrees in psychology and many are licensed as psychologists for private practice by the State of California. Our faculty represents a wide range of theoretical orientations and interests that include most of the major areas in American psychology.

The department has an animal laboratory to service the needs of students and faculty interested in studying animal behavior. A comprehensive test library is maintained for programs in the testing and clinical areas. Complete video facilities are available for presenting training materials, research and instruction. A large number of university computer terminals are located in the department area and the department has several microcomputers of its own for instruction and research. A computerized Bio-lab is also available for training and research in biofeedback and psychophysiological studies. The department employs technicians who construct specialized equipment for research and teaching purposes.

Career Opportunities

In addition to learning theoretical views and research methods, students often have the opportunity to apply psychological principles of counseling and testing in community settings. Many students who earn the M.A. or M.S. degree obtain certification as school psychologists or school counselors. Their course work can also meet the educational requirements for the Marriage, Family, and Child Counseling license. There are openings in mental health, the public school and other agencies for these advanced students. Some of the careers open to psychologists with specialized training include:

School Counselor	Evaluation Specialist
School Psychologist	Organization Consultant
Psychotherapist	Test Counselor
Research Scientist	Group Leader
College Instructor	Behavior Analyst
Community Worker	Industrial Psychologist

Current surveys show that about one-third of psychology graduates become employed in business and related vocations, one-third in education, and one-third in clinical and counseling vocations.

The B.A. degree does not train a person to work as a professional psychologist. However, a number of jobs related to psychology can be entered without advanced education. Some examples are employment interviewers, personnel managers, market researchers, management trainees, probation officers, and mental health workers.

Our 30 unit M.A. degree provides a strong background for further graduate study toward the doctoral (Ph.D.) degree. In the 60 unit M.S. degree, students learn many clinical skills (psychotherapy, psychological assessment, etc.) that lead to employment possibilities in the schools and mental health settings. The M.S. degree is also a strong preparation for further graduate study.

Professional psychologists are employed in colleges and universities as instructors, researchers, and counselors. Local, state, and federal governments also employ professional psychologists. Governments utilize psychologists in a variety of agencies and settings (mental hospitals, rehabilitation centers, prisons, employment testing and personnel work). School systems and industries employ a considerable number of professional psychologists as school psychologists, counselors, industrial/organizational/personnel psychologists. Finally, some psychologists are in private practice as counselors and psychotherapists, or consulting psychologists.

Faculty

Harrison E. Madden, *Chair*

Ibrahim M. Abou-Ghorra
Barbara H. Basden
David R. Basden
Raul Betancourt
Thomas E. Breen
Alan D. Button
William C. Coe
Arnold M. Cooper
Samuel S. Franklin
Alexander Gonzalez
Joel S. Grossman
Wayne B. Holder
Donald D. Kirtley
Janet E. Lapp
George S. Leavitt
Robert V. Levine
Stanley E. Lindquist
Ernst Moerk
Terry G. Newell
Frank V. Powell
Merry W. Salehi
James Mitchell Smith

Undergraduate Adviser: Raul Betancourt
Graduate Adviser: Terry G. Newell

Bachelor of Arts Degree Requirements

	Units
1. Psychology Major Requirements:	48
a. Applications Area (select 3): Psych 160T, 162 or 165, 166, 169, 175, 176, 177, Mgt 104	(9–11)
b. Basic Content Area (select 2): Psych 150T, 154, 155, or 178, 134 or 173	(6–8)
c. Basic Processes Area (select 2): Psych 120T, 121, 122, 124, 125, 126, 127	(6–8)
d. Assessment Area (all 4): Psych 142, 144, 145, 149	(16)
e. History and Systems: Psych 112	(4)
f. Psychology electives:	(1–7)
2. General Education requirement:	54
3. Electives and remaining degree requirements (see *Degree Requirements,* pp. 98–101); may be used toward a dual major or minor:	22–31 *
Total	124

* This figure takes into consideration that one General Education—CORE and a maximum of two BREADTH courses also may be applied to satisfy Psychology major requirements (see *General Education,* pp. 104–111). Courses may be selected from Psych 10, 36, 61, 132, 142 (CORE), 171. Consult the psychology department chair or department advising office for additional details.

Notes:

1. Math 101, Statistical Methods (plus a one-unit laboratory), may be substituted for Psych 142. Math 101 has a prerequisite of Math 70 or 72 or 75.
2. No course used to satisfy General Education CAPSTONE requirements may be used to satisfy psychology major requirements.
3. *CR/NC* grading is not permitted in the psychology major.
4. General Education and elective units may be used toward a dual major or minor (see *Dual Major,* p. 98 or departmental minor). Consult the appropriate department chair, program coordinator or faculty adviser for further information.

Courses Suggested for Particular Areas of Interest

1. Child Development
   A. Applications: Psych 166, 175, 177
   B. Basic Content: Psych 155 or 178, one other
   C. Basic Processes: any except Psych 127
   F. Electives: Psych 132, 167 or 168, 174; CLS 154 or 156
2. Counseling
   A. Applications: Psych 162 or 165, 166 or 160T, 177
   B. Basic Content: Psych 154, one other
   C. Basic Processes: Psych 121, 122
   F. Electives: Psych 132, 174, 175; CLS 180T (Chicano Psychology) or CLS 156
3. Business
   A. Applications: Psych 162 or 165, 176, 177; Mgt 104
   B. Basic Content: Psych 134, 154
   C. Basic Processes: Psych 121, 122
   F. Electives: Psych 166 or 171, 174 or 175
4. Preparation for Graduate Work
   A. Applications: Psych 166, or others of interest
   B. Basic Content: Psych 154, 155, 178 (any two)
   C. Basic Processes: Psych 121, 122
   F. Electives: Psych 143, one course from Areas *B* or *C*

Preprofessional Preparation

A psychology major is often used as preparation for other professions. For preprofessional programs in law, dentistry, medicine, and the ministry, see the *Preprofessional Preparation* section and consult an adviser in the psychology department.

Credential Programs

The Department of Psychology offers the Pupil Personnel Services Credential and the School Psychology Credential. The Pupil Personnel Services Credential must be completed prior to entrance into the School Psychology program. The admission dates for these programs are November 30 and April 30. (See psychology department for specific course requirements.)

Application forms and advising are available in the psychology department.

Psychology Minor

A psychology minor must have prior approval of the psychology department. The minor consists of 22 units of psychology courses, 15 of which must be upper division. The specific courses may be selected to satisfy the needs of individual students but must be worked out in advance with an adviser from the department and be approved by the department.

Graduate Programs

The Master of Arts and Master of Science degrees in psychology are designed to provide students with a broad background in psychology while allowing them opportunities to pursue areas of special interest. Fulfillment of the requirements for either master's degree prepares the student for positions in related community service, public institutions, college teaching, re-

search, or entrance into Ph.D. programs in psychology. Completion of the appropriate courses leading to the M.S. degree in psychology may fulfill the educational requirements for the California State license in marriage, family and child counseling.

The Master of Arts and Master of Science degree programs in psychology are based upon the satisfactory completion of the core courses required for the CSU, Fresno undergraduate major in psychology, or their equivalent. Classified standing requires an undergraduate average of *B* or better in psychology courses and a total G.R.E. Aptitude Test score of 1000 (*V* plus *Q*) or a total score on the G.R.E. Advanced Test in Psychology equivalent to the 60th percentile (E.T.S. norms).

(See also *Admission to Graduate Standing, Advancement to Candidacy, Program Requirements, and Criteria for Thesis and Project,* pp. 464–468.)

Under the direction of a graduate adviser, a coherent program is prepared and submitted, directed toward the achievement of the student's goal in graduate study.

Core Course Requirements for the Master of Arts and Master of Science Degrees

	Units
1. Psych 244	4
2. Psych 200T or 250T or 255T (one course)	3–4
3. Psych 220T or 225T (one course)	3–4
4. Psych 231	2
5. Psych 299 (Thesis)	3–6
Total	15–20

Master of Arts Degree Requirements

The Master of Arts degree program in psychology may be arranged to include interest areas such as general experimental, developmental, and social psychology, as well as special Master of Arts programs for individuals. This 30-unit degree program is intended primarily to prepare graduates for entry into doctoral programs in general experimental, developmental, social, or clinical psychology, and may serve as preparation for community college teaching or professional employment requiring a master's degree.

	Units
Core Requirements (above)	15–20
Electives in psychology or related fields	10–15
Total	30

See the department for other recommendations related to the general experimental, developmental, and social program interest areas.

Master of Science Degree Requirements

The Master of Science degree in psychology is a 60-unit degree which can be a terminal degree or qualify one for entry into a doctoral program. This clinical program can be coordinated with developmental psychology or school psychology pursuits. Nearly half the units are field work practicum and intern work. The second year is partially spent in intern placements.

	Units
Core Requirements (above)	15–20
Courses in core program and field work (see Specific Requirements)	35–36
Electives in psychology or related fields, 200-series	4–10
Total	60

Specific Requirements: Psych 267 (12 units), 280 (4 units), 281 (4 units), 282 (4 units), 283T (3–4 units), 284 (4 units), 285 or 286 (4 units).

Specific requirements for advancement to candidacy for either degree include a score above the 60th percentile (E.T.S. norms) on the G.R.E. Advanced Test in Psychology. See the department for details about other requirements.

COURSES

Psychology (Psych)

Note: All psychology courses are open to majors and non-majors.

10. Introduction to Psychology (4). Not open to students with more than six units in psychology. Introduction to psychology as an empirical science; biological and social bases of behavior; scientific principles of psychology in perception, learning, motivation, intelligence and personality. (3 lecture, 2 lab hours)

36. Introduction to Psychophysiology (3). Functioning of the brain in learning, memory, language, motivation, and emotion; human physiological correlates of emotional states, pain, dreaming; control of brain waves and internal states, lateralization of brain functions.

60T. Psychology as a Behavioral Science (1–5; max total 6 if no topic repeated). Problems in approaching man as a social animal; sections in basic or applied processes in personality, interpersonal relations, social environment, and group participation. (Some sections may have lab hours)

61. Personal Adjustment (3). Not open to students with credit in Psych 171. General adjustment behavior with regard to personal, academic, social and mental health problems; application of principles of prevention of emotional problems.

101. Child Psychology (3). Not open to students with credit in Psych 155. The dynamics of infant and child development and adjustment.

102. Adolescent Psychology (3). Adjustment of youth to self and society.

103. Maturity and Old Age (3). Psychological study of maturity and old age; physiological and sociological considerations.

112. History and Systems (4). Prerequisite: 12 units in psychology. Historical, philosophical and scientific background of psychology; current systems and theoretical issues.

120T. Topics in General Psychology (2–5; max total 12 if no topic repeated). Empirical evidence and theoretical issues in learning, motivation, cognition, language, perception, sensory and physiological processes. Sections may be limited to animal or human studies; research and reporting. (Usual sections include lab hours)

121. Learning and Memory (4). Prerequisite: Psych 142. Combined survey of (1) principles from the human and animal laboratory with theoretical interpretations and applications; and

(2) principles of operation of the human memory system with theoretical interpretations. (May include lab hours)

122. Motivation (4). Prerequisite: Psych 142. Initiation and continuation of behavior, acquisition and modification of motives. (May include lab hours)

124. Sensation and Perception (4). Study of sensory and perceptual processes in vision, touch, and hearing. Emphasis is placed on how basic perceptual principles operate in everyday life as well as in lab settings.

125. Physiological Psychology (4). Prerequisite: Psych 142 or permission of instructor. (Psych 36 recommended) Nervous systems structures and physiological processes underlying behavior; anatomical and physiological bases of learning, motivation, emotions, and emotional disorders. (May include lab hours)

126. Psycholinguistics (4). An introduction to theory and research in psycholinguistics: language as related to thought and culture; language acquisition; recognition, production, and comprehension of language; psychological applicability of modern linguistic theory; language as related to social processes.

127. Animal Behavior (4). Causal factors for instigation, acquisition, and maintenance of behavior in animals. Genetic, ethological, ecological, and physiological approaches are considered. (May include lab hours and field trips)

132. Psychology of Sexuality (3). Prerequisite: upper division standing. Psychological aspects of human sexual behavior: influence on personality, various behavioral manifestations and pathologies.

134. Social Psychology (3). Not open to students with credit in Psych 156. Introduction to human interaction in different social environments. Major concepts, theories, and principles of social psychology, relevant findings and their applications to everyday life.

136. Human Learning and Behavior (3). Not open to students with credit in Psych 121. Open to majors and non-majors. Introduction to learning principles as they interact with perception, cognition and motivation. Relevance of these principles in understanding human adaptation to school, home and social environments.

142. Introductory Statistics (4). Recommended: E.L.M. Exam, two years high school algebra, Math 4 or 51. Basic statistical methods for analysis of data; parametric tests of significance; linear regression and correlation; analysis of variance; introduction to non-parametric techniques. (May include lab hours)

143. Intermediate Statistics (4). Prerequisite: Psych 142. Intensive study of analysis of variance with research emphasis. Topics include single and multifactor designs both with and without repeated measures, planned and post hoc comparisons, trend analysis, analysis of covariance, and introduction to university computational facilities. (May include lab hours)

144. Research Designs and Experimental Methods (4). Prerequisite: Psych 142. Basic course in experimental psychology: research design statistics; introduction to scientific procedures and methods in psychology; participation in research and report writing. (May include lab hours)

145. Computer Applications (4). Prerequisite: Psych 142 (may be taken concurrently); IS 50 recommended. A comprehensive survey of computer applications in the behavioral sciences. Major emphases will be placed on theoretical and practical applications (simulations, artificial intelligence, com-



puter control, and processing), SPSS and BMD statistical packages, and other specialized computer program for psychology. (3 lecture, 3 lab hours) (Former Psych 170T section)

149. Psychological Testing (4). Prerequisite: Psych 142. Theories of psychological testing stressing the logic and limits of measurement. Emphasis on technical and individual tests. (3 lecture, 3 lab hours)

150T. Problems in Personality, Developmental and Social Psychology (2–5; max total 12 if no topic repeated). Wholistic levels of analysis in psychology such as personality, social, individual differences, and developmental; conceptual and empirical issues. (Some sections include lab hours)

154. Personality (4). Major contemporary theories of personality; techniques for research in personality. (May include lab hours)

155. Developmental Psychology (4). Empirical and theoretical treatment of human development throughout the life span; genetic, physiological, and socio-cultural influences upon development; physical, emotional, motivational, intellectual-cognitive, and social facets of development. (May include lab hours)

160T. Topics in Clinical Processes (2–5; max total 12 if no topic repeated). Prerequisite: permission of instructor. Examination of individual behavior and small-group processes; include such topics as clinical psychopathology, sensitivity training, and intragroup dynamics, consciousness, dreams and imagination.

165. Interpersonal Dynamics (4). Explores personality, social and situational factors in interpersonal relations, with emphasis on two-person relationships. Uses clinical process approach requiring student's participation in personal and social interaction exercises.

166. Abnormal Psychology (3). Theoretical examination of origins, symptoms, and treatments of personality disturbances.

167. Mental Retardation (3). Psychological aspects of mental retardation; parent-child problems, etiology, nosology, school placement, institutionalization, treatment, and recognition of all types; parent and child counseling.

168. Exceptional Children (3). The atypical child; etiology, symptomatology, nosology, recognition, and recommendations.

169. Psychological Aspects of Physical Disability (3). Psychological theory and research pertaining to physical disability and disabled persons. Attitudes regarding disability and the impact of disability on individual behavior. Primarily deals with blindness, deafness, orthopedic handicap and epilepsy, and secondarily with cardiovascular disease, cancer and diabetes.

170T. Topics in Psychological Applications (2–5; max total 12 if no topic repeated). Applications of psychology; human factors; clinical psychology, learning applications, clinical quantitative, learning, creativity, computer, and other applied topics. (Some sections may include labs)

171. Adjustment and Mental Hygiene (3). Not open to students with credit in the Psych 60T section or Psych 61. Basic processes in adjustment; mental health and social problems; applications of principles of emotional health, prevention of personal problems.

172. Psychology of Women (3) (Same as WS 172). Prerequisite: permission of instructor. Examination of sex differences and sex roles; biological, cognitive, social, and motivation.

173. Environmental Psychology (3–4). Man-environmental relations, psychological and behavioral effects of various ecological conditions including crowding, housing, urbanization, and space.

174. Introduction to Counseling (3) (See A S 174)

175. Family Counseling (3). Psychodynamic treatment of family problems; methods of counseling; psychotherapy.

176. Industrial Psychology (3). Occupational assessment, training procedures, production efficiency, morale determinants, human engineering, decision processes, organization theory.

177. Behavioral and Cognitive Change Techniques (4). Introduction to learning principles and their applications to behavioral and cognitive change. Methods and techniques used for changing self, children, adolescents, and adults. (3 lecture hours, 1 practicum hour arranged).

178. Culture, Social Class and Development (3–4). An introduction to theory and research on race, prejudice, culture, and social class, and the results of these on the intellectual and social development of the child.

179. Supervised Field Experience (4). Open only to psychology majors. Prerequisite: Permission of instructor. Supervised field experience in community settings. Placements may include schools, hospitals, institutions for the aged, community service agencies, and legal settings, depending on student interests. Regular class meetings.

180T. Seminar in Psychology (1–5; max total 12 if no topic repeated). Prerequisite: 9 units in psychology, permission of instructor. Undergraduate seminar in specialized areas, new developments and synthesis of psychological processes, thought, and theory.

190. Independent Study (1–3; max see reference). See *Academic Placement—Independent Study,* pages 96–97.

199. Senior Thesis (2–4). Concentrated empirical or theoretical study of specific topic in psychology; emphasis on independent and creative activity. Copy of thesis required for psychology department file.

GRADUATE COURSES

(See *Course Numbering System,* p. 133.)

200T. Seminar in Developmental Psychology (2–4; max total 15 if no topic repeated). May be repeated with different topics. Prerequisite: permission of instructor. Seminars in development and genetic psychology, special topics for particular age ranges and problem areas. (May include lab hours)

220T. Seminar in Learning and Related Problems (2–4; max total 15 if no topic repeated). Prerequisite: undergraduate core. Advanced current developments in learning, perception, language, memory and cognitive psychology. (May include lab hours)

225T. Seminar in Psychobiological Bases of Behavior (2–4; max total 15 if no topic repeated). Prerequisite: permission of instructor. Recent advances in psychophysiology, physiological psychology, psychopharmacology, behavior genetics, sensory processes and related topics. (May include lab hours)

231. Ethics in Psychology (2) (Same as A Eth 200). Prerequisite: permission of instructor. Study of ethical issues and

problems in psychological research, theory, and practice. Seminar format with student presentations required.

240T. Seminar in Quantitative Methods for Behavioral Research (2–4; max total 15 if no topic repeated). Prerequisite: Psych 142, 143. Methods for analysis of multivariate data; factor analysis; multiple regression; advanced analysis of variance procedures. Computer applications and use of computers for analysis of data. (May include lab hours)

244. Seminar in Research Methods and Theoretical Issues (4). Prerequisite: Psych 143 or permission of instructor. Examination of recent theories, advanced research methods and statistical techniques in behavioral research. (May include lab hours)

250T. Seminar in Personality and Related Areas (2–4; max total 12 if no topic repeated). Prerequisite: undergraduate core in psychology. In-depth examination of the recent developments in personality and clinical psychology. (May include lab hours)

255T. Seminar in Social Psychology and Related Areas (2–4; max total 15 if no topic repeated). Prerequisite: permission of instructor. Theories and research about individual functioning in society; also includes such topics as environment psychology and the psychology of women. (May include lab hours)

267. Field Work in Clinical Methods (3–18; max total 18). Prerequisite: Psych 281, 282, 284; 285 or 286, and permission of instructor. Supervised field work in clinical assessment, intervention and case study techniques. Field placements will include hospitals, schools and clinics, depending on student's needs. Regular conferences and critiques with supervising faculty.

270T. Seminar in Applied Behavioral Science (1–6; max total 15 if no topic repeated). Prerequisite: permission of instructor. Topics in applied behavioral research; conflict management, group dynamics, organization development, sensitivity training, and related processes. For students in the fields of business, communications, education, psychology, and the social sciences. (May include lab hours)

275T. Seminar in Community Psychology and Related Areas (2–4; max total 15 if no topic repeated). Prerequisite: permission of instructor and graduate standing. May be repeated with different topics. Survey course of basic concepts in Community Psychology including levels of prevention, crisis work, consultation, program evaluation, community influence and organization and new approaches to mental health problems. Open to graduate level psychology and non-psychology majors with an interest in mental health programs.

277A. Seminar in School Psychology (2). Prerequisite: graduate standing. State education codes and court decisions related to school psychology; community resources; and observation of special educational programs.

277B. Seminar in School Psychology (2). Prerequisite: admission to the School Psychologist credential program, Psych 277A, Psych 284, and Psych 285 (may be taken concurrently). Professional issues, ethics and current practices; in-service training theory and practicum; consultation skills and individualized educational planning.

280. Seminar in Clinical Psychology (4). Prerequisite: a course in Abnormal or Clinical Psychology and permission of instructor. Historical backgrounds and current issues and developments in: training and professional preparation; issues of scientific and professional concerns in clinical assessment and intervention; psychotherapies; clinical research; other relevant topics.

281. Interviewing and Individual Psychotherapy (4). Prerequisite: a course in Abnormal or Clinical Psychology and permission of instructor. Basic interviewing skills including intake and interviews for diagnostic and therapeutic purposes. Review of current models and theories of psychotherapy. Development of applications using video taping and supervised practicums.

282. Cognitive and Behavior Therapy (4). Prerequisite: a course in Learning or Behavior Modification and permission of instructor. Historical and current trends, research issues and designs. Application of the behavior approach in a variety of settings. Includes supervised practicum experience.

283T. Topics in Clinical Intervention (3–4; max total 12 if no topic repeated). Prerequisite: permission of instructor. Advanced study in specialized areas in psychotherapy. May include topics such as clinical hypnosis, health psychology, family therapy, group therapy, etc. Practicum training usually included. Topics may not be repeated.

284. Assessment of Intellectual Abilities (4). Prerequisites: a course in Psychological Testing and permission of instructor. Review of theories of intelligence. Administration, scoring, and interpretation of individual and group measures of intelligence and creativity for children and adults. Supervised practicum includes case studies of learning problems and the role of intelligence measures in assessment batteries.

285. Assessment of Learning and Developmental Problems (4). Prerequisite: Psych 284. Administration, scoring and interpreting measures of learning disorders, physical-motor development, psychomotor abilities, social maturity, tests, school achievement, and vocational selection. Supervised practicum emphasizing proscriptive and rehabilitative recommendations in case studies.

286. Assessment of Personality and Neuropsychological Functioning (4). Prerequisite: Psych 284. Review of personality theory and psychophysiology. Administration, scoring, and interpreting measures of child and adult group, and individual objective personality tests, children's scales, neuropsychological tests and batteries. Supervised practicum.

290. Independent Study (1–3; max see reference). See *Academic Placement—Independent Study,* pages 96–97.

299. Thesis (3–6; max total 6). Prerequisite: See *Criteria for Thesis and Project,* pages 467–468. Preparation, completion, and submission of an acceptable thesis for the master's degree in compliance with Psychology Department regulations.

IN-SERVICE COURSES

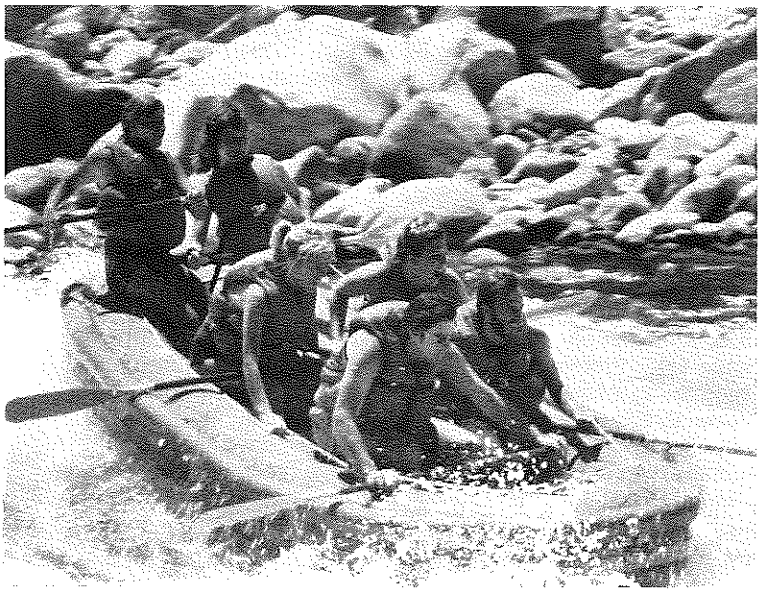
See *Course Numbering System,* page 133.

302. Selected Topics in Psychology (1–3; max total 9 if no topic repeated).

Recreation Administration

School of Health and Social Work
Recreation Administration Program
Audrey M. Fagnani, Coordinator
San Ramon 2, Room 23
(209) 294-2367

B.S. in Recreation Administration
Options in:
Public and Private Recreation
Therapeutic Recreation
Emphasis in Commercial Recreation
Minor in Recreation Administration



The program offers a Bachelor of Science degree with a major in recreation administration for individuals who are committed to the recreation and leisure services profession. While the General Education program provides students with a foundation in the liberal arts and sciences, the major in recreation administration allows students to acquire knowledge, understanding, ability, and skill necessary to successfully function in professional positions related to the major.

The faculty is committed to providing a quality professional preparation program in recreation and leisure services, founded on a competency based curriculum. Our graduates will have acquired specific competencies as identified by practitioners, faculty, and the National Recreation and Park Association. These competencies are related to leadership, program planning, recreation and leisure oriented activities, budgeting, evaluation of programs and personnel, history, professional ethics, philosophy, research techniques, public relations, communication skills, organizational systems, laws and legislation, facility design, administration, and therapeutic techniques.

The program is accredited by the Council on Accreditation of the National Recreation and Park Association. The program offers a B.S. degree and a minor in recreation administration. Preparation is provided within the major for two distinct degree options: public and private recreation, and therapeutic recreation.

Within the public and private recreation option, students develop specific competencies related to the subject matter of courses in camp management, special populations, commercial recreation, leisure: prospects for profit, design and operation of recreation facilities, outdoor recreation, volunteer management, and internship. Within this option, a student may elect to pursue an emphasis in commercial recreation. This emphasis allows students to develop specific competencies in the areas of commercial recreation, accounting, finance, business management, marketing, and decision sciences. Students in the therapeutic recreation option acquire specific competencies related to the subject matter of courses in physiology, foundations of therapeutic recreation service, methods in therapeutic recreation, abnormal psychology, individual and small group counseling, and internship.

All students in the recreation administration major complete a core of courses. These courses are designed to assist students in acquiring competencies related to the content of courses in principles of recreation, leadership and group dynamics, legal and financial aspects of recreation service, community recreation, program planning, organization and administration of leisure services, and trends, current research and professionalism.

Under the guidance of a practitioner, students in Recreation Administration earn more than one thousand hours of paid or voluntary hands-on experience in a variety of recreation, clinical, or leisure services agencies. In addition, they serve full-time internships with private or commercial recreation enterprises, public recreation agencies, non-profit organizations, park oriented agencies, clinical organizations, and others.

Career Opportunities

The recreation and leisure business comprises the second largest industry in the United States. Fresno graduates who are highly motivated, assertive, and have designed their academic and work experience to meet the needs of the marketplace have been very successful in securing professional positions.

The undergraduate curriculum is designed to prepare students for possible careers as: hospital recreation therapists; nursing home activity coordinators; recreation therapists in centers for the disabled; recreation directors in detention centers; city recreation leader, supervisor, general supervisor, or specialty supervisor; city and county recreation and park manager; state recreation specialist; state recreation consultant; manager or assistant manager of a resort area; manager or assistant manager of a membership club (racket, swim, golf, or fitness); hotel social director; church recreation or youth director; industrial recreation director; school recreation director; program or field director in youth agencies; camp director or assistant director; armed forces recreation specialist; and others.

Faculty

Audrey M. Fagnani, *Coordinator*

Michael B. Hoffman

The Bachelor of Science in Recreation Administration

Units

Course Requirements for the Major: 62–64

The following courses are required of all candidates for this degree. Additional required courses dependent upon the selected option are outlined following the core program requirements.

CORE Program

Rec 55, 73, 73L, 151, 168, 179, 180 ..... (18)

The General Option (Private-Public) ..... (44)

Rec 95, 160, 173, 173L, 177, 185, 186, 188 ..... (26)

Recreation electives. Elect from: Rec 80, 159, 169, 170 ..... (6)

Select 12 units from: Acct 3; Art 60, 70; BA 18; Crim 120, 121, 133; Drama 136, 137, 138; H S 113; I Ed 60, 133, 162; HRM 150; Jour 113; Mgt 104; Music 9, 36–136, 39–139; IS 105W; P E 108, 152, P E AC 111A, 112A; OH 1, 2, 3; Pl Si 181; Psych 101; Rec 80, 159, 169, 170; T Ed 135; Spch 167; S Wrk 124 ..... (12)

Students in the general option interested in pursuing careers in commercial recreation are advised to complete the following courses: Rec 169, 170, 177, 188 and the general business minor.

The Therapeutic Option ..... (46)

Phy 33 ..... (5)

Rec 165, 166, 174, 174L, 187 ..... (23)

Psych 166 and AS 174 ..... (6)

Recreation elective. Elect from: Rec 80, 159, 160 ..... (3)

Select 9 units from: Art 20, 30, 40, 60, 70; A S 170; Crim 120; CSH 117; Drama 136, 137; H S 110, 113, 115; IS 105W; Music 9; P E 146; PE AC 101, 111A, 112A; Psych 101, 102, 103, 167, 169; Rec 80, 150, 159, 160; Soc 143 ..... (9)

General Education Requirements 54

Electives and Remaining Degree Requirements *10–21

Total 128

* This figure takes into consideration that General Option majors may also apply Mus 9, Rec 80, and Art 60 or 70 to General Education—BREADTH, Divisions 5 and 10 requirements. Therapeutic Option majors may also apply Art 20, 30, 40, 60, 70 to General Education—BREADTH, Division 10 requirements and Music 9 in Division 5. See the recreation administration department chair or faculty adviser for details.

Notes:

1. *CR/NC* grading is not permitted in the recreation administration major with the exception of Rec 185, 186, 187, 188.
2. General Education and elective units may be used toward a minor (see departmental minor). Consult the appropriate department chair, program coordinator, or faculty adviser for further information.

The Recreation Administration Minor ..... (24–26)

The minor in recreation administration for the Bachelor of Science degree consists of 24–26 units of which 6 must be upper division and permits, with guidance, a selection of courses to satisfy special interests and needs. The recreation administration minor offers training in activities suitable for use in recreation programs of communities, schools, youth agencies, and clubs.

Rec 55, 73, 73L, 168, 173 and 173L or 174 and 174L ..... (15)

Recommended electives: P E 108; Art 70; Music 9; Drama 137; Rec 80, 95, 151, 159, 160, 165, 166, 169, 170, 177 ..... (9–11)

> "I thrive on competition. It pushes me to be the best I can be. If someone tells me that my goals are impossible to obtain, it just makes me want to work harder!"
>
> — *Sophomore, Music*

COURSES

Recreation (Rec)

55. Principles of Recreation (3). Philosophical, theoretical, and historical basis for recreation service in contemporary American society; development of a personal philosophy of recreation through education information, and stimulation.

73. Leadership in Recreation Service (2). Prerequisite: Rec 55. Theoretical and philosophical basis for leadership. Social dynamics of leading recreative activities.

73L. Leadership in Recreation Service Laboratory (2). Concurrent with Rec 73. Practical leadership experience in supervised recreation settings.

80. Outdoor Recreation (3). History, development, and trends of outdoor recreation resources, agencies, and activities. Integration of the individual with the outdoor recreation experience. Practical experience in camping, wilderness travel, water based activities, and others. (Students may incur minimal expenses related to field trips.)

95. Recreation Services Integrating Special Populations (3). Prerequisite: Rec 55. Introduction to the recreation and leisure needs of special populations, and in the integration process in a community recreation setting. (Field trips may be required)

150. Perceptual Motor Development (3) (See P E 150)

151. Community Recreation (3). Prerequisite: Rec 55. Analysis of community agencies offering recreation services. Emphasis on assessing community recreation and leisure preferences. (Field trips may be required) (Former Rec 171)

159. Volunteer Coordination (3). Analysis of the role of volunteer program coordinators, basic skills of organizing and administering a volunteer program, methods of developing and channeling voluntary effort and identifying resources.

160. Camp Management (3). Prerequisite: Rec 73, 73L. Organization, supervision, and management of various types of camps. (Course fee for field trips; approximately $25)

165. Foundations of Therapeutic Recreation Service (3). Prerequisite: Rec 55, Phy 33. Historical review of therapeutic recreation; identification of special populations including the study of etiology, characteristics, terminology, and support systems; field trips to settings serving the mentally and physically handicapped, the developmentally disabled, the aged, the convalescent and the socially deviant.

166. Methods in Therapeutic Recreation (3). Prerequisite: Rec 165. Analysis and application of therapeutic recreation techniques, adaptive games, and activities for atypical populations; appliances, testing, charting, narrative writing, and leisure counseling.

168. Legal and Financial Aspects of Recreation Service (3). Prerequisite: Rec 151. Legal and financial aspects of recreation service; budget analysis, legal terminology, and their role in recreation administration. (Field trips may be required)

169. Foundations of Commercial Recreation (3). Prerequisite: Rec 55. Historical and philosophical foundations of the commercial recreation field. Identification of providers of commercial recreation goods and services. Analysis of current trends in leisure enterprises. (Field trips may be required)

170. Leisure: Prospects for Profit (3). Prerequisite: Rec 169. The establishment, financing and marketing of commercial recreation enterprises. Conceptual, theoretical, and practical concepts of commercial leisure service management explored through the development of an investment memorandum. (Field trips may be required)

173. Programs of Recreation (3). Not open to students with credit in Rec 174. Prerequisite: Rec 168. Principles and procedures of planning programs for various age groups and settings.

173L. Programs of Recreation Laboratory (2). Not open to students with credit in Rec 174L. Rec 173 concurrently. Practical program experience in supervised community based recreation settings.

174. Programs of Therapeutic Recreation (3). Not open to students with credit in Rec 173. Prerequisites: Rec 166, 168. Principles and procedures of planning programs for various disability groups and treatment settings.

174L. Programs of Therapeutic Recreation Laboratory (2). Not open to students with credit in Rec 173L. Rec 174 concurrently. Practical program experience in supervised community based therapeutic recreation settings.

177. Analysis of Leisure and Park Facilities (3). Prerequisite: Rec 55. Planning, design, maintenance and operation of recreation facilities. Facility analysis for general public and special population use. Group or individual projects in the area of special interest: public, private, commercial, or community therapeutic facilities. (Field trips may be required)

179. Organization and Administration of Leisure Services (3). Prerequisite: Rec 168 and may only be taken the semester prior to internship. Preparation for the role of administrator of recreation and leisure services; administrative practices, the provision of sites and facilities, and management of personnel.

180. Senior Seminar (2). May only be taken the semester prior to internship. Trends and issues, current research, professionalism, and internship search procedures in Recreation Administration.

185. Internship in Private Recreation (12). Prerequisite: completion of all major, general education and university graduation requirements. Directed supervisory experience with a private recreation agency. Individual development in administration, supervision, program planning, and community and public relations; supervised, directed full-time experience in the field of private recreation, reports and conferences required. (It is recommended before internship registration that a student have the equivalent of 1,000 hours of recreation related experience either paid or volunteer, in the field of recreation service.)

186. Internship in Public Recreation (12). Prerequisite: completion of all major, general education, and university graduation requirements. Directed supervisory experience with a public recreation agency. Individual development in administration, supervision, program planning, community and public relations; supervised, directed full-time experience in the field of public recreation; reports and conferences required. (It is recommended before internship registration that a student have the equivalent of 1,000 hours of recreation related experience either paid or volunteer, in the field of recreation service.)

187. Internship in Therapeutic Recreation (12). Prerequisite: completion of all major, general education, and university graduation requirements. Supervised, directed full-time experience in the field of therapeutic recreation; reports and conferences required. (It is recommended before internship registration that a student have the equivalent of 1,000 hours of recreation related experience, either paid or volunteer in the field of recreation service.)

188. Internship in Commercial Recreation (12). Prerequisite: completion of all major, general education, and university graduation requirements. Supervised, directed full-time experience in the field of commercial recreation; reports and conferences required. (It is recommended before internship registration that a student have the equivalent of 1,000 hours of recreation related experience, either paid or volunteer in the field of recreation service.)

190. Independent Study (1–3; max see reference). See *Academic Placement—Independent Study,* pages 96–97.

192T. Topics in Recreation Administration (1–3; max total 6 if no topic repeated). Prerequisite: permission of instructor. Investigation of selected topics related to: administration, supervision, and leadership in public recreation; therapeutic recreation; camping, and, workshops related to skills in leisure oriented activities.

IN-SERVICE COURSES

(See *Course Numbering System,* p. 133.)

313. Recreation Activities (1–3; max total 6, may be repeated for credit).

330T. Topics in Recreation (1–3; max total 6, may be repeated for credit).

Rehabilitation Counseling

School of Health and Social Work
Rehabilitation Counseling Program
E. W. (Bud) Stude, Coordinator
Lab School, Room 185
(209) 294-2105

M.S. in Rehabilitation Counseling

Rehabilitation Counseling is a rapidly growing profession that helps persons with disabilities that result in vocational handicaps achieve more productive and useful lives. Working with those who are physically, mentally, or emotionally disabled, the rehabilitation counselor helps each to appraise his or her own needs and then reach his or her optimal level of occupational, personal, and social adjustment.

The graduate program in rehabilitation counseling, accredited by the Council on Rehabilitation Education, focuses on the preparation of professional rehabilitation counselors for employment in public and private non-profit or profit vocational rehabilitation programs. Emphasis is placed upon professional education for developing the skills and knowledge necessary for effective rehabilitation counseling of individuals with vocational handicaps. The variety of activities performed by rehabilitation counselors necessitates a program highly diversified in character and interdisciplinary in nature.

The objective of the graduate program in rehabilitation counseling is to prepare the student to enter a life long profession, not just a specific job or position. Consequently, the rehabilitation counseling curriculum is concerned with: teaching methods and patterns of learning, the development of professional attitudes, and a professional identification; and the adoption of a critical, questioning, and exploratory attitude. The ultimate objective of graduate preparation in rehabilitation counseling is to assure that clients of public and private rehabilitation agencies receive the high quality of counseling services to which they are entitled.

Faculty and Facilities

To assure that these objectives are achieved, the program includes:

1. Faculty who have practiced as rehabilitation counselors, are identified professionally with the field of rehabilitation counseling, are Certified Rehabilitation Counselors (C.R.C.), and hold doctoral degrees in rehabilitation counselor education;
2. A combination of practical field and classroom experiences including a full-time *Internship* during the last semester of the program which gives students an opportunity for application of theory to the practice of rehabilitation counseling in a rehabilitation setting;
3. Flexibility in curriculum design to meet the needs of students enrolled in the program;
4. The opportunity for interdisciplinary education;
5. Student eligibility to take the exam to become a Certified Rehabilitation Counselor (C.R.C.) during the last semester; and
6. Readiness to assume a rehabilitation counseling position in a variety of work settings upon completion of degree requirements.

Career Opportunities

Rehabilitation counselors find employment in a variety of work settings including: state/federal vocational rehabilitation programs, sheltered workshops, medical rehabilitation centers, private (for profit) practice, drug and alcohol abuse rehabilitation programs, county and private mental health programs, community college and university disabled student programs, industry alcohol/industrial accident/employee assistance programs and insurance company rehabilitation programs.



At the present time, the trend in job opportunities is away from state/federal government agencies and toward private practice. This is primarily due to reduced government budgets and passage of worker's compensation laws in many states mandating rehabilitation benefits for industrially injured workers. In addition, there is a trend toward employers preferring master's degree graduates who are Certified Rehabilitation Counselors in both public and private work settings.

Follow-up studies of CSU, Fresno rehabilitation counseling program graduates indicate that 83–90 percent have found employment as rehabilitation counselors in one of the work settings listed above. The starting salary range is from $14,000 to $25,000 per year with an average starting salary of $18,000 per year.

Although the CSU, Fresno rehabilitation counseling program offers a terminal master's degree (one that prepares the student to work in the field rather than going on for an advanced degree), 16 universities throughout the United States offer doctorates in rehabilitation counseling and accept graduates from master's degree programs such as the one at CSU, Fresno.

Faculty

E. W. (Bud) Stude, *Program Coordinator and Adviser*

Master of Science Degree Requirements

The Master of Science degree in rehabilitation counseling assumes undergraduate preparation in psychology or counseling or a closely related area. A baccalaureate degree in an unrelated area is acceptable provided that the student has a working knowledge of the behavioral sciences. A knowledge of elementary statistics is also expected. Admission to classified standing is dependent upon an evaluation of the student's background by the rehabilitation counseling faculty.

(See also *Admission to Graduate Standing, Advancement to Candidacy* and *Program Requirements,* pp. 464–468.)

The degree requires 60 units of credit and is designed to cover two years' full-time course work, including a full semester of internship. A thesis is not required; however, the student must demonstrate proficiency by the satisfactory completion of a comprehensive examination in addition to fulfillment of all other specified degree requirements.

Under the direction of the graduate adviser, each student prepares and submits an individually designed program within the following framework:

	Units
Required Core Courses: R C 201, 203, 211, 212, 221, 251T, 296	31
Courses in supporting curriculum (at least 18 units in 200 series courses)	
Counseling Courses: A S 224, 231, 228	
Testing Course: A S 227	
Behavioral Dynamics Courses: Psych 154 or 250T and 166	19
Electives: As approved by adviser	10
Total	60

GRADUATE COURSES

(See *Course Numbering System,* p. 133.)

Rehabilitation Counseling (R C)

201. Seminar in Rehabilitation Counseling (3). Seminar in the fundamental concepts of rehabilitation counseling and vocational rehabilitation including examination and analysis of historical, philosophical, organizational, and functional principles. Community rehabilitation agency or orientation visits.

203. Job Placement in the Rehabilitation Process (3). An experiential seminar concerning the attitudes, skills, and abilities necessary to provide effective vocational and job placement services to the disabled, including vocational diagnosis, job development, placement techniques, job analysis, affirmative action, and appropriate legislation. (2 seminar, 3 lab hours)

211. Medical Aspects of Disability (3). Seminar in the treatment of disabling conditions including etiology, functional limitations, and vocational implications. Student presentation of case studies.

212. Psychological and Social Aspects of Disability (3). Seminar in psychological and sociological effects of physical and mental disability and the dynamics of adjusting to disabling conditions. Student presentation of case studies.

221. Case Practices in Rehabilitation Counseling (4). Prerequisites: R C 201, 211. Seminar in methods for facilitating client rehabilitation including: interviewing, case recording, plan development, ethical practices; field placement in a community rehabilitation agency; and student case presentations. (2 class, 6 lab hours)

251T. Selected Topics in Rehabilitation (3; max total 12). Prerequisites: R C 201, 203, 211, 212, 221. Topics seminar rotated each semester to include subjects such as principles and techniques of supervision and administration, rehabilitation program evaluation, rehabilitation research, current professional issues in rehabilitation counseling, work evaluation procedures, rehabilitation of the severely disabled, and the industrially injured worker.

290. Independent Study (1–3; max see reference). See *Academic Placement—Independent Study,* pages 96–97.

296. Internship in Rehabilitation Counseling (12). Prerequisites: R C 201, 203, 211, 212, 221, 251T, permission of instructor. Full-time, supervised field placement in one of a variety of settings including case responsibilities.

299. Thesis (2–6; max total 6). Prerequisite: See *Criteria for Thesis and Project,* pages 467–468. Preparation, completion, and submission of an acceptable thesis for the master's degree.

IN-SERVICE COURSES

(See *Course Numbering System,* p. 133.)

303. Human Interaction in Rehabilitation (1–3).

333T. Topics in Rehabilitation (1–3).

Requirements for majors in the various departments are listed in the respective program descriptions. For the social science major, the following requirements must be met.

Bachelor of Arts Degree Requirements

Social Science Major

The social science major consists of a minimum of 39 units of approved upper-division courses selected in such a way as to insure a breadth of exposure to the social sciences. Students electing the major must satisfy all of the requirements listed below.

Preparatory Work

Since the major is comprised of upper-division courses, some of which, in addition, have prerequisites, the student must have some exposure to introductory work in the social sciences. And, while no specific number of units are mandated, it is assumed that such preparation will encompass more than the minimal exposure guaranteed by the General Education requirements.

Courses appropriate for this purpose include, but are not limited to: Anth 2, Econ 1A, 1B, Eth S 1, Geog 2, Hist 1, 2, Pl Si 1, and Soc 1.

	Units
1. Major Requirements: Approved upper-division electives (see list below and note #2)	39
2. Additional Requirement: Statistics: Select from Econ 120, Geog 110, Math 11, Pl Si 90, Psych 142, Soc 25 or Speech 106	3–4
3. General Education Requirements	54
4. Electives and remaining degree requirements (See *Degree Requirements,* pp. 98–101); may include a dual major or minor:	30–34*
Total	124

* This figure takes into consideration that Math 11, Psych. 142 or Soc. 25 may also be applied to fulfill the General Education—CORE, Math 4 requirement if Algebra II was completed in high school (see *General Education,* pp. 104–111). Consult Dr. Jack Christensen, the social science major adviser in the history department, for additional details.

Notes:

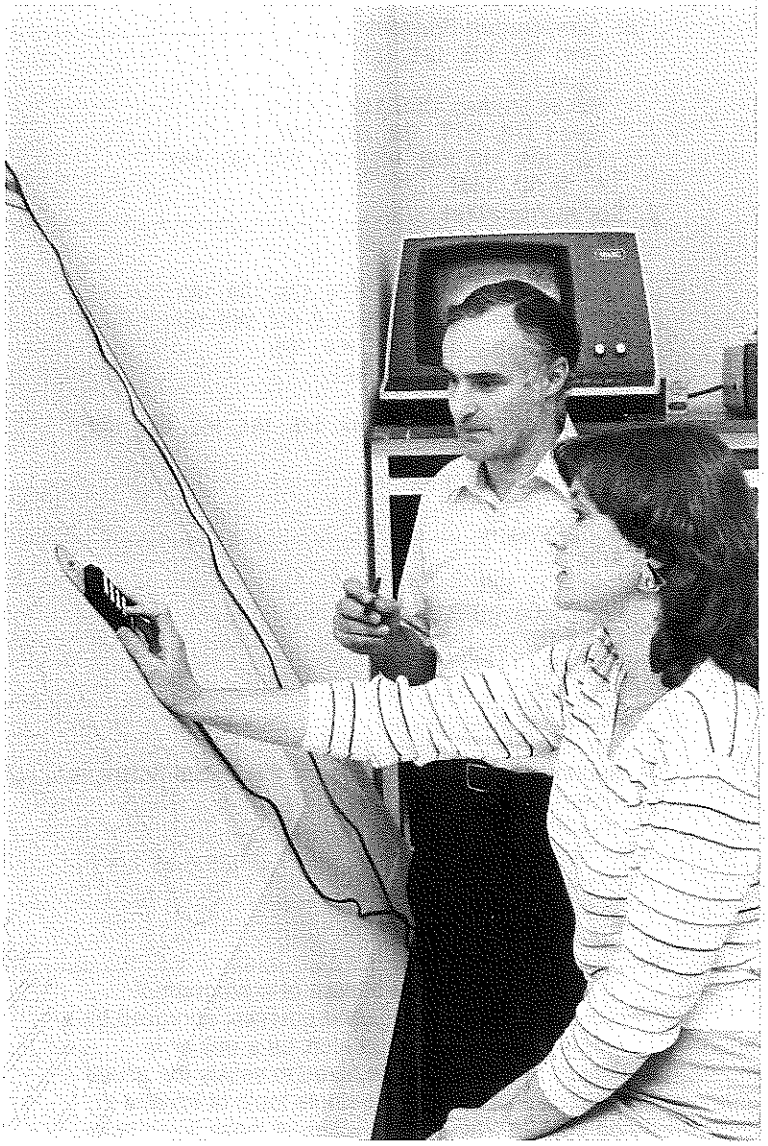
1. *CR/NC* grading is not permitted in the social science major.
2. Social science major courses may *not* be used to fulfill General Education—BREADTH or CAPSTONE requirements.
3. General Education and elective units may be used toward a dual major or minor (see *Dual Major,* p. 98 or departmental minor), or a secondary teaching credential (see *Single Subject Credential Program,* pages 275–276, and Dr. Jack Christensen, history department). Consult the appropriate department chair, program coordinator, or faculty adviser for further information.

Approved Upper-Division Elective Courses

In satisfying the unit requirements listed below, students shall arrange their programs to insure completion of a minimum of 6 units in at least 4 but no more than 6 disciplines, and no more than 18 units in any one. These disciplines include anthropology, criminology, economics, ethnic studies (Black studies, Chicano-Latino studies, etc.), geography, history, political science, psychology, sociology, and city and regional planning.

Social Science Major

School of Social Sciences
Peter J. Klassen, Dean
San Ramon 4, Room 250
(209) 294-3013



Units

I. The Record of Human Societies
- *A. Western Societies* 6
  - Econ 110, 111
  - Geog 161, 166T, 170T, 174T
  - Hist 111, 112, 120, 121, 122, 125, 126, 130, 132, 133, 171, 172, 173, 174A, 174B, 178, 186
  - Pl Si 142T, 143T, 146T
- *B. Non-Western Societies* 6
  - Anth 121, 123, 124, 131
  - Econ 114
  - Ethnic Studies: CLS 112
  - Geog 176, 177T, 179, 180, 181T
  - Hist 106, 110, 142, 143, 144, 157, 192, 194
  - Pl Si 141, 144T

II. Social Processes 6
- Anth 142, 150W
- Crim 109, 140, 141, 153
- Econ 117, 131, 150, 161, 174, 178, 179, 180
- Ethnic Studies: Bl S 144; CLS 152, WS 152
- Geog 127, 150, 160, 162, 164, 165
- Pl Si 120, 150, 151, 170, 181
- Psych 134, 154, 166, 173
- Soc 111, 122, 131, 143, 144, 145, 151, 157, 161, 162, 163, 164, 165
- Spch 108, 160, 163
- C R P 100

III. Social Theory 6
- Anth 104
- Crim 100, 120
- Econ 100A, 100B, 101, 108
- Geog 160
- Hist 135
- Pl Si 110, 111, 114, 116, 140
- Psych 112
- Soc 152, 153

IV. Methods and/or Techniques in the Social Sciences 3
- Crim 170
- Hist 100W
- Pl Si 115
- Psych 144
- Soc 175
- Spch 166

V. Special Topic 12

The special topic shall consist of a program of upper-division social science courses, approved by a social sciences adviser, which, as a unit or in conjunction with courses taken to satisfy the above requirements, explores a single topic of interest to the student. With the exception of those listed below, all upper-division courses offered in anthropology, economics, ethnic studies (Black studies, Chicano-Latino studies, etc.), geography, history, political science, psychology, sociology, speech communication and city and regional planning may be employed to satisfy this requirement.

Courses that may not be applied to the social science major:

- Anth 50, 101, 161, 162, 163, 164, 169T, 181, 186, 190, 192, 199
- Econ 120, 185, 190
- Ethnic Studies: As Am 150, 190; Bl S 125, 148, 190; CLS 100, 101, 106A, 106B, 108, 190; NAS 190
- Geog 100, 104, 105, 106, 111, 112, 114, 117, 118, 120, 121, 190, 192
- Hist 190
- Pl Si 190, 191
- Psych 101, 102, 103, 120T, 124, 125, 132, 142, 143, 149, 150T, 155, 160T, 167, 168, 170T, 171, 174, 175, 176, 180T, 190, 199
- Soc 190
- Spch 103, 114, 115, 140, 142, 165, 189, 190
- C R P 190, 191

Social Science Credential Requirements

The Single Subject Waiver Program consists of the following:

I. *Core* *Units*
- A. Lower-division survey courses 21
- B. Upper-division work in one teaching area 18

II. *Breadth*
- A. Lower-division survey courses 9
- B. Upper-division work in a second teaching area 9

A detailed description of the program outlined above is available from the social science credential adviser (Dr. Jack Christensen—Department of History). Credential candidates should consult the adviser as early in their programs as possible. Students should be aware that without advisement successful completion of this program is impossible.

Social Work Education

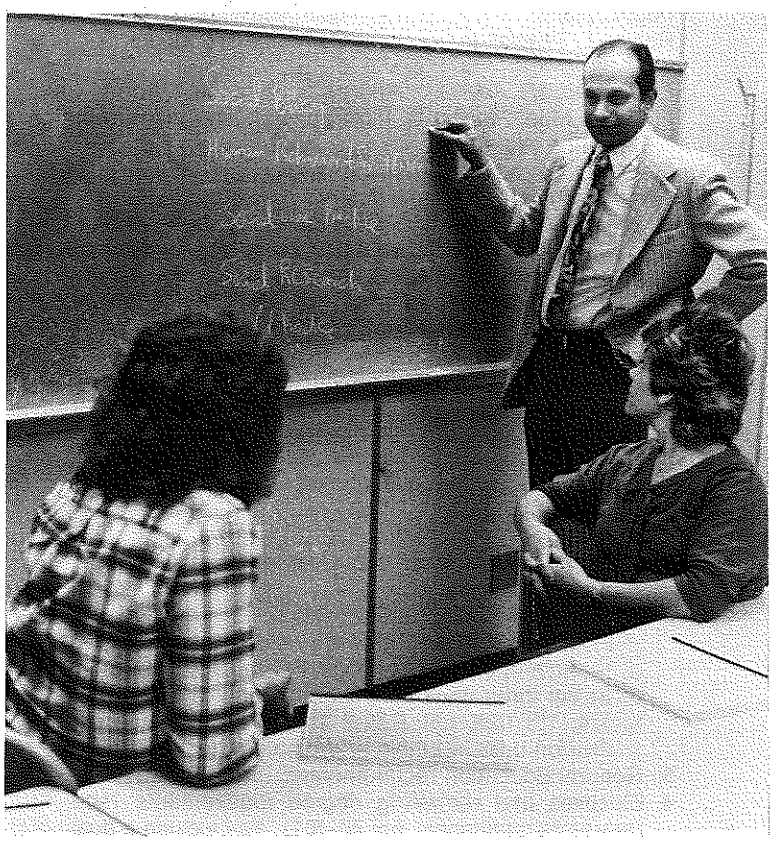
School of Health and Social Work
Department of Social Work Education
Wynn C. Tabbert, Chair
San Ramon 2, Room 24
(209) 294-3992

B.A. in Social Work
M.S.W., Master of Social Work

The Bachelor of Arts degree program prepares students for beginning professional practice as well as for consideration for admission to master's degree programs. The Master of Social Work degree prepares social workers for advanced clinical social work practice and advanced generalist practice. Both the B.A. and M.S.W. graduates find employment in a host of public and private social agencies such as: public social services, mental health programs, family services, correctional programs, medical and hospital programs, child welfare services, and alcohol and drug abuse programs. Both the B.A. and M.S.W. programs are accredited by the Council on Social Work Education.

Faculty and Facilities

The faculty of the Department of Social Work Education represent a wide variety of theoretical orientations and approaches to professional practice. All have substantive practice experience and many have research interests. Several public and private social agencies in the San Joaquin Valley have made their facilities and staff available for the department's program. A representative sample of these agencies include: Atascadero State Hospital; Big Brothers/Big Sisters of Fresno; California State Department of Corrections, Human Resources Development, Social Services, Youth Authority; California State University, Fresno; Fresno Community Hospital; Fresno County: Mental Health Department, Probation Department, Department of Social Services, Valley Medical Center; Infant of Prague; Kings View Mental Health Services; Madera County Welfare Department; Marjorie Mason Center; Merced County Department of Mental Health; Merced County Welfare Department; Planned Parenthood of Fresno; Oncology Counseling Center; St. Agnes Hospital; Valley Children's Hospital; Veterans Administration Hospital; Vietnam Outreach Center; Area Agency on Aging; Gerontology programs; Rural Social Work programs; Tulare County: Executive Office, Mental Health, Welfare Department; Stanislaus County Mental Health Department; Central Valley Regional Center.



Career Opportunities

Graduates from the B.A. program typically find employment in county departments of social services; private agencies offering individual, group, or community services; poverty and mental health programs; social rehabilitation; human resources development; and services to the handicapped, aged and special population groups. The M.S.W. graduates can expect to hold responsible clinical and administrative positions in a broad spectrum of human service organizations.

The U.S. Department of Labor *Occupational Outlook Handbook* 1984–85 projects 20–29 percent growth in social work job opportunities through the mid 1990's. Special mention must be made regarding increased job opportunities in child welfare, mental health, and substance abuse programs, and services for the elderly.

Faculty

Wynn C. Tabbert, *Chair*

Cora M. Adams
Andrew J. Alvarado
Clifford V. Bonham
Thomas M. Brigham
Frederick W. Childers
Benjamin Cuellar
David L. Ellis
Richard D. Ford
Paul L. Haire
Robert L. Hatmaker
Sudarshan Kapoor
Robert K. McMain
Nobuo Mori
Patricia R. Pickford
Erving C. Ruhl
Jon D. Shaver
Nancy J. Van Den Bergh
Barbara K. Varley
Ganesha Visweswaran
Catherine Woodcock

Undergraduate Advisers: Andrew J. Alvarado, David L. Ellis, Nobuo Mori, Patricia R. Pickford, Ganesha Visweswaran, Catherine Woodcock
Graduate Advisers: All full-time faculty
Field Coordinator: Cora M. Adams
Director of Graduate Admission: Ganesha Visweswaran

Bachelor of Arts Degree Requirements

	Units
1. Social Work major requirements: S Wrk 20, 123, 130, 135, 136, 140, 141, 175, 176, 181 (10 units), 185	42
2. Additional major requirements: (May also count toward General Education requirements)	18
a. Econ. 1A (3)	
b. Biology 20, 105, 107, or 122 (3)	
c. Approved upper-division electives (see list in department office) (9)	
1) Chicano-Latino Studies (3)	
2) Six units from two of the following three areas: Anthropology, Sociology, Psychology (6)	
d. Select three units from the following: S Wrk 122T, 124, 125, 128, 129, C R P 100, or approved upper-division units in Ethnic or Women's Studies (3)	
3. General Education requirements:	54
4. Electives and remaining degree requirements (see Degree Requirements, pp. 98–101); may include a dual major or minor:	*10–28
Total	124

* *This figure takes into consideration that, with proper selection, all 18 units of additional requirements for the social work major may also be applied toward fulfilling General Education requirements (see General Education, pp. 104–111). Consult the social work department chair or your faculty adviser for details.*

Notes:

1. Approved course listings are available in the department office. Consult your faculty adviser for assistance in selecting a pattern of courses to fit your particular interests and goals.
2. *CR/NC* grading is not permitted in the social work major with the exception of S Wrk 181.
3. General Education, additional requirements, and elective units may be used toward a dual major or minor (see *Dual Major,* p. 98, or departmental minor). Consult the appropriate department chair, program coordinator, or faculty adviser for further information.
4. Senior year internships are arranged by the field coordinator. Applications must be filed, interviews with the field coordinator, and agency selection interviews completed the semester *prior* to entering the field.
5. Students who have prior knowledge of Spanish but lack fluency are encouraged to take additional course work in Spanish.
6. A booklet describing the program more fully is available in the department office.

Master of Social Work Degree Requirements

In the 60-unit program all students are required to take S Wrk 200, 203, 210, 211, 212, 292A, 292B, 250 and 251, in addition to completing an individual thesis (299) or project (298). In consultation with their faculty advisers, students also enroll in graduate social work seminars (16–17 units) related to their professional career goals, e.g., clinical practice, or generalist practice. In addition, students may elect to take an independent study (290), usually for two units, and 5–7 units of topics electives.*

COURSES

Social Work (S Wrk)

001R. College Planning Skills (2). Seminar in skills, techniques, and strategies needed in order to make a successful academic and personal adjustment to college life. *CR/NC* grading only; not applicable to baccalaureate degree requirements.

20. Introduction to Social Work (3). Social, economic, political, historical, and philosophic components in development of social welfare and social work in western society.

122T. Topics in Social Work (1–3; max total 15). Topics in fields of social work practice, basic social work theories, and social work methods.

123. Seminar in Social Welfare Policies and Programs (3). Basic policies and major programs in contemporary social welfare; consumption, income supports, job provision, housing, health, civil rights, consumer advocacy, population control, environmental standards; principles of social security, administration of social services, roles of government and citizen participation.

124. Proseminar in Interviewing (3). Seminar in principles of interviewing. Conduct, analysis, and presentation of interviews, and case studies.

125. Social Services for the Aging (3). Students will be aquainted with the common bio-psycho-social needs of the aging in the U.S. and the social services available to meet those needs. Within the context of social work values and problem solving methods, attention will be given to issues of ethnicity, gender, and gaps in services. (Former S Wrk 122T section)

128. Child Welfare (3). History, development, and provision of child welfare services in the United States.

129. Treatment of Chemical Dependency (3). Intervention and treatment of the chemically dependent and of family

* Topics electives may be selected from S Wrk 271T, 272T, or from other departments, subject to approval.

members; community resources; laboratory skills development. (Former S Wrk 122T section)

130. Seminar in Social Work Processes (3). Introduction to social work intervention.

135. Human Behavior and the Social Environment (3). A general systems approach focused on the interaction of biological, psychological, and cultural phenomena with individuals, small groups, complex organizations, and communities.

136. Foundations for Social Work with Oppressed Groups (3). Cultural, economic, ethnic, social, and psychological considerations for helping members of groups who suffer oppressed status in our heterogeneous society. (Former S Wrk 142)

140. Seminar in Micro Practice (4). Cannot be taken concurrently with S Wrk 141. Seminar emphasizing integration of human behavior and social environment theories with principles of beginning social work counseling techniques with individuals, families, and small groups.

141. Seminar in Macro Practice (4). Cannot be taken concurrently with S Wrk 140. Analysis of and interventive strategies in large groups, organizations, and the community.

175. Seminar in Human Services Research (3). Research design in human services; sampling, instruments for data collection.

176. Seminar in Data Analysis and Presentation (3). Introduction to statistical methods and computer utilization. Application of research methods to problems of program development and evaluation with a focus on analysis and interpretation of data.

180. Training in Public Services (1–2; max total 5). Planned and supervised experience or study in a field of occupational specialization.

181. Field Instruction (5; max total 10). Open only to senior Social Work majors or by permission of instructor. Five units to be taken in conjunction with S Wrk 140; 5 units in conjunction with S Wrk 141. Guided social work practice experience with individuals, groups, families, and organizations in the community.

185. Capstone Seminar (3). Open only to Social Work majors. Prerequisite: senior standing, five units of S Wrk 181. Culminating senior seminar integrating theory and practice of social work, current trends in the profession.

190. Independent Study (1–3; max see reference). See *Academic Placement—Independent Study,* pages 96–97.

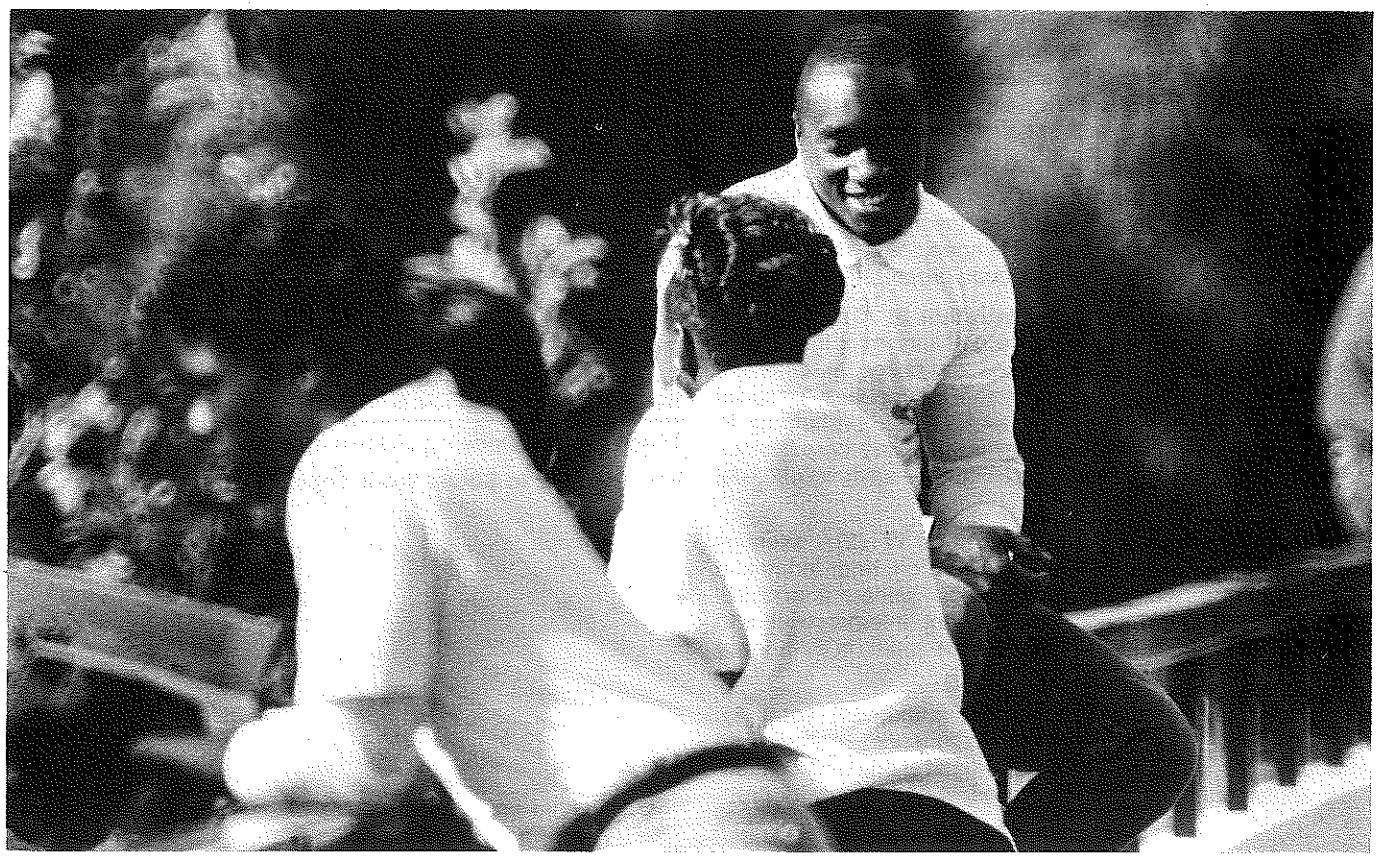
GRADUATE COURSES

Social Work (S Wrk)

Note: Admission to the M.S.W. program is prerequisite to all graduate courses. Exceptions may be authorized by the department chair.

200. Social Welfare Policy I (3). Analysis of major social welfare policies; includes consideration of legislative history, social, political and economic factors, court decisions, and administrative implementation. Comparison of various policy analysis frameworks; the legislative process and involvement of social workers therein.

203. Social Welfare Policy II (3). Prerequisite: S Wrk 200. Analysis of social agency policy. Board and administrative policy; internal and external influences on development; role of staff, particularly direct-service practitioners, in policy develop-



ment and revision; impact of policy decisions on service delivery system.

210. Seminar in Behavioral and Environmental Concepts (3). Concepts of health and disease in a bio-psycho-social and environmental context for social work practice with small systems; emphasis on theories of deviance and pathology.

211. Seminar in Social and Cultural Factors in Social Work (3). Ethnic, racial, socioeconomic class and gender influences on behavior and their implications for social work practice.

212. Seminar in Small Group Behavior (3). Analysis of structural properties, interactional dynamics and developmental processes of small groups in social institutions and communities.

223. Seminar in Clinical Social Work Practice (4). Historical development of dominant theories of social work practice. Primary focus on short-term and crisis intervention with individuals.

224. Seminar in Advanced Clinical Social Work Practice (3). Prerequisite: S Wrk 223. Advanced study of theories of psychotherapy and social work practice for intensive treatment. (Former S Wrk 228)

226. Seminar in CSW Group Therapy (3). Prerequisite: S Wrk 224 or permission of instructor. Analysis of the theories, practice, principles and techniques of clinical social work practice with small groups.

227. Seminar in CSW Marriage and Family Therapy (3). Prerequisite: S Wrk 224 or permission of instructor. Analysis of theories, practice, principles and techniques of clinical social work practice with couples and families.

229. Seminar in CSW Alternate Methods (3). Prerequisite: S Wrk 223. Analysis of alternate methods affecting clinical social work practice.

233. Social Planning and Administration I (4). Historical context of social welfare administration; administrative theories and their relevance to social welfare organizations; managerial functions performed in social welfare agencies. Instruction balanced between theory and experiential exercises.

234. Social Planning and Administration II (3). Prerequisite: S Wrk 233. Organizational analysis in social welfare. Analysis of social service organizations, theories of organization, and their application to human service agencies as differentiated from other organizations; emphasis upon organizational change.

235. Social Planning and Administration III (3). Prerequisite: S Wrk 233. Social welfare planning. Planning for the agency program and the community, based on needs assessment; sectoral, comprehensive, and systems approaches to social planning; application of specific techniques of planning to community and organizational settings; selected case studies and analysis of plans in areas such as aging, health, alcoholism, and criminal justice.

236. Social Planning and Administration IV (3). Interpersonal elements in social welfare administration. Knowledge and skills in human relations essential to social welfare administration; application to personnel management, interpersonal, and public relations, involvement of citizen participation in the agency program.

250. Field Instructed Practice (2–8; maximum total 8). Advanced field instructed practice experience in work with individuals, groups, families, formal organizations and communities; applying the theories and concepts of social work practice.

251. Field Instructed Practice (2–8; maximum total 8). Prerequisite: S Wrk 250. Continued advanced field instructed practice experiences in work with individuals, groups and families, formal organizations and communities, applying the theories and concepts of social work practice.

271T. Seminar in Social Work Specializations (1–3; max total 8). In depth study of specific treatment modalilties or methods, e.g., community organization, community development, crisis intervention, personality adjustment.

272T. Seminar in Areas of Social Work (1–3; max total 8). Theories and developments in the areas of mental health, public health, administration of justice, child welfare, family welfare, income maintenance, schools, international social work, social gerontology, social rehabilitation.

290. Independent Study (1–3; max see reference). See *Academic Placement—Independent Study,* pages 96–97.

292A. Advanced Social Work Research: Problem Formulation and Method (2). This course explores advanced topics in social work research including: conceptualization, operationalization, design and sampling strategies. It allows students to prepare a proposal for an independently pursued, empirically based research project.

292B. Advanced Social Work Research: Data Collection and Analysis (2). Prerequisite: S Wrk 292A. This course examines advanced strategies for social work research data collection and analysis. Students will be able to independently collect data, analyze it and report findings from a research project.

293. Research Project Design (3). A course designed to prepare students to develop potentially fundable grant proposals in the social services and to expose them to a variety of potential funding services and approach strategies. Preparation and evaluation of grant proposals will constitute the basis of the course.

298. Project (2–4; max total 4). Prerequisite: S Wrk 292A–B, See *Criteria for Thesis and Project,* pages 467–468. A project must evidence originality and independent thinking, appropriate form and organization, and a rationale. It must be described and summarized in a written abstract that includes the project's significance, objectives, methodology, and a conclusion or recommendation.

299. Thesis (3–6; max total 6). Prerequisite: S Wrk 292A–B. See *Criteria for Thesis and Project,* pages 467–468. Preparation, completion, and submission of an acceptable thesis for the master's degree.

IN-SERVICE COURSES

(See *Course Numbering System,* p. 133.)

301. Seminar in Social Work Topics (1–3).

Sociology

School of Social Sciences
Department of Sociology
Joel G. Best, Chair
San Ramon 5, Room 231
(209) 294-2234

B.A. in Sociology
Minor in Sociology

Sociology is the study of social life and the social causes and consequences of human behavior. Sociology's subject matter ranges from the intimate family to the hostile mob, from crime to religion, from the divisions of race and social class to the shared beliefs of a common culture, from the sociology of work to the sociology of sport. In fact, few fields have such broad scope and relevance.

Training in sociology provides students with a special perspective on human development and social life which is an especially important part of a liberal education. Theory and research methods provide the foundation for study in sociology. On this foundation, different programs of electives can be built to meet the needs of students with different goals and interests.



Faculty and Facilities

All eight full-time faculty hold Ph.D. degrees and share a commitment to excellence in teaching. Their areas of special interest are diverse, including social change, deviance, women in society, social stratification, social psychology, social theory, and research methods. Most of the faculty are actively involved in research and the department encourages students to gain research experience. Some students conduct their own research projects; others assist faculty members or work with the CSU, Fresno Social Research Laboratory (S.R.L.). Recent faculty research included studies of the history of crime, intermarriage, family power, and discrimination in contemporary courtrooms. The S.R.L. conducts applied research on topics of local concern. Recent S.R.L. studies examined health hazards near toxic waste dumps and population patterns in new neighborhoods. The opportunity to gain practical research experience while working closely with faculty members can add a special dimension to education in sociology at CSU, Fresno. Students can also apply their sociological training through internships with local counseling or social service agencies.

Career Opportunities

Students trained in sociology at CSU, Fresno have entered a wide variety of occupations. Although only a few students plan to become professional sociologists, training in sociology provides a solid background for a variety of careers. The research emphasis of this department provides training in data gathering, analysis, and report writing which is valuable in many careers. In addition, an understanding of the relationships between individuals and groups can prove useful in work, as well as in everyday life.

A few of our students have become professional sociologists. After completing graduate school, they became university professors. (While most professional sociologists teach, an increasing number hold research positions in a variety of organizations.) Many more students have found sociology to be an excellent preparation for law school. Still other CSU, Fresno graduates have taken graduate training and entered other professions, including anthropology, library science, social work, counseling, criminology, rehabilitation counseling, and public administration. Those students who begin work after completing a bachelor's degree in sociology usually enter careers in business and management, in the administration of public and private social service agencies, or as human services workers or research analysts in a variety of organizations.

Faculty

Joel G. Best, *Chair*

Alfred J. Claassen	Edward E. Nelson
S. John Dackawich	Elizabeth N. Nelson
Robert D. Fischer	John N. Tinker
Albert I. McLeod	Chandler Washburne

Bachelor of Arts Degree Requirements

Sociology Major

	Units
1. Major requirements	39
a) Core: Soc 1, 25, 151, 153, 162, 175	(18 units)
b) Sociology upper-division electives	(21 units)
2. General Education requirement	54
3. Electives and remaining degree requirements (see *Degree Requirements,* pp. 98–101); may be used toward a dual major or minor	31–40 *
Total	124

* This figure takes into consideration the fact that a General Education—CORE course and a maximum of two BREADTH courses may be applied to satisfy sociology major requirements (see *General Education,* pp. 104–111). Courses may be selected from Soc 1, 3, 25 (CORE) and 131. Consult the sociology department chair or faculty adviser for additional details.

Notes:

1. Soc 3 may be substituted for three upper-division elective units in the major.
2. No course used to satisfy General Education CAPSTONE requirements may be used to satisfy Sociology major requirements.
3. *CR-NC* grading is not permitted in the sociology major, except for courses offered only under *CR-NC* grading.
4. General Education and elective units may be used toward a dual major or minor (see *Dual Major,* p. 98 or department minor). Consult the appropriate department chair, program coordinator or faculty adviser for further information.

Sociology Minor

The following minor requirements are in addition to general education requirements.

	Units
Soc 1, 25	6
Sociology upper-division electives (Soc 3 may be substituted for 3 of these units)	15
	21

COURSES

Sociology (Soc)

1. Principles of Sociology (3). Introduction to the principles and theoretical perspectives of sociology and their application to the fundamental problems of social life. Discussion of sociological methods and findings in such areas as: family, race relations, deviance.

2. Social Problems (3). Introduction to major sociological perspectives on social problems. Analysis of causes and possible solutions to such problems as poverty, discrimination, crime, delinquency, alcoholism, drug abuse, suicide, family disorganization, and pollution.

3. Analysis of Social Life (3). Introduction to sociology through participation in research. Individual and group projects based on observation, experimentation, survey research, or other techniques. Training in analyzing social situations and developing sociological explanations. Topics covered and assignments vary with instructor.

25. Quantitative Methods in the Social Sciences (3). Prerequisite: E.L.M. Exam. Introduction to quantitative methods as an aid to the understanding of research in the social sciences. Application of basic descriptive and inductive statistics to the social sciences.

111. Sociology of Minority Relations (3). Dominant and minority group relations historically, cross-culturally, and in contemporary American society. Primarily, the bases examined are in terms of ethnicity-race, religion, nationality, country-of-origin, nativity, and language—and secondarily the bases are non-ethnic such as age and gender.

112. Collective Behavior (3). An examination of types of collective behavior: crowds, mobs, panics, publics, fashion, fad, social movements, and transient and anonymous relationships; their increasing importance in modern society where violence, conflict, and social unrest are common.

122. Social Movements (3). Theory of nonviolent direct action in the pursuit of social justice and social change. Discussion of goals, ideology, norms, organizational structure, leadership, strategy, tactics, and social roots of social movements.

130W. Contemporary Social Issues (3). Prerequisite: Engl 1. A sociological perspective is used to examine currently debated public issues. Often public issues involve present or proposed public policies; the impact of these policies on different segments of society is assessed. Meets the Upper Division Writing Skills requirement for graduation.

131. Sociology of Sex Roles (3) (Same as W S 131). The roles of women and men in contemporary social life, socialization and adult life—work roles, nuclear family, and other roles.

132. Women and Work (3) (Same as W S 132). An examination of women and work in contemporary society, including housework, labor force participation, employment in various occupations, and career planning. (Former Soc 150T section)

142. Sociology of Popular Culture (3). Impact of popular media on modern society. Includes movies, television, fiction, and other forms of popular culture. The meaning, the creation and production, and the future of popular culture.

143. Deviance and Control (3). Rule-breaking behavior (such as crime, delinquency, mental illness) and responses to it. Examines deviance as a social phenomenon, its causes and consequences, and formal and informal social control activities.

144. Social Policy Analysis (3). Interdisciplinary social science methods for approaching local and national social problems. Analysis of selected public issues emphasizing evaluation of social costs and benefits of alternative policies.

145. Social Organization (3). Prerequisite: Soc 1. Study of the nature of social organizations, their types and varieties, and the factors producing their different forms. Causes of the growth and decline of social organizations. Problems of centralization, authority, communication, and conflict in organizations.

146. Sociology of Work (3). Work in modern industrial society, employment and unemployment, formal and informal

characteristics of work, the relationship between work and leisure, and the investigation of work satisfaction and alienation.

147. Medical Sociology (3). Political and economic organization of American medical health care system and cross-cultural comparisons. Analysis of social relations and interactions among members of the health professions affecting designations of persons as ill and their subsequent treatment.

148. Sociology of Education (3). Prerequisite: Soc 1. A sociological examination of education as an institution, including its social determinants, functions, and consequences.

149. Sociology of Business (3). The social origins and development of business as an institution. Comparative studies of diverse impacts of business on society. Analysis of resulting ideological, political, and regulatory reactions to business.

150T. Special Topics Seminar (1–3; max total 9). Prerequisite: permission of instructor. Topics include those areas of advanced theoretical and empirical studies that will orient the student to contemporary sociological endeavors.

151. Social Classes and Inequality (3). Prerequisite: Soc 1. Analysis of evaluational differentiation leading to social stratification. Criteria for differentiation, bases for evaluation, types of stratification, composition of strata and status systems, mobility, consequences of stratifications, and methods of studying stratification.

152. Classical Sociological Theory (3). Prerequisite: Soc 1. Evolution of classical sociological theories. Consideration of their origins in society and culture. Examination of such theorists as Marx, Weber, Durkheim, Comte, St. Simon, and Simmel.

153. Contemporary Sociological Theory (3). Prerequisite: Soc 1. Processes of theory construction. Major current sociological theories such as functionalist and conflict, interaction and interpretive, and behaviorist and exchange theories.

157. Social Change (3). Analysis of directions, patterns, and processes of social and cultural change.

159. Social History of Crime (3). Impact of social changes on crime and social control. Focus on United States and Western Europe. Topics include incidence and types of crime, rule-making and vindication, and organization of criminality.

161. Population Analysis (3). Prerequisite: Soc 1. Population theories and history; demographic processes and variables in contemporary society. Analysis of census data.

162. Social Psychology (3). Social factors affecting the development of social personality, attitudes and behavior. Basic social processes involved in interpersonal interaction. Demonstrations and student observations to increase an understanding of social processes in everyday life.

163. Urban Sociology (3). The urban concept; form and development of urban areas; scientific study of urban places and populations; effect of urbanization on social institutions and social relations.

164. Political Sociology (3). Prerequisite: Soc 1. The social causes and effects of political phenomena. The roles of social classes, movements, and institutions in shaping the political process; examination of political behavior and attitudes.

> "The dorms can be kind of noisy but hearing that racket in the background makes it seem more like home. Also, if you are wanting to meet a lot of people, this is the place to do it."
>
> *— Freshman, Undeclared*

165. The Family (3). The family in historic and contemporary society, theoretical frameworks for analyzing the family, family dynamics; changes in family functions, structures, and roles.

166. Social Gerontology (3). Aging and the aged with special emphasis on urban American society; demographic dynamics; problems of the aged; gerontological research methodology.

167. Seminar in Self and Society (3). Prerequisite: Soc 1, 162, or Psych 134. Analysis of the relation of the self-system to society; symbolic interaction theory; role identity and social interaction; types of self developed under varying social conditions.

169. Sociology of Religion (3). Major sects, denominations, and churches; integrative and disintegrative processes in the United States; contemporary religious phenomena.

170T. Research Topics (1–3; max 6). Content of course will vary from semester to semester. Topics include an introduction to computer data analysis, a more in-depth discussion of computer data analysis, survey research, observational techniques, measurement, sampling.

175. Sociological Research Methods (3). The research process, with exercises in data collection, measurement, sampling, and analysis. Basic assumptions and dilemmas of social science research.

181. Small Groups (3). Small groups as basic social units. Description of the types of groups, how they operate, and the important variables affecting them. Observation and participation to increase understanding of the many small groups to which we all belong.

190. Independent Study (1–3; max see reference). See *Academic Placement—Independent Study,* pages 96–97.

Speech Communication

School of Arts and Humanities
Department of Communication Arts and Sciences
Ronald D. Johnson, Chair

Speech Communication Program
John A. Cagle, Coordinator
Speech Arts Bldg., Room 15
(209) 294-2826

B.A. in Speech Communication
Minor in Speech Communication
M.A. in Speech
Option in:
Speech Communication
Single Subject Teaching Credential in English/Speech



Our aim is to prepare you to compete in, understand, and provide leadership in a world which is more and more a communication-oriented society.

We offer a balance of humanistic and scientific instruction in communication skills people need to function effectively in teaching, business, law, the communication professions, public service and administration, the ministry, public relations, politics, and management. You have an opportunity to explore the full range of human communication.

Our major and minor are well grounded in interpersonal skills, in problem-solving and decision-making methods, and in group and organizational leadership. We study issues such as how we perceive events, express ourselves verbally and nonverbally, and how communication influences human behavior and social developments. We develop skills in oral and written communication, statistics and research methods (including using computers), and how to employ these skills in specific career areas.

A new Professional Communication Skills Certificate program is designed to enable students to achieve recognition of development in such areas as presentational speaking, problem solving and decision making, leadership, and interpersonal communication.

Our program offers a variety of exciting activities to enrich your educational experience. We have a fine intercollegiate forensics program of debate and individual speaking. We host a national communication conference each spring that brings scholars and students from around the country.

We offer you personalized advising. Our major builds on a sound core of foundation courses, but is completed by courses selected to meet your needs and career objectives, often with a minor in an appropriate field. We think your choice of an adviser is an important decision, and we encourage our students to pick their own adviser. You'll find we're glad to talk with you.

Career Opportunities

In the "Information Age" of the 1980's, a degree in speech communication can open a great number of career doors. Increasingly, we see a wide variety of job descriptions across professional disciplines which list *skills in communication* as the highest priority. An essential goal for us is to help you develop these very important communication skills. In addition, we try to provide an educational base for our majors and minors for specific careers requiring competencies in oral and written communication and in interpersonal and managerial communication.

Speech Communication graduates are employed as public relations consultants, personnel managers, political campaign directors, management analysts, teachers, counselors, lawyers, ministers, human resource specialists, and marketing representatives. We offer students a discipline widely suited to today's uncertain job market. National placement studies reveal that communication majors are finding jobs with reasonably high job satisfaction and above average pay rates, and that their rate of promotion is significantly faster.

The pursuit of a career is of great concern to students today, but it is important to recognize that the quality of your education will determine your success in life as well as how to make a living. More than half of college graduates do not enter fields directly tied to their majors.

As you begin your university education, and as you begin making decisions about your life and what you want to do with it, please remember that we will be happy for you to join us in the most exciting and fundamental discipline of all—the study of human communication.

Faculty

John A. Cagle, *Coordinator*

Katherine L. Adams
R. Gene Anderson
Constance C. Bacon
Vincent L. Bloom
Hal W. Bochin
George E. Diestel
L. Ralph Hennings
Susan C. Jarboe
David T. Natharius
David F. Quadro
Gail A. Sorensen
W. Richard Ullmann

Graduate Adviser: L. Ralph Hennings
Undergraduate Adviser: Hal W. Bochin
Credential Adviser: R. Gene Anderson

Bachelor of Arts Degree Requirements

Speech Communication Major

The Speech Communication major is designed to develop broad-based competencies not only in oral and written communication, in critical analysis, and in statistics and research methods, but also emphasizes how to employ these skills in specific contexts such as business management, political persuasion, or public relations. With your program adviser, you may select a concentration track to fit your particular interests and professional aspirations. The *professional track* is designed to prepare students for advanced study in communication, law and government, ministry, education (credential candidates should see section on Teaching Credential Program), and other professions. The *organizational/applied study track* is designed to prepare students for careers and/or advanced study in business, public service and administration, public relations, social services, and management. The *communication studies track* is designed to provide the student with a broad range of human communication skills applicable to a wide range of career interests.

Units

1. **Major requirements** 45
   - *Lower-division core:* Spch 3, 4, 5, 7, 8 ..... (15*)
   - *Upper-division core:* Spch 100 and 140 ..... (6)
   - *Concentration:* Select one track ..... (12)
     - Professional: Spch 103, 105, 114, 142, 146, 148, 160, 162, 166, 179, 190
     - Organizational: Spch 103, 106, 108, 160, 162, 163, 165, 166, 167, 168, 169, 170, 176, 179, 190
     - Communication Studies: Select three courses from each of the other tracks (includes breadth requirement)
   - *Upper-division breadth* (select two courses from track other than concentration) ..... (6)
     - In the Organizational track, select from: Spch 105, 114, 142, 146, 148
     - In the Professional track, select from: Spch 106, 108, 163, 165, 167, 168, 169, 170, 176
   - *Electives:* Select from any upper-division Speech Communication course cited above and/or from SPCH 115, 120, 164, 188T, 189 ..... (6)
2. **General Education requirements** 54
3. **Electives and remaining degree requirements** (see Degree Requirements, pp. 98–101) may be used toward a dual major or minor 25–31*

Total 124

* Spch 3 and 4 may be used to satisfy general education requirements; thus the number of elective units may vary from 25–31.

Notes:

1. No more than 3 units from Spch 15 and 115 can count toward fulfillment of the speech communication major.
2. *CR-NC* grading is not permitted in the speech communication major with the exception of SPCH 179 (Internship).
3. General Education and elective units may be used toward a dual major or minor (see *Dual Major,* p. 98, or departmental minor). Consult the appropriate department chair, program coordinator, or faculty adviser for further information.
4. No more than 6 units of SPCH 179 (Internship) may be applied toward completion of the speech communication major.
5. Students are allowed only 3 units of SPCH 190 and no more than 6 units toward the baccalaureate degree.

Speech Communication Minor

Increasingly, oral and written communication, problem solving and decision making, leadership, and conflict resolution skills are being recognized as vital skills for professionals in all fields of work. The speech communication minor is designed to develop these competencies in order to help students better meet their particular career goals. While a specific minor is recommended, you may wish to consult with your department adviser about designing a minor to suit your special objectives.

	Units
A. Core requirements Spch 5, 7, 8, 140, 160	15
B. Personal and Professional Development Spch 108, 162, 163, 167, 168 (select one)	3
C. Ideas and Issues Spch 142, 146, 148 (select one)	3
	21

Teaching Credential Program—English/Speech

The following 52 unit course of study, referred to as the English/Speech Single Subject Waiver Program, will be accepted by the department as a major in speech communication. The teacher education student will take the following courses:

General Ed. Prerequisites: Spch 3, 4; Drama 22

Credential Program: Engl 182, 189, 193T; Ling 135, 146; Spch 5, 7; either Engl 161, 163, or 164; either Engl 154 or 155; one from a selected list of literature courses in English; Spch 140, Spch 8, Spch 115; Spch 100 or 160; Spch 108 or 162; and either Spch 142, 146, or 148.

See School of Education for additional professional education requirements for a credential.

Students wishing to pursue a course of study leading to a teaching credential should see the departmental director of teacher education for advising early in their programs as state requirements change frequently.

Professional Communication Skills Certificate

Proficiency in communication skills is essential in virtually any professional career. The Speech Communication Program offers a structured sequence of courses leading to a certificate of special study recognizing the focused development of professional communication skills in such areas as presentational speaking, problem solving and decision making, leadership, and interpersonal communication. Upon completion of the certificate requirements, the department will award a certificate.

Certificate Prerequisites: upper-division standing and completion of the basic speech requirement in General Education.

Certificate Requirements:	*Units*
Communication Theory (SPCH 100)	3
Professional Writing Skills (IS 105W, ENGL 164, ENGL 166, JOUR 126, TCOM 120)	3–4
Business and Professional Speaking (SPCH 170)	3
Communication Training and Development (SPCH 176)	3
Elect 6 units from SPCH 103, 108, 162, 167, 168, 169	6
Total	18–19

A new Professional Communication Skills Certificate program is designed to enable students to achieve recognition of development in such areas as presentational speaking, problem solving and decision making, leadership, and interpersonal communication.

Graduate Program

The Master of Arts degree program in speech is designed to extend the competency of persons engaged in theatre, speech communication, or the teaching of speech arts. The courses are designed to provide opportunity for comprehensive study at the advanced level in the various areas.

Master of Arts Degree (in Speech) Requirements—Option in Speech Communication

The Graduate Program in Speech Communication is designed to extend the competencies of students in the study of human communication. The Master of Arts Program in Speech has two options, one in speech communication and one in theatre arts.

The Graduate Program in Speech Communication assumes undergraduate preparation equivalent to a CSU, Fresno major or minor in speech communication. Under the direction of a graduate adviser, each student prepares and submits a coherent program individually designed within the following framework:

	Units
1. Spch 200	3
2. At least 6 units from each of the following lists	18
A. Spch 215 (Topic in Rhetoric and Public Address), 241, 242, 243, 244	
B. Spch 215 (Topic in Communication), 262, 263, 264, 265, 268	
3. One of the following:	
A. With thesis	
(1) Approved electives	3
(2) Spch 299—Thesis	6
B. With comprehensive examination	
(1) Approved electives	9
(2) Comprehensive examination	0
C. With project	
(1) Approved electives	3 or 6
(2) Spch 298—Project	3 or 6
Total	30

COURSES

Speech Communication (Spch)

AR. Study Skills Development (2). Development of communication skills necessary for successful learning in a university, including reading, library research, control of anxiety, critical analysis, listening, oral and written reports. (*CR/NC* only; enrollment credit, not applicable to Baccalaureate degree requirements.)

3. Fundamentals of Public Communication (3). Theories of human communication and their function in contemporary public settings; experiences designed to enhance fundamental communication skills—research, organization, reasoning, listening, and problem solving—through a series of oral presentations.

4. Introduction to Interpersonal Communication (3). Introduction to various theories of interpersonal communication; participation in experiences designed to enhance competence in interpersonal relationships.

5. Argumentation (3). Logical analysis, evidence, reasoning, and proof used in arriving at rational decisions as demonstrated through presentation of public speeches and debates.

7. Persuasion (3). Analysis and practice of the use of persuasion as a social tool for resolving controversy and forming opinions from the perspectives of both the persuader and the persuaded.

8. Group Discussion (3). Communication in group thinking and problem solving through preparation and presentation of panels and symposia on public issues.

10T. Topics in Speech (1–3; max total 9). Contemporary problems and issues in speech communication; sections include such topics as freedom of speech, parliamentary procedure, special communication skills, rhetoric of protest and response, and communication processes.

15. Forensics Laboratory (1–2; max total 4). Experience in the presentation of debates, oral interpretation programs, persuasive and expository speaking. Intramural and intercollegiate competition in forensics.

100. Theories of Human Communication (3). Survey of major theories of human communication, philosophical issues, and applications; theories include interpersonal, group, organizational, intercultural, linguistic, and persuasion.

103. Advanced Public Speaking (3). Advanced principles of expository and persuasive speaking; development of skills through analysis, preparation, organization, and delivery of various types of speech.

105. Argumentation Theory (3). Analysis of the theories and techniques of argumentation, including models of argument, relationships between persuasion and argumentation, and the effects of argumentative discourse.

106. Statistical Applications in Communication (3). Introduction to elementary statistical concepts, correlation analysis,

parametric and nonparametric tests; emphasis on the application of statistical procedures to communication research.

108. Communication and the Small Group (3). Analysis of group communication theories and their application to small group behavior in specific variables such as leadership, power, conflict-resolution, conformity, cohesiveness, and related group processes.

114. Communication and Learning (3) (Same as T Ed 158). The nature of communication and its relationship to learning and instruction; management of oral communication strategies in the educational setting.

115. Advanced Forensics Laboratory (1–2; max total 6). Experience in the presentation of debates, oral interpretation programs, persuasive and expository speaking. Intramural and intercollegiate competition in forensics.

120. Female-Male Communication (3). Exploration of gender variables that affect human communication behaviors, focusing on behaviors that have some mythical or factual bases in sex similarities and differences. (Former Spch 188T section)

140. Rhetorical Theory (3). Examination and analysis of classical, renaissance, and modern rhetorical theory for the purpose of identifying the theories of speech.

142. Rhetorical Criticism (3). Examination of methods of the classical critics through the contemporary theorists in rhetorical criticism for the purpose of establishing standards for rhetorical analysis.

146. British Political Communication (3). A history and criticism of British political communication from Pitt to modern times. Special emphasis is given to the social and political forces of the period.

148. American Public Address (3). Selections from speeches of great American speakers analyzed in a cultural, psychological, social, and historical context; historical-rhetorical method of speech criticism.

160. Meaning, Language, and Communication (3). A review and analysis of the various approaches to the study of human symbolic behavior, with focus on such theories as: General Semantics, Psycholinguistics, Sociolinguistics, Epistemology, and other philosophical and scientific enquiries into the nature of language and meaning.

162. Interpersonal Communication (3). Nature of the communication process; factors affecting the process and the individuals involved.

163. Social Influence and Attitude Change (3). Discussion of research on the nature and effects of social influence, with special emphasis on attitude formation and change, conformity, behavior, "brainwashing," prejudice, and propaganda as functions of communication.

164. Intercultural Communication (3). Analysis of cultural variables and factors in the communication process and strategies for the resolution of intercultural problems; consideration of implications for education and programs necessarily involving intercultural communication.

165. Computer Applications in Communication (3). Study and use of various computer systems available in the study of human communication: Fortran IV, coursewriter III, LISP, SNOBOL, *General Enquirer;* emphasis on processing verbal data.

166. Communication Research Methods (3). Application of behavioral research principles to problems in quantification, design, and analysis of data in communication research.



167. Leadership in Groups and Organizations (3). Theory and practice of selected leadership variables in groups and organizations; functions of leadership in formal and informal structures, understanding and analysis of role-playing techniques.

168. Communication in Organizations (3). Application of communication principles to the improvement of organizational efficiency.

169. Communication and Conflict (3). Examination of the role of communication in conflict, the clarification of issues and power relationships, strategies and tactics of conflict behavior, and conflict management, intervention, and resolution.

170. Business and Professional Speaking (3). Development of communication skills necessary for success in business, government, and the professions. Includes theory and practice of interviewing, job instruction training, work group leadership, and proposal presentations. Class activities are adapted to students' career goals.

176. Communication Consulting & Training (3). Development of skills necessary for effective communication consulting in business, government, and the professions. Includes theory and practice of needs assessments, planning and conducting training activities, and evaluation of educational activities; topics relating to adult education and client-consultant relationships.

179. Internship (1–6; max total 12). Prerequisite: Major in speech communication, at least 75 units completed, and permission of instructor. Supervised work experience in government, business, social agencies, or non-profit organizations.

188T. Topics in Speech (1–3; max total 9). Selected topics in speech communication.

189. Projects in Speech (1–3; max total 6). Prerequisite: permission of instructor. Projects in speech communication. (4 hours activity)

190. Independent Study (1–3; max see reference). See *Academic Placement—Independent Study,* pages 96–97.

GRADUATE COURSES

(See *Course Numbering System,* p. 133.)

200. Introduction to Graduate Study (3). Seminar in research procedures and materials. Required of all majors during the first semester of graduate work.

214. Seminar in Communication Education (3). An examination of the relationships of learning theories to communication study and research. Research in instructional communication, teaching strategies in communication education, and techniques for applying these concepts in educational and training settings.

215. Seminar in Speech Arts (3; max total 9). Research and individually directed work within one area of specialization.

241. Seminar in Rhetorical Theory (3). A seminar which deals with the development of specific principles by selected theorists.

242. Seminar in Contemporary Criticism (3). The role of rhetorical criticism in contemporary society.

243. Seminar in the History of American Public Address (3). A detailed study of selected men who have influenced political, religious, and social problems in American History.

244. Seminar in Contemporary Public Address (3). The study of contemporary figures in public address who have influenced political, religious, economic, and social problems in the 20th century.

262. Seminar in Communication Theory and Research (3). An examination and evaluation of mathematical, philosophical, sociological, psychological, and rhetorical theories of human communication. Emphasis upon the assumptions and implications of various theories, models, and constructs.

263. Seminar in Group Communication (3) A critical examination of the scientific research and theories in group communication including research variables and methodologies. Implications of research findings for contemporary communication problems.

264. Seminar in Communication Research Methods (3). The nature, implications and assumptions of methodologies in human communication research. Discussion of quantification, design, and statistical inference as they relate to experimental, quasi-experimental, descriptive, survey, and case study methodologies.

265. Seminar in Interpersonal Communication (3). An examination of current quantitative and qualitative theory and research in interpersonal communication. Implications and applications to various kinds of human relationships and various aspects of those relationships, e.g., stages, relational communication, attraction, conflict, self-disclosing.

268. Seminar in Organizational Communication (3). Theory and application of organizational communication, including interpersonal and group communication in planning, staffing, development, and decision making in complex organizations; organizational systems and environments; recognizing, diagnosing, and solving organizational problems.

290. Independent Study (1–3; max see reference). See *Academic Placement—Independent Study,* pages 96–97.

298. Project (2–6; max total 6). Prerequisite: Prior advancement to candidacy. See *Criteria for Thesis and Project,* pages 467–468. Preparation, design, conduct, and evaluation of project applying rhetorical and communication theories; e.g., communication campaign for public agency, communication audit of corporate organization, extensive consulting or training activities, etc. Requires scholarly report similar in format to thesis and final oral defense.

299. Thesis (2–6; max total 6). Prerequisite: see *Criteria for Thesis and Project,* pages 467–468. Preparation, completion, and submission of an acceptable thesis for the master's degree.

IN-SERVICE COURSES

(See *Course Numbering System,* p. 133.)

303. Topics in Speech (1–3; repeatable with different topics).

Telecommunications

School of Arts and Humanities
Department of Communication Arts and Sciences
Ronald D. Johnson, Chair

Telecommunications Program
R. C. Adams, Coordinator
Speech Arts Bldg., Room 15
(209) 294-2826

B.A. in Telecommunications
Minor in Telecommunications

The Telecommunications Program offers courses of study for those who seek careers in the media or in allied fields and for those who wish to pursue advanced study of mass communications. Students completing the program should be prepared to seek careers in such fields as commercial or public radio or television, the motion picture industry, new media technologies, and the cable industry. The program is based on study of the cultural, social, political, economic, educational, legal, and artistic significance of the media and, also, provides for specialized preparation in selected areas. Those enrolled have the opportunity to work on the university's student-operated FM radio station and to participate in production projects at local broadcast and cable facilities.

Internships

The program typically places 16 to 20 interns in local radio and television stations each semester. Internships provide the opportunity to spend about one-quarter time in a facility working in capacities suitable to student background and interests just as if employed. This practical aspect of the program permits students to experience the reality of the workaday world of broadcasting while obtaining the education that is normally prerequisite to obtaining fulltime employment in the field. The internship often is deemed suitable experience by small-market stations in their hiring decisions.

Faculty

The individual members of the faculty have developed expertise in areas of personal interest through graduate study and professional employment in the media. Their areas of special interest in radio, television production, film and television criticism, writing, management, regulation, and research are complementary, providing students access to competent thinkers and practitioners in these fields. Each member of the faculty serves as an academic adviser in the program; each student is assigned an adviser to help in program planning.

Facilities

KFSR-FM is a student-operated public radio station that serves as a training laboratory for aspiring radio broadcasters and as the voice of the university to the immediate community. Installed in 1982, all equipment is new, state of the art. A new student management team takes over each year and all students with an interest have the opportunity to work up through the ranks to vie for the top positions.

The on-campus television facilities provide a training laboratory for those who would be producers or directors for the medium. Local cable television and the public broadcasting station provide live production opportunities and production experiences in program preparation and taping for later transmission.

Film courses offered are premised primarily on the relation between television and cinema. Basic instruction is with portable video and Super-8; advanced instruction uses standard 16mm equipment. Courses in history and criticism supplement the laboratories.



Special Scholarships

The Meredith Corporation, owners of KSEE-TV 24 in Fresno, provides one $1,500 scholarship to a major in telecommunications who is a member of a federally protected minority. Because the program maintains an institutional membership in the Broadcast Education Association, all majors are eligible to compete for scholarships offered by the National Association of Broadcasters—the Harold E. Fellows Scholarship, four national awards of $1,250 each, for study in any area of broadcasting and the Walter Patterson Scholarship, two national awards of $1,250 each, for study leading to a career in radio.

Career Opportunities

Departments of communications of all kinds are growing on university campuses across the country. This reflects the perception of those who study job markets in different fields that communication is becoming increasingly recognized as a primary factor in all forms of work. Students graduating from our program work in radio and television stations, as most would expect. They also find ready opportunities in advertising agencies, independent production companies, public relations firms, and in businesses and agencies that use these kinds of services.

Faculty

R. C. Adams, *Coordinator*

H. Lee Alden
Merlyn D. Burriss
Russell A. Hart
Philip J. Lane
William N. Monson
James R. Wilson

KFSR-FM *Faculty General Manager:* James R. Wilson
Mass Communications Graduate Program Coordinator: Philip J. Lane
Student Placement Liaison: James R. Wilson
Undergraduate Advising Coordinator: H. Lee Alden

Bachelor of Arts Degree Requirements

The Telecommunications Major

The major in telecommunications is premised on a balance among courses taught to impart skills, courses about the telecommunications fields, and academic courses in theory, criticism, and research. It comprises upper-division work only and has two parts: 1) a core of common courses required of all students and 2) four options from which students choose to structure their major. The four options are: **Creative, Management, News/Public Affairs,** and **Production.**

The **Creative Option** is oriented to developing critical, writing, and performance skills; prerequisite courses may be required in speech and drama and supplementary courses are recommended in literature and music as well as these areas.

The **Management Option** is oriented to developing the practical skills and the critical overview essential to moving into an administrative or managerial role in any media operation; a business course is prerequisite and students electing this option are encouraged to select other business courses to support the option.

The **News/Public Affairs Option** is oriented to developing skills and insights into those functions of the media that will facilitate entry into, and informed practice in, roles suitable to this area of broadcast and cable operation; drama, speech, and journalism courses may be included in the prerequisites and are recommended along with courses in agriculture, business, criminology, political science, and the natural and social sciences to support the option.

The **Production Option** is oriented to developing skills and critical abilities supportive of careers in producing/directing in all the media; drama courses may be prerequisite and are recommended to support the option.

Select the option that coincides best with your career aspirations and work with your academic adviser in the Telecommunications Program to select courses that will best assist you in reaching your career goals. Note which courses have lower-division prerequisites that must be satisfied; these should be included in the selection of suitable general education courses and preparation for entering the major.

Degree Component	*Units*
1. **Major requirements:**	30
a. **Required core:** TCOM 110, 120, 140, 160, 195	(14)
b. **Option requirements and electives:**	(16)
1) Creative: Required—TCOM 173, 180; Elective—10 units selected from TCOM 131, 151, 163, 171, 175, 190, 191; DRAMA 131, 133.	
2) Management: Required—TCOM 145, 185; Elective—9 units selected from TCOM 131, 148, 151, 165, 186, 190, 191.	
3) News/Public Affairs: Required—TCOM 148, 153; Elective—9 units selected from TCOM 131, 151, 175, 180, 186, 190, 191; JOUR 130, 183.	
4) Production: Required—TCOM 150, 155; Elective—10 units selected from TCOM 131, 151, 170, 175, 186, 189, 190, 191.	
2. **General Education requirements** (including ENGL 1 & 20, PSYCH 10, SOC 3, or their equivalents and others chosen in concert with your program adviser):	54
3. **General electives and remaining degree requirements** (See Degree Requirements; may include a dual major or a minor):	40
Total	124

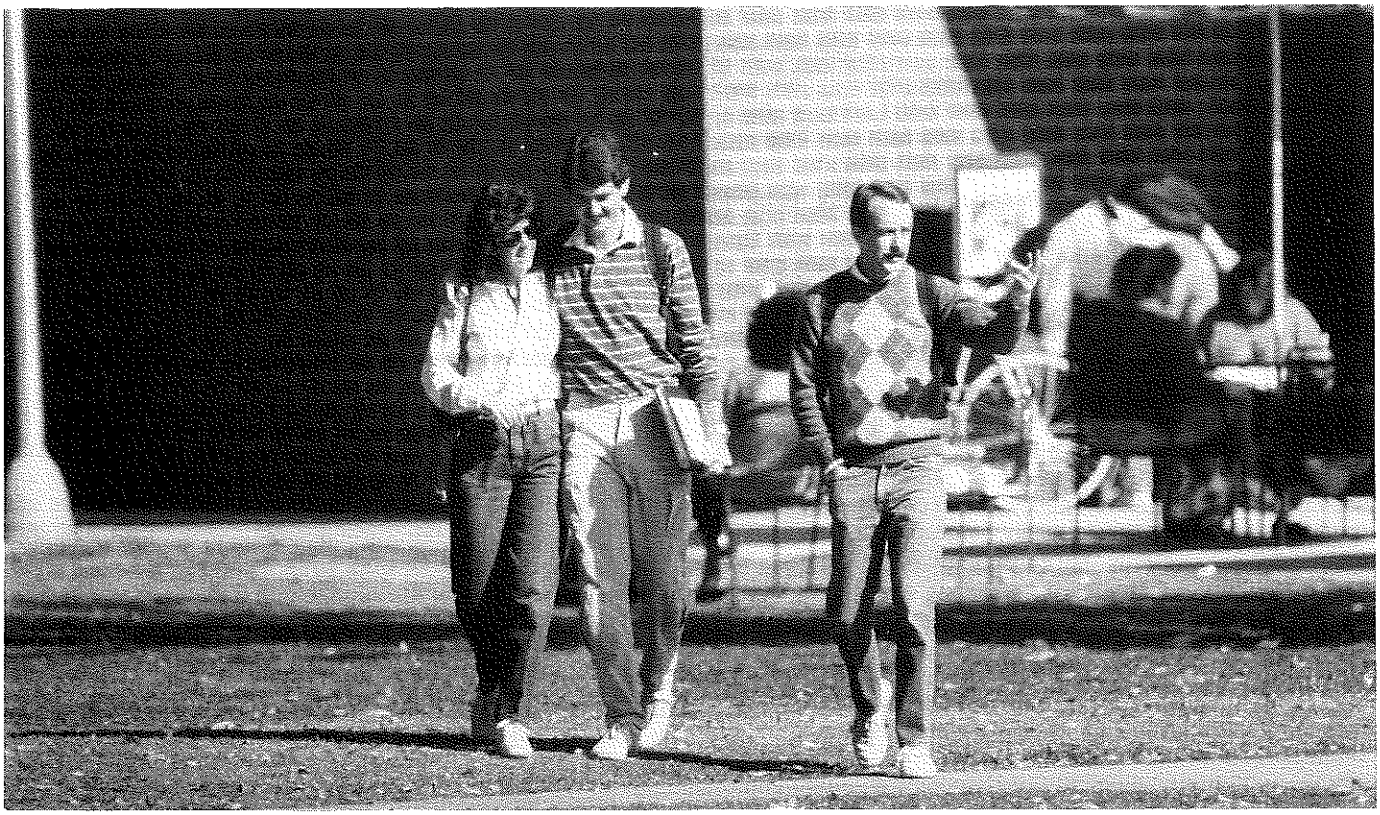
Notes

1. Each TCOM major is expected to declare an option within the program; work with your academic adviser to do this. If you do not know who your adviser is, contact the undergraduate advising coordinator listed above.
2. While the TCOM major is composed of upper-division work only, note that some courses have lower-division prerequisites in the program or in the General Education offering that must be taken first. For example, the TCOM core has as prerequisites TCOM 10, 30 or 50, ENGL 1 & 20, PSYCH 10, and SOC 3, or their equivalents. Your choice of option, and courses in the option, may require you to take other prerequisite courses.
3. *TCOM 163* cannot be used to satisfy both a TCOM elective requirement in one of the options and a *G. E. Popular Culture capstone requirement.*
4. TCOM majors are not permitted to enroll for ***CR/NC*** grading in courses that are to be counted in the major, except where mandatory—i.e., TCOM 186.
5. General Education and general elective units may be used to develop a dual major or a minor (see *Dual Major*, p. 98 or departmental minor). Consult the appropriate department chair, program coordinator, or faculty adviser for further information.

The Telecommunications Minor	*Units*
1. Required core: TCOM 120, 140, 160	9
2. Select one of the required courses from your preferred option and any other three units available to you in the option; no more than 2 units in practicum courses may be included in the minor.	6
Total	15

Master of Arts Degree in Mass Communications

The graduate program leading to the Master of Arts degree in mass communications, with the emphasis in the electronic media, is based on undergraduate work in telecommunications or an equivalent academic background. For requirements, consult the coordinator of the Mass Communications Graduate Program or of the Telecommunication Program, identified earlier. For courses, see *Special Programs*, pages 453–454. Information about graduate study in the university may be obtained from the Office of the Division of Graduate Studies and Research.



COURSES

Telecommunications (TCOM)

10. Media and Society (3). A survey of the social and institutional framework of contemporary media of communication based upon historical development of technologies, companies, and theoretical concepts. Emergence of regulation, identification of social influences, and contemporary standards of evaluation are also introduced. (Former R-TV 40, R-TV 10)

30. Audio Production (3). Lecture and laboratory experiences in sound recording and transmission techniques as they apply to the recording industry, radio, film, and video. (2 lecture, 2 lab hours) (Former R-TV 41, R-TV 30)

50. Video Production (3). Lecture and laboratory experiences in production techniques as they apply in television program development. (2 lecture, 2 lab hours) (Former R-TV 44, R-TV 50)

70. Introduction to Film/Video (4). The basic principles and theories of Super 8mm filmmaking and single-camera video production. A comparison of film and video as contemporary art forms. (4 hours lecture, discussion, demonstration; outside projects required) (Former R-TV 70)

80. Media Performance (3). Basic theories and techniques of broadcast and film performance. Lecture and laboratory experiences in vocal and visual aspects of performance; analysis and preparation of material for media performance. (2 lecture, 2 lab hours) (Former R-TV 25, R-TV 80)

110. Media Problems and Practices (2). Prerequisites: TCOM 10 or equivalent. This course is an introduction to the day-to-day concerns of media professionals as they appear in current industry periodicals such as *Broadcasting* magazine. Subscription(s) required. (Former R-TV 110)

120. Writing for the Media (3). Prerequisites: TCOM 10, 30 or 50, Engl 1 and 20, or equivalents. Required of majors, this course focuses on continuity types; writing and evaluation of announcements, commentaries, and program formats; adapting the written word to the aural/visual media. (Former R-TV 141, R-TV 120)

131. Radio Operations Practicum (1; max total 2). May be used in lieu of R-TV 115 credit by continuing students. Prerequisites: TCOM 10 and 30 or equivalents; permission of instructor. Enrollees participate in the operation of the university FM radio station, on a scheduled basis, under instruction and supervision of program faculty. (1 lab, 4 arranged hours) (Former R-TV 131)

140. Media Audiences and Effects (3). Prerequisites: TCOM 10, Psych 10, and Soc 3, or equivalents. Required of majors, this is a study of recent and contemporary research addressing audiences for media and programs; effects of programs on audiences; uses of programs by audiences. (Former R-TV 140)

145. Audience Measurement (4). Study of survey research methods as employed in the broadcast ratings industry for stations, networks, and agencies; conduct of a local audience measurement project. (Former R-TV 188T, R-TV 145)

148. News/Public Affairs Analysis (4). Study of methods of content analysis as used to evaluate programs for emphasis, bias, style, comparison; conduct of an analysis of local

news/public affairs programming. Project participation required. (Former R-TV 148)

150. Advanced Video Production (3). Prerequisites: TCOM 10, 50, and Drama 34, or equivalents. Development of critical and creative skills; study of production theory and practice; participation in planning, organization, and production activities. (1 lecture, 4 lab hours) (Former R-TV 144, R-TV 150)

151. Television Operations Practicum (1; max total 2). May be used in lieu of R-TV 115 credit by continuing students. Prerequisites: TCOM 10 and 50 or equivalents; permission of instructor. Enrollees participate in television studio operations on campus and in the media community, on a scheduled basis, under instruction and supervision of program faculty. (1 lab, 4 arranged hours) (Former R-TV 151)

153. News/Public Affairs Laboratory (3). Prerequisites: TCOM 10, 30 or 50, Jour 8, 100W, and 128; permission of instructor. Characteristics of electronic news media; local and national broadcast news operations; news sources and resources; social influence; policy and control; planning and producing news, and public affairs programs. (2 lecture, 2 lab, arranged hours) (Former R-TV 142, R-TV 153)

155. Television Directing (3). Prerequisites: TCOM 150 and Drama 44; permission of instructor. Theories and practices in producing and directing television productions and programs; planning and production for the directorial function. Laboratory goal to create airworthy products for closed-circuit, cable, or broadcast distribution. (1 lecture, 4 lab, arranged hours) (Former R-TV 147, R-TV 155)

160. Broadcast Regulation (3). Prerequisite: TCOM 10 or equivalent. Required of majors, the course examines philosophies and principles of mass communication control and their application to the electronic media, development of regulatory patterns in the U.S. media, and social responsibility of the broadcaster. (Former R-TV 160)

163. Radio/TV as Popular Culture (3). Satisfies G. E. Capstone requirement in Popular Culture and Society cluster. A consideration of the media as popular cultural arts through study of development of program forms, social influences. Programs are studied in script and recorded forms. Term paper required. (Former R-TV 127, R-TV 163)

165. Broadcast Programming (3). Study of strategies and practices in programming radio and television stations and cable television operations. Lecture, discussion, and analysis/evaluation are primary course methods. Term project and paper required. (Former R-TV 188T, R-TV 165)

170. Motion Picture Production (3). Prerequisites: TCOM 70 and 120 or equivalents; permission of instructor. Advanced study of problems of camera and sound; production organization and equipment; laboratory projects in film production. (2 lecture, 2 lab, arranged hours) (Former R-TV 170)

171. History and Development of Motion Pictures (3). Criteria for motion picture selection; use of reviews and judgments by critics and organizations; critical observation of films. Evaluations required. (Former R-TV 128, R-TV 171)

173. Film/Television Criticism (3). Study of traditional and new critical approaches to film and their application to television; analysis and interpretation of films and television programs through humanist critical methodology. (Former R-TV 187T, R-TV 173)

175. Documentary (3). History and criticism of documentary in its various forms with emphasis on the analysis of techniques, methods, styles, purposes, and social significance in film and television. (Former R-TV 187T, R-TV 175)

180. Advanced Media Performance (3). Prerequisites: 9 units from TCOM 80, Drama 22, 44, Spch 3, or their equivalents; permission of instructor. Theories and practices of performance in radio, television, film; refinement of professional skills and standards; laboratory goal is cable, closed-circuit, or broadcast performance. (2 lecture, 2 lab, arranged hours) (Former R-TV 149, R-TV 180)

185. Proseminar in Media Management (3). Prerequisites: TCOM 160, 165, and BA 120, or equivalents; permission of instructor. Organization, operation, and administration of radio and television stations and cable television facilities; correlation of department functions; relation to regulatory agencies and the marketplace. (Former R-TV 185)

186. Media Internship (3; max total 6). Prerequisites: 15 upper-division units in TCOM program; permission of instructor. Applied practice in an area media outlet or an allied agency. On-the-job and faculty supervision/instruction; conferences and reports required. *CR/NC* grading only. (Former R-TV 186)

189. Media Projects (3; max total 6). Prerequisites: senior status in TCOM program; permission of instructor. Creative group projects in radio, television, film; public showing/airing or other distribution required. (6–8 arranged hours) (Former R-TV 189)

190. Independent Study (1–3; max see reference). See *Academic Placement—Independent Study,* pages 96–97. (Former R-TV 190)

191. Radio-Management Practicum (1; max total 2). May be used in lieu of R-TV 115 credit by continuing students. Prerequisites: Completion of one semester TCOM 131 with *B* or better; permission of instructor. Enrollees participate in management of the university FM radio station with a specific, assigned responsibility for an operational element, under faculty supervision. (1 lab, 4 arranged hours) (Former R-TV 191)

195. Proseminar in Media Issues (3). Prerequisite: senior standing, eligible for graduation. This major capstone course examines current issues affecting all phases of the media industries through discussions with local media executives and middle-management personnel and readings in current industry periodicals such as *Broadcasting* magazine; normally taken in the spring semester the degree requirements are completed. Subscription(s) required. (Former R-TV 195)

200 series. Graduate courses are listed under *Special Programs—Mass Communication,* pages 453–454.

IN-SERVICE COURSES

(See *Course Numbering System,* p. 133.)

305T. Topics in Telecommunications (1–3; repeatable with different topics). (Former R-TV 305T)

One of the most important industries in the United States is entertainment. It dominates the leisure time market to the tune of three billion dollars a year. You can successfully compete in this dynamic and rewarding industry with a solid background in theatre arts.

Our major and minor are designed to develop your skills in acting, dance, directing, playwriting, management, children's theatre, technical production, scene design, costume design, lighting design, history, literature and teaching. After completing our program you will have had the opportunity to develop the skills and techniques that will enhance your ability to pursue either an advanced degree or a professional career.

Our professionally trained instructors will guide you through a program which is not only educational but fascinating. A major or minor in theatre can be one of the more exciting times in your life because it will develop communication and performing skills in you that will aid you no matter what career you finally decide to pursue. If theatre is what you want, then the CSU, Fresno Theatre Arts Program is ready to serve you.

CSU, Fresno's national and international award winning Theatre Arts Program offers you extensive professional and educational preparation in all aspects of theatre and dance. Besides having the opportunity of being guided by an extensive curriculum and production schedule of more than 12 plays and several dance concerts, you will have the opportunity to study with guest professionals who participate in our program on a regular basis.

At CSU, Fresno you have a variety of production organizations, each providing a different kind of experience. University Theatre produces five major productions a year, cast and crewed by students. The Experimental Theatre Company (E.T.C.) is a student organization with its own board of directors. Playwrights Theatre is dedicated to the production of original plays. The Child Drama Center, as its name implies, produces plays for young people, two of which tour throughout the Valley. You also have the opportunity to work with our resident dance company, The Portable Dance Troupe. As you can see, there are many formats for you to develop and practice your arts at CSU, Fresno.

Facilities

At CSU, Fresno you have the opportunity to study and practice your art with an outstanding faculty in well-equipped theatres and production facilities. Our complex consists of a 420 seat proscenium theatre, a 200 capacity arena theatre, a 200 capacity Child Drama Center, and a 6,000 capacity amphitheatre. You will work closely with fourteen faculty members who are current in their craft and professionally active in acting, directing, dance, design, technical production and management. Playwriting is a specialty of several of our faculty; all have published and two have been awarded Schubert Fellowships. As you might imagine, we encourage the production of original plays at CSU, Fresno.

Career Opportunities

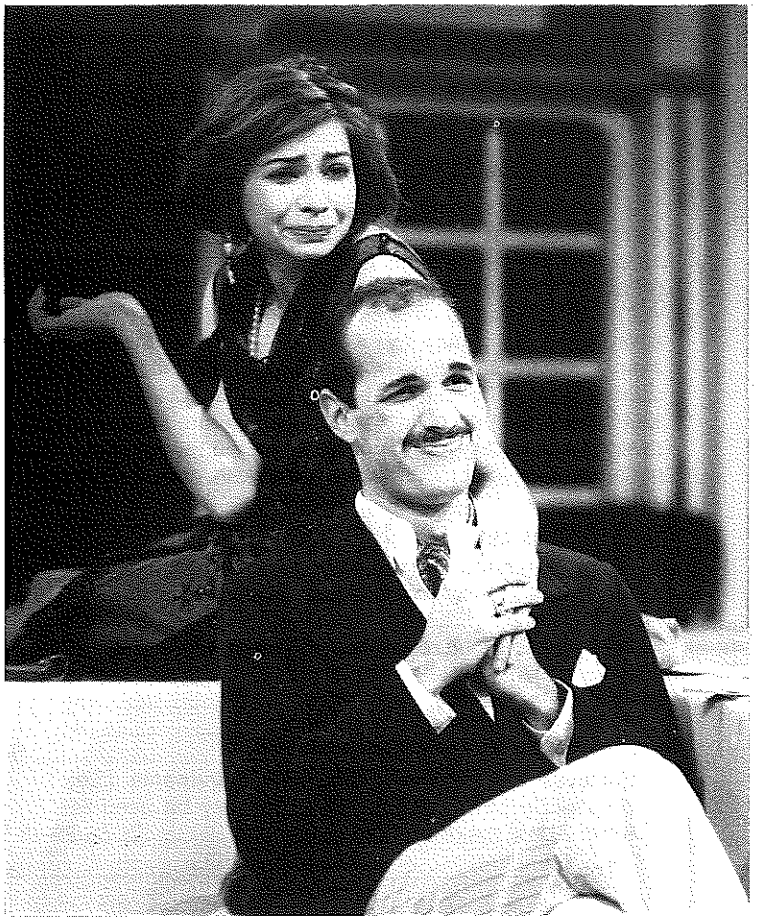
Professional theatre and dance are very competitive areas especially for performers. Nevertheless, CSU, Fresno graduates have more than held their own as actors and dancers in the professional world. As designers, production specialists and managers, our students have readily found career opportunities. The rapid expansion in home video entertainment promises even more opportunity in the field.

Theatre Arts

School of Arts and Humanities
Department of Communication Arts and Sciences
Ronald D. Johnson, Chair

Theatre Arts Program
Ronald D. Johnson, Coordinator
Speech Arts Bldg., Room 33
(209) 294-3987

B.A. in Theatre Arts
Option in:
Dance
Minor in Theatre Arts
Single Subject Teaching Credential in:
English/Drama



Graduates have also found successful careers in related fields such as radio and television, journalism, rock performances and touring productions. Many graduates teach in high schools, community colleges and universities. Several former students have found their theatre training as an asset in such careers as law, theology and politics.

Faculty

Ronald D. Johnson, *Coordinator*

Howard H. Brewer
Jeanette P. Bryon
M. C. Drake
Edward F. EmanuEl
Gaylord O. Graham
Ruth H. Griffin
Janet Loring
Kathleen S. McKinley
Terry C. Miller
Bradley J. Myers
Charles H. Randall
Lois M. Trostle
Phillip N. Walker
Robert G. Ware

Graduate Adviser: Janet Loring
Credential Adviser: R. Gene Anderson

To insure a rich and varied experience for students, the program makes extensive use of guest artists as master teachers in workshop and courses as well as performers, directors and designers.

Bachelor of Arts Degree (Theatre Arts) Requirements

Theatre Arts Major and Minor

The theatre arts major and minor are designed to provide competencies in the theatre arts for students who intend to pursue study beyond the Bachelor of Arts degree, who are preparing for careers in teaching or for the professional theatre. With the assistance of their advisers and with departmental approval, students may, by proper selection of electives, prepare themselves for service in one or more of the following specializations: acting/directing, arts administration, dramatic literature and theatre history, child drama, oral interpretation, technical/design, elementary or secondary teaching credential. These patterns of development should be determined in consultation with advisers.

Theatre Arts Major *Units*

1. **Major requirements** (see Note 1 below): 50
   - *a) Lower-division requirements:* Drama 10, 33, 34, Dance 20 ..... (12)
   - *b) Upper-division requirements:* Drama 134A, 134B or 181A, 135, 139, 163, 185, 186 ..... (21)
   - *c) Drama 15–115* ..... (8)
   - *d) Approved electives* (see Note 2) ..... (9)
2. **General Education requirement:** 54
3. **Electives and remaining degree requirements** (See *Degree Requirements,* pp. 98–101); may be used toward a dual major or minor: ..... 20–26 *

Total 124

* This figure takes into consideration that a maximum of two General Education—BREADTH courses may also be applied to satisfy theatre arts major requirements (see *General Education,* pp. 104–111). The two courses that may be selected are Drama 34 and 163. Consult the theatre arts department chair or faculty adviser for additional details.

Notes:

1. Special Requirements: (Students majoring in theatre arts are advised to enroll in no more than two production courses per semester.)
   a) Audition for each departmental production and accept any role or production responsibility assigned. (May be waived only by written consent of a majority of the theatre arts faculty.)
   b) Obtain specific approval from the program coordinator for participation in nondepartmental production activities, extra-curricular, or noncollege responsibilities. Majors are expected to be available for full participation in departmental production activities.
   c) New majors must enroll in Drama 10 (fall) and Dance 20 (spring) during their first year in the program.
2. Consult Theatre Arts Program coordinator regarding approved electives.
3. No course used to satisfy General Education CAPSTONE requirements may be used to satisfy Theatre Arts major requirements.
4. *CR/NC* grading is not permitted in the theatre arts major with the exception of Drama 15–115.
5. General Education and elective units may be used toward a dual major or minor (see *Dual Major,* p. 98 or departmental minor). Consult the appropriate department chair, program coordinator, or faculty adviser for further information.

Theatre Arts Major (Dance Option) *Units*

1. **Option requirements:** 55
   - a) Drama 15–115 (4 units), 33, 34, 134B or 181B .(13)
   - b) Dance 20, 159, 164A–B, 166, 167, 170, 171, 175A ..... (30)
   - c) Dance 117A, B, C, or D (must enroll in one section each semester) ..... (6)
   - d) Dance 158A, B, C, or D (must enroll in one section each semester) ..... (6)
2. **General Education requirements:** 54
3. **Electives and remaining degree requirements** (see *Degree Requirements,* pp. 98–101); may be used toward a dual major or minor: 15–21*

Total 124

* This figure takes into consideration that a maximum of two General Education—BREADTH courses may also be applied to satisfy dance option requirements (see *General Education,* pp. 104–111). These two courses are Dance 171 and Drama 34.

Notes:

1. Special requirements: Students seeking the dance option are required to have competency in either Dance 117 (Modern) or Dance 158 (Ballet) for graduation.
2. A maximum of 12 units of dance technique courses (117, 118, 155, 158) and/or physical education/athletic activity courses may be credited toward the minimum B.A. graduation requirement of 124 units.
3. *CR/NC* grading is not permitted in the dance major.
4. General Education and elective units may be used toward a dual major or minor (see *Dual Major,* p. 98 or departmental minor). Consult the appropriate department chair, program coordinator, or faculty adviser for further information.

Theatre Arts Minor *Units*

Drama 10, 30 or 31, 33, 34, 163	15
Drama 15–115	2
Approved electives (upper division)	3
	20

Credential Program

Consult the teacher education department coordinator concerning the required course of study for the Single Subject Waiver Program in English/Drama.

Master of Arts Degree (In Speech) Requirements—Option in Theatre Arts

The graduate program in theatre arts is designed to extend the competency of students in the study and practice of theatre arts. The Master of Arts Program in Speech has two options, one in theatre arts and one in speech communication.

The graduate program in theatre arts assumes undergraduate preparation equivalent to a CSU, Fresno major or minor in theatre arts with adequate emphasis in the specialization selected for the graduate major.

Under the direction of a graduate adviser, each student prepares and submits a coherent program designed within the following framework:

	Units
1. Drama 200, 221, 231, 232, 233 and 240	18
2. Approved electives	9
3. Drama 298 (Project) or 299 (Thesis)	3
Total	30

COURSES

Theatre Arts (Drama)

1. Theatre Appreciation (1; max total 4). Open to non-majors. Understanding elements of theatre production through observation of a wide variety of staged productions. Discussion will stem directly from productions observed during the semester.

10. The Art of Theatre (3). Fundamental knowledge and skills required for study in the theatre arts program which includes the literary basis, technique, visual impact and presentation of drama.

15. Dramatic Arts Laboratory (1–2; max total 6) (Same as Drama 115). Group laboratory experience in presentation of major productions for public performance.

22. Fundamentals of Interpretation (3). Discovering and communicating intellectual and emotional meaning of the printed page through preparation and presentation of selected readings from prose, poetry, and drama.

30. Voice and Speech for Performance (3). Open to theatre arts majors and minors only. Principles of voice and speech for stage performance including the International Phonetics Alphabet, breathing, relaxation, resonance, enunciation, articulation, pronunciation, projection, expressiveness, and vocal characterization.

31. Fundamentals of Voice and Articulation (3). Open to non-majors only. Principles of voice and articulation with demonstration in various aspects of oral communication.

32. Introduction to Acting (3). Not open to Theatre Arts majors. Fundamentals of improvisation, voice, movement, and acting. Development of stage presence, and an introduction to characterization and dramatic text.

33. Fundamentals of Acting (3). Fundamental techniques and theories of acting; development of individual insight, skill, and discipline in the presentation of dramatic materials.

34. Theatre Crafts (3). 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 major plays for public performance.

35. Intermediate Acting (3). Prerequisite: Drama 33. Intermediate studies in acting including text analysis, expansion of the actor's character range and audition techniques.

44. Fundamentals of Motion Picture Acting (3). Introduction to the basic creative and mechanical principles of motion picture acting through preparation and presentation of scenes on tape for analysis and discussion.

62. Theatre Today (3). Not open to theatre arts majors. Perspectives on contemporary theatre forms and productions.

83. Touring Theatre (1–3; max total 6) (Same as Drama 183). Prerequisite: permission of instructor. Experience in touring major productions for public performance.

89. Projects in Production (1–3; max total 9) (Same as Drama 189). Prerequisite: permission of instructor. Group projects in all phases of production in laboratory theatre.

101. Theatre Appreciation (1; max total 4). Open to non-majors only. Understanding elements of theatre production through observation of a wide variety of stage productions. Discussion will stem directly from productions observed during the semester.

115. Dramatic Arts Laboratory (1–2; max total 9) (See Drama 15).

131. Fundamentals of Playwriting (3; max total 9). Exercises in plotting, characterization, exposition, and stage business, critical analysis and revision of manuscripts.

133A–B. Advanced Acting (3–3 units). Prerequisite: Drama 35. (A) Advanced techniques of voice, movement, emotion, and characterization, developed through improvisation and scene study. (B) Period styles of acting. (Former Drama 133)

134A–B. Advanced Theatre Craft (3–3). Prerequisite: Drama 34. (A) Advanced training in scenic techniques and allied technology. Laboratory application to major public productions. (B) In-depth survey of each phase of the costume design and production process. Laboratory application to major public performances.

135. Make-up for Theatre (3; max total 6). Theory and practice of make-up for theatre; techniques for characterization, style, and technical processes; aesthetics, analysis of characters for make-up. Preparing plays for major public performances.

136. Puppetry (3). Introduction to the art of puppetry: history, construction of various types of puppets and theatre, practice in manipulation, script writing, use of puppets in education and recreation.

137. Creative Dramatics (2; max total 6) (Same as T Ed 137). Basic techniques for the use of dramatization in elementary education; socio-drama, dramatization of school subjects, creative dramatic play; simplified staging techniques.

138. Children's Theatre (3; max total 6). Theories of children's theatre and application to problems in production; preparing plays for major public performance.

139. Fundamentals of Play Direction (3). Prerequisite: Drama 33. Fundamental techniques and theories of stage direction; function, responsibility, movement, analysis, style; practice in directing scenes.

140. Experimental Techniques in Play Direction (3). Experimental techniques of play direction: prerehearsal problems

and procedures; structural analysis of plays, composition, picturization, pantomimic dramatization, movement, rhythm.

145. Women in the Theatre (3) (Same as W S 145). Historical and contemporary perspectives and attitudes applied to women in the theatre arts including study of female artists, actresses, dancers, theatrical designers and technicians, directors and teachers.

150. Theatre Management and Promotion (3). Principles of organization, operation, and administration of educational, community, and professional theatre; box office operation, accounting procedures, ticket manipulation, house management, fund raising, promotional media. Supervised practical experience in dramatic art area production.

155. Sound in the Theatre (3). Theory, techniques, and procedure necessary to develop and integrate sound, music, and effects in theatre production; hearing, acoustics, environment, sources, transducers, control, systems, equipment; organization and planning. Laboratory experience in preparing plays for a major public performance.

157. Theatre Graphics (3; max total 6). Development of rendering technique and other graphic skills essential to design for the theatre.

160. Field Studies in Theatre and Dance (1–6; max total 8). Prerequisite: permission of instructor. Supervised off-campus study of the theatre arts and dance. Submission of project or term paper required.

163. Dramatic Literature (3). Critical analysis of various types and styles of plays with respect to their form, meaning and theatricality.

178. Oral Studies of Shakespeare (3). Prerequisite: Drama 22. Appreciation and communication of representative histories, comedies, and tragedies; problems of content and structure from the point of view of the oral interpreter.

179. Playwrights' Theatre (1–2; max total 6). Prerequisite: permission of instructor. Presentation and readings of original and classical plays.

180A–B. Scene Design for Theatre (3–3; 180B max total 6). Prerequisite: permission of instructor. (A) Styles, techniques and methods of scene design; history. Laboratory application, material for major public performance. (B) Scenery design; design problems of a complicated play; experimental ideas; new materials. Laboratory application, material for major public performance.

181A. Costume History for Theatre (3). A survey of historical periods of dress from early Egyptian civilizations to present day with an emphasis on application to stage usage.

181B. Costume Design for Theatre (3). A chronological series of design projects from the classical Greeks to contemporary Pinter with an emphasis on the synthesis of script, research material, character analysis, and design elements.



182A–B. Stage and Television Lighting (3–3). Prerequisite: Drama 34 or 134A–B. (A) Instruments, control, color, electromechanical factors and simplified design and planning lighting leading to and resulting in a major public performance. (B) Lighting as an art, design concepts; lighting plots, projections, sequential cue relationships. Laboratory application, material for major public performance.

183. Touring Theatre (1–3; max total 6) (See Drama 83).

184. Readings in Dramatic Literature (3; max total 6). Open to upper-division students of all departments. Prerequisite: permission of instructor. Reading and discussion of great plays of history.

185. History of the Theatre and Drama I (3). Prerequisite: Drama 163. History of European theatre and component arts from ancient Greece through the mid-nineteenth century; analysis of representative examples.

186. History of the Theatre and Drama II (3). Prerequisite: Drama 163. From Ibsen to the present; analysis of representative examples.

188T. Topics in Theatre Arts (1–6; max total 9). Prerequisite: permission of instructor. Selected topics may include: acting, children's theatre, creative dramatics, play direction, technical theatre, theatre history, dramatic literature and theatre administration. (May include lab hours)

189. Projects in Production (1–3; max total 9) (See Drama 89).

190. Independent Study (1–3; max see reference). See *Academic Placement—Independent Study,* pages 96–97.

194. Shakespeare (4). (See Engl 189)

GRADUATE COURSES

(See *Course Numbering System,* p. 133.)

200. Introduction to Graduate Study (3). Seminar in research procedures and materials. Required of all majors during the first semester of graduate work.

220T. Seminar in Theatre Arts (1–3; max total 9 if no area repeated). Prerequisite: graduate standing and permission of instructor. Principal theories and research in the phases of the theatre arts: directing, history, criticism, aesthetics, playwriting, scene design, costume design, sound, lighting, architecture, theatre administration, oral interpretation.

221. Seminar in the Theory and Criticism of Drama and Dance (3). Theory and criticism of the uses of text, time, space, and motion in drama and dance.

231. Applied Studies in Acting and Directing (3). Prerequisite: Drama 32 or 33, Drama 139. Theoretical and practical study of selected acting and directing styles.

232. Applied Studies in Design (3). Prerequisite: Drama 134A, 134B. Study and analysis of performance as the product of design, in script, direction, environment, technology and management.

233. Seminar in Theatre Administration and Production Management (3). Prerequisite: Drama 200, 221, 231, 232. Development of problem-solving, decision-making, and management skills required in theatre administration and production management.

240. Practicum in Dramatic Production (3). Prerequisite: Drama 200, 221, 231, 232, 233. Advanced creative projects with emphasis on theatre as a synthesis of performing arts, designed to enhance individual depth and proficiency in each student's selected area of concentration.

290. Independent Study (1–3; max see reference). See *Academic Placement—Independent Study,* pages 96–97.

298. Project (3). Prerequisite: See *Criteria for Thesis and Project,* pages 467–468. Advancement to candidacy for the M.A. degree and permission of the Graduate Committee Chair. Individual project in a Theatre Arts specialty such as performance, play direction, playwriting, design, technical production, choreography and other creative works. Project requires documentation in a report format.

299. Thesis (3). Prerequisite: See *Criteria for Thesis and Project,* Pages 467–468. Preparation, completion, and submission of an acceptable thesis for the master's degree.

IN-SERVICE COURSES

(See *Course Numbering System,* p. 133.)

303. Topics in Theatre Arts (1–3)

Dance Courses (Dance)

A maximum of 12 units of dance technique courses (117, 118, 155, 158) and/or physical education/athletic activity courses may be credited toward the minimum B.A. graduation requirement of 124 units.

20. Movement/Space (3). Fundamental theories and technique of movement for performance required for study in the Theatre Arts and Dance Option programs.

116. Introduction to Modern Dance (1). Basic technique, improvisation, and composition. Moving through space, energy, and time with focus on varying internal and external stimuli as impetus for movement.

117A. Modern Dance Technique (1; max total 2). Prerequisite: permission of instructor. Basic aspect of modern dance technique. Emphasis on importance of breath, body alignment and rhythmic coordination; total movement awareness.

117B. Modern Dance Technique (1; max total 2). Prerequisite: permission of instructor. Beginning-intermediate level study of movement fundamentals, locomotor activities, and expressive qualities; development of balance, strength, breath coordination and technical ability.

117C. Modern Dance Technique (2; max total 6). Prerequisite: permission of instructor. Intermediate level of modern dance technique; center practice and locomotor movement, stress on increased movement awareness through individual technical development and personal expression.

117D. Modern Dance Technique (2; max total 12). Prerequisite: permission of instructor. Advanced level in modern dance technique; elements of alignment, flexibility, strength, rhythm, and energy flow. Exposure to techniques of Limon, Nikolais, Humphrey, Graham, and others.

118. Tap (1). Combination of movement fundamentals and studies in rhythmic structures. Basic skills in tap dance and understanding rhythmic phrasing through percussive sounds of feet.

155A. Modern Jazz Dance (1). Prerequisite: Dance 116 or 158A. Rhythmic and stylistic devices of jazz and rock movement using modern dance technique as a movement foundation.

155B. Modern Jazz Technique (1). Prerequisite: permission of instructor. An in-depth study of jazz dance techniques and different jazz idioms; emphasis on individual style, freedom of expression.

158A. Ballet Technique (1; max total 2). Beginning level of ballet technique. Basic principles of tournout, plier, etentre, relever, sauter, tomber, tourner, muscular control, and balance. Partial barre work, port de bras, adagio, centre barre, petit allegro, and grand allegro.

158B. Ballet Technique (1; max total 2). Prerequisite: permission of instructor. Beginning-intermediate level of ballet technique. Introduction to important theories of French, Russian, Italian, and Danish techniques. Extended practice of complete class; barre, port de bras, adagio, centre barre, and allegro.

158C. Ballet Technique (2; max total 12). Prerequisite: permission of instructor. Intermediate-advanced level of ballet technique. Concentrated study and practice of French, Russian, Italian, and Danish concepts and theories of technique.

158D. Ballet Technique (2; max total 12). Prerequisite: permission of instructor. Advanced level of ballet technique. Advanced practice and study of French, Russian, Italian, and Danish concepts and theories of technique.

158P. Ballet Pointe (1). Prerequisite: permission of instructor. Advanced level of ballet technique and technical training for ballet pointe work. Advanced study of style and theory used for ballet pointe.

159. Music as Dance Accompaniment (3). Experimentation with different musical media, i.e., rhythm, sound, speech, music accompaniment as it relates to dance movement. Musical form, composers, improvisation, selection and preparation of methods.

160. Creative Movement for Children (3). Prerequisite: P E 147. The exploration of rhythmic coordination for children to enhance their imagination through the expressive use of the body, development and growth through self activity, exploration of space, movement to music and self-created sounds. (2 hours lecture, 2 hours lab)

163. Dance Performance (2; max total 8). Group laboratory experience in the learning and presentation of finished choreographed works. Practical experience in the requirements of rehearsing, understudying and performing roles.

164A. Dance History: Classic (3). European dance beginning in the 16th century and its sequel, the classical and contemporary ballet.

164B. Dance History: Contemporary (3). Modern dance, its growth and development.

166. Dance Choreography (2; max total 16). Prerequisite: working knowledge of movement observation and dance aesthetics. Exploring through studio problems the nature of experimentation in movement and self-paced progression from expression to communication.

167. Dance in Education (3). Prerequisite: permission of instructor. Unique potential found in movement for the development of creativity through the teaching of dance.

170. Centering and Alignment (3). Prerequisite: Phy 33. A course designed to introduce a spectrum of models and concepts used in somatic analysis and movement facilitation. Emphasized is the use of images and thought to acquire efficient and safe alignment for ease of expression through dance.

171. Philosophical Bases and Trends in Dance (3). The elements and principles common to all arts and their relationship to dance.

173. Theories of Improvisational Movement (3; max total 9). Philosophical and physiological ideas in the possibilities of spontaneity as they relate to the actual process of human movement.

174T. Topics in Dance (1–3; max total 12). Selected topics may include: philosophy, psychology, art, theatre, and music as related to dance.

175A. Effort/Shape (3). Prerequisite: permission of instructor. An introduction to the Laban system of movement analysis. Designed to include movement and observation, effort/shape analysis and the application of this work in the fields of education, performance, and therapy.

175B. Delsarte System of Expression (3). Prerequisite: permission of instructor. An introduction to the science and art of Francois Delsarte. Designed to include movement observation, Delsarte Analysis, and the application of this work in the fields of choreography, stage movement, and therapy.

176A–B. Expressive Movement Core Seminar (3). Prerequisite: Dance 175A–B. A two-semester course. Seminar II is a sequel to Seminar I. The course is theoretical and experiential exploration of the therapeutic process as it relates to the creative process in dance.

177. Myth and Movement (3). A mythical journey using movement/dance to explore the role of myth in contemporary life. Myths from the Orient and the Occident, modern, ancient, and primitive traditions.

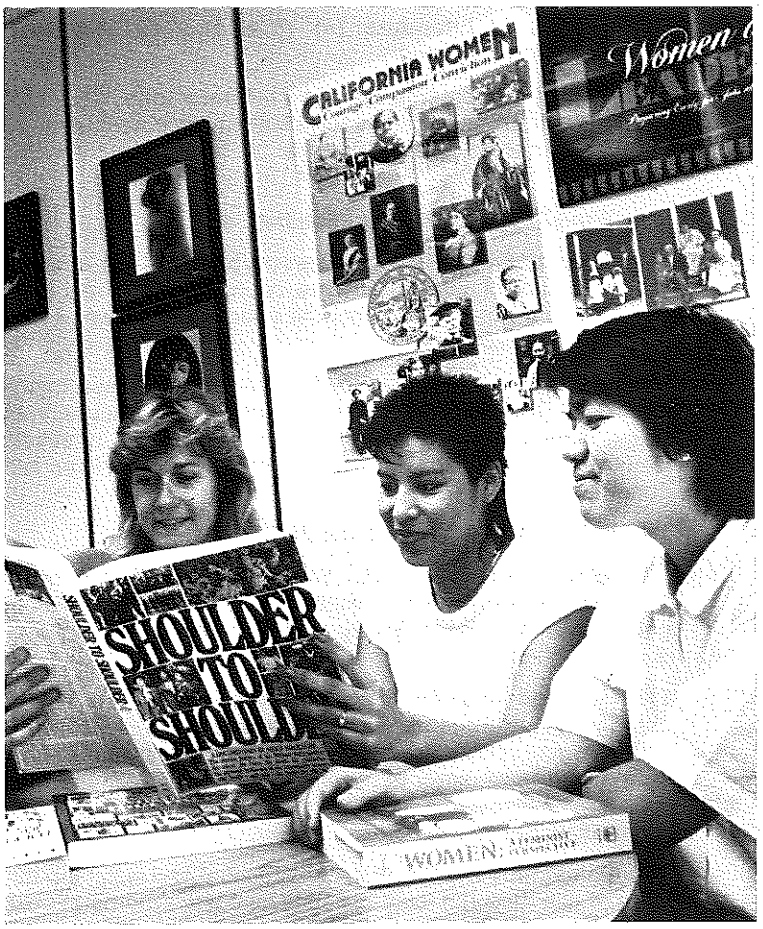
178. Movement and the Teachings of Don Juan (3). Creation of movement rituals which explore the teachings of Don Juan (e.g., enemies, knowledge, seeing, power). Examination of the Ritual Process and its relation to the dance of life.

179. Mantra/Mandala/Movement (3). The structure and content of the idea of Mandala studies both visually and gesturally. Emphasis on movement mandalas, their shapes, sounds, and colors.

Women's Studies

School of Social Sciences
Women's Studies Program
Susan S. Arpad, Coordinator
San Ramon 3, Room 113
(209) 294-2858

Minor in Women's Studies



Career Opportunities

Women's Studies classes encourage students to develop critical and analytical thinking skills and the ability to communicate new ideas to a general public. Women's Studies students frequently say that Women's Studies classes enhanced their self-esteem and enabled them to more clearly define their special skills and talents. Therefore, all fields open to most social sciences and humanities graduates are open to Women's Studies graduates.

More specifically, students with a strong academic background in information about women find a growing number of career opportunities such as women's service agencies: displaced homemaker centers, rape counseling service, battered women's shelters. Students majoring in fields like gerontology, mass communications, nursing, recreation, criminology, economics, health sciences, and social work, say that their major defines the field in which they will work; Women's Studies defines their special interest within that field. Postgraduate education in business, law, medicine, social welfare, psychology, and education has provided many Women's Studies students with satisfying and challenging career opportunities.

Program Faculty

Women's Studies has its own full-time and part-time faculty, who come from a variety of disciplines: history, humanities, economics, sociology, and psychology. In addition to this core faculty, many individuals teach Women's Studies courses in their home departments: anthropology, art, Chicano studies, criminology, drama, education, English, ethnic studies, health sciences, history, philosophy, psychology, recreation, and sociology. Saturday School faculty are most often chosen from the community-at-large on the basis of their particular area of expertise.

Minor Requirements

An interdisciplinary minor is available to any CSUF student. Each student's minor program is individually planned by the student in consultation with the Women's Studies program coordinator.

The minor in Women's Studies requires a minimum of 20 units, including W S 10 and W S 175. At least six units must be upper division. The other 14 units shall be selected from at least two different disciplines. In addition to the courses listed as regular offerings, below, electives may be chosen from special topics courses on women offered periodically by certain departments.

COURSES

Women's Studies (W S)

10. Introduction to Changing Women (3). Introductory interdisciplinary course designed to provide a foundation for Women's Studies; focus on women in the areas of sociology, psychology, history, economics, and the arts.

37. Math Confidence (2) (See N Sci 37)

50T. Studies in Literature (4) (See Engl 50T section). *Women in Novels section.*

55T. Topics in Women's Studies (1–4; max total 12). Topics of current issues in the Women's Movement, covering a wide variety of interest. (See *Schedule of Courses* for specific topics.)

101. Women in History (3) (See Hist 101)

105. Education and Sex Role Stereotypes (3). Designed to meet the needs of parents, teachers, counselors, administrators. How sex role stereotypes affect the educational system, pre-K through higher education.

108. Rape (1). An inquiry into the phenomenon of rape, myths about rape and rapists, treatment of rape victims, discussion of physical and psychological preparation for possibility of attack. Lecture, film, paper, speakers. An all day workshop held on two consecutive Saturdays.

110. Women in Sport (3) (See PE 110)

112. Assertive Training (1). Women's special needs in becoming assertive; blocks preventing assertion and methods of getting around them. An all day workshop held on two consecutive Saturdays.

114. Marriage and the Family in the 1980's (1). A reexamination of the concept of traditional marriage and the family, and emerging concepts of the 1980's. Contemporary complaints against traditional family roles, proposed alternatives, and their implications. Films, speakers. An all day workshop held on two consecutive Saturdays.

116. Domestic Violence (1). An historical and cultural overview of the battered and battering spouse syndromes; the marriage contract as a license to abuse; the status of remedial legislation; and, the effect of parental battering on children. (Former W S 150T section)

118. Women and Aging (1). An exploration into the myths and realities of the aging process, with a focus on women. The class will confront the issues of aging in order to stimulate constructive change and positive alternatives for women.

124. Feminist Art (3; max total 6) (See Art 104)

126. Legal Rights of Women (3) (See Crim 126)

127. Female Sexuality (3) (See H S 126)

130. Women's Health (3) (See H S 130)

131. Sociology of Sex Roles (3) (See Soc 131)

132. Women and Work (3) (See Soc 132) (Former W S 150T section).

135. Women in Other Cultures (3). Examines the religious, economic, and social roles of women in the world, including their current status in at least four of the following areas: China, Southeast Asia, India, Africa, Middle East, South America.

137. Black Women (3) (See Bl S 137)

145. Women in the Theatre (3) (See Drama 145)

150T. Topics in Women's Studies (1–4; max total 12). Topics of current issues in the Women's Movement, covering a wide variety of interests. (See *Schedule of Courses* for specific topics.)

152. The Chicano Family (3) (See CLS 152)

155. Career Life Planning (3). An exploration of contemporary career planning models and their practical application in the work world. Identification of individual needs, values and capabilities as they apply to making career choices and becoming upwardly mobile. (Former W S 150T section)

160. Feminist Issues in Counseling (3). Prerequisite: W S 10 or permission of instructor. Evaluates counseling theories; individual and group counseling techniques; examines ethical issues and power structure in therapeutic settings; surveys community resources; and explores innovative and feminist perspectives concerning the effective treatment of women.

165. Women and the Media (3). Historical perspectives, contemporary issues, and future alternatives for women as mass media professionals and for consumers of sexist media messages. (Former W S 150T section).

168T. Women and Literature (4) (See Engl 168T)

170. Women: Culture and Biology (3) (See Anth 170)

172. Psychology of Women (3) (See Psych 172)

175. Seminar in Women's Studies (3). Primarily for Women's Studies minors. Prerequisite: 15 units in Women's Studies (including W S 10). A synthesis of objective and subjective experience in Women's Studies. In depth research project required.

176T. Genre Film: Form and Function (1–4; max total 8) (See Engl 176T)

179T. Studies in United States History (1–3; max total 6 if no topic repeated) (See Hist 179T)

190. Independent Study (1–3; max see reference). See *Academic Placement—Independent Study,* pages 96–97.

194T. Seminar in Women and Literature (4; repeatable with different topics) (See Engl 194T)



SPECIAL PROGRAMS AND EXTENDED EDUCATION

SPECIAL PROGRAMS

(See individual listings, pp. 450–457.)



AMERICAN ENGLISH INSTITUTE

The American English Institute is designed to prepare international students for American university studies by offering instruction in English as a second language at the intermediate and advanced levels. Instruction is available at three levels: Level I—Advanced, Level II—Advanced Intermediate, or Level III—Intermediate. Students receive 23 hours of instruction each week but do not earn academic credit. Qualified students earn a certificate of completion at the end of each session. During each session, up to 80 international students enroll at the institute. Students have come from more than 25 different countries.

Admission requirements and application procedure: Applicants must meet the following requirements: be older than 16 years of age, be a secondary (high) school graduate, and have an intermediate or advanced level of proficiency in English. Applicants should be motivated to improve their speaking, listening, reading, and writing of English. They should be prepared to attend classes every day and to do homework regularly. Interested students should call or write to the institute to obtain application forms. After completed application forms have been submitted along with an application fee, students can get I-20's. Since processing and mailing of the I-20's takes time, students should apply several weeks before the session begins. For further information, call or write to **Dr. Ellen Lipp, Director, American English Institute, California State University, Fresno; Fresno, CA 93740-0074. Phone: (209) 294-2097.**

Calendar and fees: The American English Institute has three sessions each year: spring, summer, and fall. The institute charges students registration, tuition, health and activity fees. Interested students should contact the institute to get specific information on fees and session dates.

Courses offered: The following list represents courses offered during each session: (1) listening and speaking, (2) grammar, (3) writing, (4) reading, (5) TOEFL preparation, (6) listening laboratory, and (7) reading laboratory.

APPLIED ETHICS

The Applied Ethics Program incorporates a wide range of courses addressing ethical issues and the application of moral values to problems students are likely to face in their professions, private lives, and responsibilities as citizens. These courses are intended to enhance a student's appreciation of her or his own values throughout life. While the program has neither a major nor minor, inclusion of several Applied Ethics courses in a student's curriculum should be beneficial in a number of careers and in life itself. There are several Applied Ethics courses which count toward general education requirements, as well as graduate seminars in certain departments. Prerequisites for advanced courses may be established by participating departments. For further information, consult the **Coordinator, Dr. Warren Kessler (Philosophy)** and the *Schedule of Courses.*

COURSES

Applied Ethics (A Eth)

100. Contemporary Conflicts of Morals (3). (See Phil 120)

101. Introduction to Professional Ethics (3). (See Phil 122)

102A.* Economics, Ethics and Civilization (3). (See BA 101)

102B. Economics, Ethics and Civilization (3). Theories of ethics and their relevance to civilization, a study of the economic and social philosophy of Karl Marx, humanist, scientist and revolutionary, as well as a comparison of the Marxism of the USSR with the philosophy of Mao Tsetung and the People's Republic of China.

104. Politics and Christianity (3). (See Pl Si 112, GE Capstone Cluster)

106T. Topics in Applied Ethics (1–3). Selected topics involving applied ethics covering a range of career and life issues. Usually requires a previous course in Applied Ethics or special background.

190. Independent Study (1–3; max see reference). (See *Academic Placement—Independent Study,* pp. 96–97.)

192. Directed Reading (1–3; max total 6). Prerequisite: permission of instructor. Supervised readings in a selected applied ethics field.

194. Seminar in Applied Ethics (3). Prerequisite: one previous course in applied ethics or special background. Intensive

* A Eth 102A may be substituted for BA 101.

investigation of issues in applied ethics, normally requiring substantial student participation and discussion.

200. Ethics in Psychological Research (2). (See Psych 231)

201. Seminar in Politics and Values (3). (See PI Si 210)

202. Ethics and Public Administration (3). (See GPA 250)

ASIAN STUDIES

CSU, Fresno offers courses in many disciplines which are concerned with South, Southeast, and East Asia. Although there is no degree program in Asian Studies at this time, an interdisciplinary undergraduate minor is available for students who desire a knowledge of Asia as a complement to their chosen academic discipline or profession. For further information and for aid in planning such a course of study, consult the **Coordinator of Asian Studies, Marilyn Hsu, (209) 294-2786, or any member of the Asian Studies Committee.**

Minor

A minor in Asian Studies consists of 21 units, including a minimum of nine upper-division units. Specific Requirements: (1) 6–9 units in one of the areas subsumed under Section I or II below; (2) a total of four courses, two (at least 6 units) from Section I and two (at least 6 units) from Section II, but none in the area chosen in Requirement (1), (3) up to three units of electives from Sections I, II, or III. Independent Study (190) courses in any department may be applied toward the minor as long as they cover some aspect of Asian Studies and are approved by the director. Unspecified topics courses and seminar courses listed below must cover some aspect of Asia to be counted toward the minor.

COURSES

SECTION I. HUMANITIES

Ling. 110 Indic Culture and Tradition (3)

Language

Chinese 1A–1B Elementary Chinese (3–3)
2A–2B Intermediate Chinese (3–3)

Japanese 1A–1B Elementary Japanese (3–3)
2A–2B Intermediate Japanese (3–3)

Sanskrit 10A–B Sanskrit (3–3)

Philosophy and Religion

Philosophy 136 Buddhism (3)
137 Hinduism (3)
138 Chinese Thought (3)
172T Seminar in Religious Issues (1–4)

SECTION II. SOCIAL SCIENCES

Anthropology 123 Peoples and Cultures of Southeast Asia (3)
124 Peoples and Cultures of East Asia (3)
129T Topics in Area Surveys (1–3)
159T Topics in Ideology (1–3)
181 Cultures and Foods of East Asia (3)
186 Tradition and Change in China and Japan (3)

Economics 114 Economics of Underdeveloped Areas (3)
182 Political Economy of China (3)
188T Special Topics (1–3, max total 6)

Geography 177T Asian Regions (3, max total 9, if no area repeated)

History 6 East Asian Civilization (3)
191A Modern Far East, 1843–1949 (3)
191B Modern Far East, 1949–Present (3)
199T Studies in Far Eastern History (1–3; max total 6, if no topic repeated)

Social Work 120T Gandhi and non-violence (3)

Political Science 183 Comparative Administration (3)

SECTION III. COURSES PARTIALLY RELATED TO ASIA

Agricultural Economics 140 International Agriculture (3)
147 Seminar in International Agriculture (3)

BASIC WRITTEN ENGLISH

The minicourses described below are designed to help students improve their writing skills. Each course offers intensive work in a specific area. Students may take one or all or any combination of these one-unit courses. These courses may be taken prior to, concurrently with, or after Eng 1 or A. Classes are taught by members of the English and Linguistics departments.

Basic Written English (B W E)

4A. Spelling and Word Formation (1). Developing awareness of the systematic nature of English spelling in relation to the sound system and rules for word formation in the language. Mastery of the system rather than word memorization will be emphasized.

4B. Vocabulary Building (1). Acquiring greater sensitivity to the literal and implied meanings of words, developing an awareness of the processes of word formation in English, and expanding the active vocabulary.

4C. Sentence Structure (1). Developing skill in writing clear, mature sentences. The focus of the course is on structure—that is, on the alternative ways of phrasing the same idea and the consequences of choosing one alternative and not another. Sentence and phrase expansion, reduction, combination and rearrangement are emphasized, not traditional grammar.

4D. Punctuation (1). Learning to use punctuation marks so that readers readily understand the writer's ideas. Particular attention to the use of commas, semicolons, apostrophes, and dashes. A minimum number of unvarying rules will be emphasized.

4E. Paragraph and Essay Organization (1). Developing skills in identifying the sub-topics which make up the central idea of a paragraph or essay, in expanding and supporting ideas, and in arranging them so that the writer's purpose is carried out as effectively as possible.

CHILD DEVELOPMENT—MAJOR

The university offers an interdisciplinary major leading to the Bachelor of Science degree in child development. The major is appropriate for students interested in vocational opportunities based on children. It may lead to employment in the areas of preschool, child center, private nursery, early childhood and elementary teaching, special programs for disadvantaged children, special education, adult education programs, and other child-related vocations.

The program includes a behavioral science base from psychology, sociology, home economics, and courses in communicative disorders, and speech communications. Faculty advisers for the child development major are located in the Department of Family Studies and Home Economics.

The major consists of a core of 11 courses listed below, plus 15 units of approved electives. ***Note:*** CFS 39, Psych 10, and Soc 1 are prerequisites to some of these courses. Please consult catalog.

	Units
1. Major requirements:	**48**
a. Required Courses:	(33)
CFS 37, 138, 139	(9)
CFS 131 or Soc 165	(3)
CFS 134 or Psych 178	(3)
A S 172, 174	(6)
C D 80	(3)
Psych 101, 136	(6)
Spch 162	(3)
b. Approved electives: (see adviser to obtain an approved list of elective courses)	(15)
2. General Education requirement:	**54**
3. Electives and remaining degree requirements (see Degree Requirements): may be used toward a minor:	**22**
Total	**124**

Notes:

1. *Students seeking teaching credentials should see a Child Development adviser for program planning before enrolling in any classes in the major.*
2. Under the restrictions of the major, students may make approved adaptations in their programs to fulfill specific needs and career objectives in consultation with their faculty adviser.
3. *CR/NC* grading is not permitted in the major.
4. No course used to satisfy General Education CAPSTONE requirements may be used to satisfy child development major requirements.

COOPERATIVE EDUCATION

CSU, Fresno's Cooperative Education program (Co-op) incorporates productive, major-related work experience into a student's academic studies. Cooperative Education students are given the opportunity to combine classroom theory with "on-the-job training" to work with professionals in their particular field of study, and to test their career choice.

In addition to augmenting their marketable knowledge, students receive competitive wages, develop maturity, and may earn academic credits from cooperating departments. The program is available to all academic majors upon completion of the freshman year. There are two options for participation:

1. Under the ***Alternating Plan,*** students work one semester on a full-time basis, and then study one semester on a full-time basis.
2. Under the ***Parallel Plan,*** part-time work is found that closely relates to a student's current classes and career interests.

Work related to the students' academic and career choices are identified through the efforts of the Cooperative Education Office in combination with academic departments, plus Career Development and Employment Services. Placement arrangements are negotiated with local cooperating employers in the San Joaquin Valley, as well as throughout California and the Western United States. Co-op students have been placed in city, state, and federal governmental agencies; agriculture; business; and all facets of private industry.

To be eligible for Co-op, you must be currently registered at CSU, Fresno, have at least a 2.0 grade point average, and be a sophomore, junior, senior, or graduate student. For further information, telephone the **Cooperative Education Office at 294-2160 or visit Joyal Administration Building, Room 256 (209-294-2703).**

The following courses offer field experiences that may qualify as cooperative education. Check with the academic department for enrollment requirements:

A S 115F	Field Work in Special Education
A S 237	Field Work in School Counseling
A S 238	Field Work in Professional Services Counseling
Ag Ec 194	Agribusiness Internship
A Sci 194	Agricultural Internship
C E 193	Internship in Civil Engineering
C Sci 194	Cooperative Education
E E 195	Electrical Engineering Cooperative Internship
Engl 185	English Internship Seminar
Engl 186	Internship in English
Enol 194	Enology Internship
H Ec 193	Cooperative Education
FScN 193	Supervised Work Experience
H S 185F	Field Work in Health
I E 193	Industrial Engineering Cooperative Internship
M E 193	Mechanical Engineering Cooperative Internship
Ph Th 180T	Topics in Physical Therapy
Plant 194	Agricultural Internship
Pl Si 187	Internship in Public Administration
S E 193	Internship in Surveying Engineering
T Ed 122F	Field Work in Outdoor Education
T Ed 182	Field Work in College Teaching

GERONTOLOGY

The interdisciplinary minor in gerontology (study of aging) is open to students in any major. It is especially designed to serve undergraduate majors in Communicative Disorders, Home Economics, Health Sciences, Nursing, Physical Therapy, Psychology, Recreation, Social Welfare and Sociology; graduate majors in various social science and health professions areas; those

currently working for service agencies for the aging; and aging individuals who are interested in gaining greater insight into this period of their lives.

The minor consists of from 21 to 24 semester units of credit. The total to be determined by the student's major adviser and the coordinator of services to older adults.

The following list indicates the course requirements of the minor:

		Units
A. **Basic course** (required)		3
Caps 160	Orientation to Gerontology (3)	
B. **Core courses** (four of the following six courses are required)		12
Soc 166	Social Gerontology (3)	
Psych 103	Maturity and Old Age (3)	
S Wrk 125	Social Services for the Aging (3)	
Caps 132	Aging as a Social Issue (3)	
CSH 117	Resource Management of Aging (3)	
FScN 162T	Nutrition: Life Cycle II (3)	
A S 180T	Counseling Skills in Aging (3)	
P E 148	Biophysical Aspects of Aging (3)	
H S 115	Health Problems of Aging (3)	
C. **Elective courses** (any of the following courses required—or the course not completed in group B)		3
Anth 155	Folk Medicine (3)	
C D 80	Principles of Communicative Disorders (3)	
Rec 159	Volunteer Coordination (3)	
W S 10	Introduction to Changing Woman (3)	
A S 185T	Summer Institute on Aging (2)	

In addition classes on aging that are offered through Division of Extended Education, and the Saturday classes may be accepted for meeting elective credit requirements.

D. **Intern or research course.** Required field work or a research project relating to the aging, usually to be arranged through coordinator of gerontology minor. The number of units required determined by the department concerned. Consideration will be given to previous work experience with the aging		3–6
		21–24

The basic and core courses in the minor can be beneficial to any student in understanding the aging process and in correcting misconceptions about characteristics of aged individuals.

For further information, please call or write **Gerontology Program, School of Health and Social Work (294-4004).**

Certificate in Gerontology

The certificate in gerontology is an interdisciplinary program of study awarded to students who complete 12 units of carefully selected courses in the field of gerontology. Normally the students admitted to the program will have had some college preparation (e.g., an A.A. or A.S. degree, two years of college) or two years of experience related to the field of aging. Certificate work must be completed with a *C* average or better in the required 3 units and the 9 units of electives. The following list includes the course requirements of the certificate:

		Units
Required		3
CapS 160	Orientation to Gerontology (3)	
Electives		9
CSH 117	Resource Management of Aging (3)	
Soc 166	Social Gerontology (3)	
CapS 132	Aging as a Social Issue (3)	
S Wrk 125	Social Services for Aging (3)	
A S 180T	Counseling the Older Adult (3)	
P E 148	Biophysical Aspects of Aging (3)	
H S 115	Health Problems of Aging (3)	
A S 185T	Summer Institute on Aging (2)	
Total		12

Contact the School of Health and Social Work or the gerontology coordinator for additional information.

MASS COMMUNICATION GRADUATE PROGRAM

The Master of Arts degree in mass communication is an interdisciplinary degree program jointly offered by the journalism and telecommunications faculties of the university. The program has been developed to prepare students for professional roles in the various mass communication industries, as teachers in the mass communication disciplines, or as candidates for advanced graduate study and research.

The Division of Graduate Studies and Research provides administrative coordination for graduate interdisciplinary programs and courses.

Supervised by a joint committee of representatives from the Department of Communication Arts and Sciences and the Department of Journalism, the program has options in print media and electronic media administered by the two respective departments. For more information, contact **Philip J. Lane, coordinator, at (209) 294-2826.**

Master of Arts Degree Requirements

The Master of Arts degree program in mass communication assumes that the student has an undergraduate major in a directly related field, such as radio, television, film, journalism, etc.

(See also *Admission to Graduate Standing, Advancement to Candidacy, Program Requirements, and Criteria for Thesis and Project,* pp. 464–468.)

Under the direction of an advisory committee, each student prepares and submits an individually designed course of study within the following framework:

	Units
Required core courses (see *Specific Requirements*)	9
Courses in selected major option (print or electronic media)	9–12
Approved electives in cognate areas (e.g., psychology, political science, sociology)	3–6
Thesis	6
Total (at least 18 units in 200-series)	30

Specific Requirements: M Com 200, 201, 202

COURSES

The following graduate courses in mass communication may be used on master's degree programs.

Mass Communication (M Com)

200. Historical and Critical Research Methods (3). (Core) A seminar in historical and critical research methods, including

cultural studies and legal research, and their underlying philosophical bases. Papers required.

201. Quantitative Research Methods (3). (Core) A survey of philosophies of modern research and of quantitative-empirical research methods used in studies of mass communications phenomena, including experiment, field survey, and content analysis. Papers required.

202. Mass Communication Theories (3). (Core) A study of the nature and structure of theory and of theoretical literature in mass communications and related fields. Papers required.

204T. Seminar in Journalism (3; max total 9). Seminar in a print media topic: government information policy, news media and urban affairs, social responsibility in public relations, magazine influence in America.

205T. Seminar in Radio-Television (3; max total 9). Seminar in an electronic media topic: current regulatory issues, mass media and social influence, comparative and international broadcasting, film as social comment, issues in media management.

230. Criticism of Broadcasting and Film (3). Development of ethical, artistic, and critical standards for broadcast and motion picture evaluation. Principles of criticism are traced from an historical to a contemporary context. Research papers and reports required.

290. Independent Study (1–3; max total 6). (See *Academic Placement—Independent Study,* pp. 96–97.)

299. Thesis (6). Prerequisite: see *Criteria for Thesis and Project,* pages 467–468. Preparation, completion, and submission of an acceptable thesis for the master's degree.

SPECIAL MAJOR—MASTER'S DEGREE

The special major for the Master of Arts degree is available to qualified graduate students when there is a need for advanced study in subject matter that is interdisciplinary and that is not available through existing graduate programs. In such instances, proposals for a special major that may combine cohesive, interrelated course work from two or more departments, must be submitted for the approval of the Dean, Division of Graduate Studies and Research. Proposals that could be accommodated by an existing master's degree or option at CSU, Fresno will not be approved.

General Eligibility

The student must demonstrate a superior undergraduate preparation for advanced studies and research appropriate to the departments involved in the proposed special major. The student must meet the minimum criteria for admission to conditionally classified standing in the departments concerned.

Degree Requirements

The basic requirements for the special major are the same as for all other master's degrees. At least 50 percent of the program must be in courses designated for graduate study, that is, in graduate-level 200 series courses. The proposed program must truly reflect the requirements of scholarly creativity and research appropriate to the graduate level and must exhibit overall coherence in a particular, recognized field of study. The proposed program must lead to the mastery of specific knowledge or skills in an area of advanced studies for which adequate faculty, library, and laboratory resources are present. Although the special major provides an opportunity for exceptional students to engage in a program outside the framework of existing majors, all normal graduation requirements and standards will be applied. Students pursuing a special major master's degree are required to write a thesis to fulfill the requirement for a culminating experience. For more detailed information concerning the application process, the procedures for constituting a committee and program for the special major, consult the Office of the Division of Graduate Studies and Research.

INTERNATIONAL PROGRAMS

The university offers two programs under this heading, a campus program, and an overseas program. The campus program of international studies courses is designed for students whose native language is not English and for those whose education has been in a language other than English. All such students are required to participate in post-admission English language testing. As a result of such testing, any student may be required to register for certain International Studies Courses.

Campus Program

The International Program (Campus) provides courses intended to help the foreign student gain adequate skill in the use of the English language and sufficient familiarity with American customs and tradition to obtain maximum benefit from his experience at an American college. The following program is required of all entering foreign students, unless excused from part or all of it by the Admissions Committee on the advice of the persons concerned with the instruction and administration of the program. This decision will be based on a consideration of test scores and other data supplied by the student with his application. (See *International Student Services and Programs,* p. 61.) After arrival on campus, examinations and an interview may lead to the student's being excused from certain courses.

First Semester Program: Most students will be required to enroll in E F L 10, 21, and I S C 93 in the first semester of residence. In addition, students with less skill in English may be required to take E F L 2R. With permission of his/her international counselor, a student may enroll in other regular courses.

Other Undergraduate Courses: E F L 110W is required in most cases of all transfer students who have completed English 1 or its equivalent and 56 units of course work.

Courses Taken in Graduate Standing: An entering graduate student whose previous education has been in a language other than English is held to the same standards of English proficiency as are undergraduate students and may be required to enroll in the following undergraduate courses when considered necessary by his advisers.

COURSES

English as a Foreign Language (E F L)

2R. Grammar and Reading Comprehension (3). Review of intermediate and advanced grammatical patterns. Reading comprehension and vocabulary building. Must be taken for *CR-NC* grade only and is not applicable to the requirements for the baccalaureate degree.

10. English Composition for Foreign Students (3).

Practice in writing paragraphs, short essays, and other types of writing. Brief review of certain grammar problems and punctuation.

10L. Writing Skills Lab (1).
Laboratory for students who need individualized writing assignments.

21. Advanced Oral Practice in American English (3).
Advanced work on stress, rhythm, and intonation. Practice in listening comprehension. Speech styles: formal vs. informal. Speech organization and delivery.

110W. Advanced Composition for Foreign Students (3).
Prerequisite: Engl 1. Review of selected points of English usage. Conventions of writing formal research reports. Writing of short essays. Practice in paraphrasing and summarizing. Writing complex sentences in concise form. Meets Upper Division Writing Skills Requirement for graduation.

110L. Writing Skills Lab (1).
Laboratory for students who need individualized writing assignments.

International Studies—Campus (I S C)

93. Contemporary American Society (1).
Introduction to contemporary American society to familiarize the student with political and social issues and ideological conflicts.

INTERNATIONAL PROGRAM (Overseas)

The California State University (CSU) International Programs offers students the opportunity to continue their studies overseas for a full academic year while they remain enrolled at their home CSU campus. The International Programs' primary purposes are to enable selected students to gain a firsthand understanding of other areas of the world and to advance their knowledge and skills within specific academic disciplines in pursuit of established degree objectives.

A wide variety of academic majors may be accommodated by the 34 foreign universities cooperating with the International Programs in 16 countries around the globe. The affiliated institutions are: the University of Queensland (Australia); the University of Sao Paulo (Brazil); the universities of the Province of Quebec (Canada); the University of Copenhagen (through Denmark's International Student Committee's Study Division); the University of Provence (France); the Universities of Heidelberg and Tübingen (Germany); the Hebrew University of Jerusalem (Israel); the University of Florence (Italy); Waseda University (Japan); the Ibero-Americana University (Mexico); Massey University and Lincoln University College (New Zealand); the Catholic University of Lima (Peru); National Chengchi University (Republic of China/Taiwan); the Universities of Granada and Madrid (Spain); University of Uppsala (Sweden); Bradford University and Bristol Universities and Kingston Polytechnic (the United Kingdom). Information on academic course offerings available at these locations may be found in the International Programs Bulletin which may be obtained from the International Programs representative on campus.

Eligibility for application is limited to those students who will have upper-division or graduate standing at a CSU campus by the time of departure, who possess a cumulative grade point average of 2.75 or 3.00, depending on the program, for all college level work completed at the time of application, and who will have completed required language or other preparatory study where applicable. Selection is competitive and is based on home campus recommendations and the applicant's academic record. Final selection is made by the Office of International Programs in consultation with a statewide faculty selection committee.

The International Programs supports all tuition and administrative costs overseas for each of its participants to the same extent that such funds would be expended to support similar costs in California. Students assume responsibility for all personal costs, such as transportation, room and board, and living expenses, as well as for home campus fees. Because they remain enrolled at their home CSU campus while studying overseas, International Programs students earn full resident credit for all academic work completed while abroad and remain eligible to receive any form of financial aid (other than work-study) for which they can individually qualify.

Information and application materials may be obtained from **Sonya L. Hildreth, Coordinator, International Programs (Overseas) at the International Student Services and Programs Office, Joyal 211, or Paul Kinzel, Academic Council Member (in San Ramon 4, Room 104)** or by writing to **The California State University International Programs, 400 Golden Shore, Long Beach, CA 90802-4275.** Applications for the 1988–89 academic year overseas must be submitted by February 1, 1988.

COURSES

California State University, Fresno students under The California State University International Programs register concurrently on campus and at the host institution abroad, with credit assigned in terms of CSU, Fresno courses. Undergraduate students who find appropriate study opportunities at the host institution but no local counterpart course may use Independent Study (190), and International Study Abroad (92) or (192). Graduate students may use Independent Study (290), and International Study (292).

International Studies—Abroad (I S A)

92. Projects in Study Abroad: (Subject) (Units variable; max total 18). Open only to students in California State University and Colleges International Programs. Study undertaken in a university abroad under the auspices of the California State University and Colleges.

192. Projects in Study Abroad: (Subject) (Units variable; max total 18). Open only to students in California State University and Colleges International Programs. Study undertaken in a university abroad under the auspices of the California State University and Colleges.

292. Projects in Study Abroad: (Subject) (Units variable; max total 18). One- to three-unit registrations. Prerequisite: admission to master's degree program; written plan approved by the instructor, department chair, and dean of the Division of Graduate Studies and Research. May require one or more

papers and oral or written examination on the student's return before the recording of the final grade.

NATIONAL STUDENT EXCHANGE PROGRAM

The National Student Exchange, a consortium of 75 state-supported colleges and universities, allows students to attend, for up to one academic year, an institution of higher learning in another area of the United States. In bringing together students from different parts of the country, the program encourages participants to broaden their academic, social, and cultural awareness. Through a simplified admissions process, students are able to enroll at their host institutions with the same financial benefits enjoyed by in-state residents. Course work completed will be treated as transfer course work, but students will be allowed to retain catalog rights for CSU, Fresno degrees.

To qualify, a participant must (1) be a full-time student; (2) have sophomore or junior standing during the exchange; (3) have a minimum cumulative GPA of 2.5.

For more information about this opportunity for educational travel and study in a new environment, contact **Sabina A. Jacques, Coordinator, Office of the Vice President for Academic Affairs, Thomas Administration Bldg., Room 110 (294-2636/4668).**

LATIN AMERICAN STUDIES

CSU, Fresno offers several interdisciplinary courses designed to meet the needs of students interested in Latin American Studies. There is no degree program available at this time, however, an interdisciplinary undergraduate minor is available. Under certain circumstances a special major may be designed to meet specific needs of students in this area. For additional information, consult the **Coordinator of the Latin American Studies Program, Dr. Manuel Figueroa, Chicano-Latino Studies Program, San Ramon 4, Room 116 (294-2848).**

Minor

The minor consists of 21 units of upper-division courses in the area. The program must be approved by the Coordinator of Latin American Studies and a Latin American Studies adviser in the area of concentration. A maximum of 9 units must be taken in any one area listed below and the remaining 12 units from any three of the other areas. One year of lower-division Spanish or Portuguese is recommended.

COURSES

Agricultural Economics (Ag Ec)

140. International Agricultural Development (3)
147. Rural Development Administration (3)

Anthropology (Anth)

121. Peoples and Cultures of South America (3)
127. Peoples and Cultures of the Southwest (3)

Art History (Art H)

173. Pre-Columbian Mexico (3)
175. Pre-Columbian Andes (3)

Economics (Econ)

114. Economics of Underdeveloped Areas (3)
178. International Economics (3)
179. Global Corporations and the Third World: The World Economy (3)
188T. Political Economy Special Topics (1–3; max total 6)

Foreign Language (Span)

125. Hispanic Culture (3)
143. Introduction to Spanish-American Literature (3)
145. Mexican Literature (3)
147. Twentieth Century Spanish-American Literature (3)
148T. Major Figures in Hispanic Literature (3)
240. Spanish-American Literature (3; max total 9 if no topic repeated)

Geography (Geog)

170T. Latin American Regions (3, max total 9 if no area repeated)
188T. Topics in Geography (1–3; max total 9)
195. Field Geography (1–6; max total 6)

History (Hist)

145. Spain and Portugal (3)
160. The Great American Civilizations: Maya, Aztec, Inca (3)
161. Caribbean America (3)
165. Modern Mexico (3)
169T. Studies in Latin American History (1–3; max total 6 if no topic repeated)
183. The Hispanic Southwest (3)

Chicano Latino Studies (CLS)

7. Music of Mexico and the Southwest (3)
103. Chicano Folklore (3)
112. Pre-Hispanic Civilizations (3)
114. Mexico and the Southwest 1810–1910
115. Mexico-U.S. Relations Since 1910
180T. Topics of Chicano Society (1–3; repeatable with different topics)

Political Science (Pl Si)

126. International Law and Organization (3)
128T. Topics in International Relations (1–4; max total 8 if no topic repeated)
146T. Area Studies in Latin America (1–4; max total 8 if no topic repeated)

Departmental Independent Studies (190 and 290) and Directed Readings (191, 192, and 292) may be applied to the major and minor requirements with adviser approval.

OFF-CAMPUS CREDIT TOWARD DEGREE

Certain circumstances, such as full-time employment, travel, or other personal commitments, may prevent a student from continuing with formal course work on the CSU, Fresno campus for one or two semesters. Even though regular attendance on campus is impossible, a capable and motivated student may earn credit through Independent Study and Directed Readings and thus continue to make progress toward a degree. The credit will be entered on the transcript as lower-division elective credit

and a maximum of six units for any combination of the courses will be counted toward degree requirements. It is necessary to have the approval of a faculty member willing to supervise the study and of the department through which the credit will be awarded prior to enrollment.

The student must enroll during the late registration period and pay the required fees if credit is to be received.

For further information, assistance, and referral, call **Office of Advising and Orientation, (209) 294–2924.**

90 IS. Independent Study (1–3). Except in unusual circumstances, available only to students with an average of 3.0 or higher.

91 DR. Directed Reading (1–3). Completion of a structured reading program dealing with a specific topic or area of study. Written reports as required by the supervising faculty.

RUSSIAN AREA STUDIES

CSU, Fresno offers an interdisciplinary minor in Russian Area Studies. This minor may complement a number of academic majors and will prove helpful to students seeking employment with public or private organizations dealing extensively with the Soviet Union.

Minor

The Russian Area Studies minor consists of 20 units, of which at least 11 must be in the Russian language, and at least 6 from the departments of Geography, History, and Political Science.

Students with a major in Russian language and literature will be given credit for Russian 1A–B, and must take 3 additional units of Russian language and literature beyond the requirements for the Russian major, plus 9 units from the remaining four sections below (Russian and Soviet Culture, Russian and Soviet History, Soviet Geography, Soviet Politics), including at least 6 units selected from the departments of Geography, History, and Political Science.

Likewise, students with a major in geography, history, or political science must choose their units within these areas so that they are in addition to, and not duplicates of, the course requirements for their major.

Courses taken to meet the CAPSTONE requirement of General Education may also be used to fulfill the requirements for the Russian area studies minor.

COURSES

Russian Language

Russian 1A–B	Elementary Russian (4–4)
Russian 2A–B	Intermediate Russian (4–4)
Russian 101	Composition and Conversation (3)
Russian 118A–B	Twentieth Century Literature (3–3)
Russian 190	Independent Study (1–3)

Russian Literature

Russian 110	Landmarks in Russian Literature (3)
Russian 148A–B	Russian Literature in Translation (3–3)
Russian 190	Independent Study (1–3)

Russian and Soviet Culture

Russian 103T	Topics in Russian Culture (3)
Russian 127T	Soviet Russian Topics (3)
History 144	Russian Culture (3)

Russian and Soviet History

History 142	Tsarist Russia (3)
History 143	The Soviet Union (3)

Soviet Geography

Geography 176	Geography of the U.S.S.R. (3)

Soviet Politics

Political Science 125	Soviet Foreign Policy (3)
Political Science 141	Soviet Politics (3)

URBAN STUDIES

(See *City and Regional Planning Program,* p. 406.)

DIVISION OF EXTENDED EDUCATION

Dean: *(To be appointed)*
San Ramon 3, Room 141
(209) 294-2524



The Division of Extended Education offers programs designed to enhance and enrich the quality of life of individuals and their communities through the acquisition of skills, experience, and knowledge. Programs serve both matriculated and nonmatricu-lated students through either credit or noncredit instruction.

EXTENSION

To meet the growing demand for continuing education, numerous courses are offered by Extension in the California State University, Fresno, service area. The service area covers Fresno, Madera, Kings, and northern parts of Tulare counties.

The financially self-supporting Extension program offers several courses in all disciplines. To provide flexibility and to better serve the needs of the entire community, regular college courses are offered for credit as well as other programs for noncredit. In addition, conferences, training seminars, workshops, and certification programs may be developed. Extension programs are administered by the dean of Extended Education in accordance with admission and academic policies of California State University, Fresno and the Trustees of The California State University.

Admission Requirements

No matriculation is required for Extension classes. Enrollment in Extension courses does not constitute formal acceptance into the university. Extension courses are open to high school graduates, college students, and other individuals provided they have met the stated course prerequisites. Course prerequisites can be determined by contacting departmental advisers or the instructor, or by consulting the *General Catalog.* Interested individuals should report directly to the classes or contact the Division of Extended Education for an explanation of registration procedures.

Unit Restrictions

Baccalaureate Degree: Extension and correspondence credit limited to 24 semester-units. Up to 24 semester units of Extension credit may be transferred from accredited institutions, provided the credit would have been acceptable toward a baccalaureate degree had it been earned as residence credit, and provided it would be acceptable toward a degree offered by the institution where it was earned.

Master's Degree: Transfer credit is limited to a maximum of 9 units of the 30 units required for the degree, provided the credit would have been acceptable toward a master's degree had it been earned as residence credit, and provided it would be acceptable toward a degree offered by the institution where it was earned. (See *Graduate Studies and Research,* pp. 462–469, for information concerning the use of specific courses.) Credit derived from 300-level Extension courses may not be used to meet the requirements of a master's degree.

Registration Procedures

Attend the first class meeting. At the first class meeting, students will receive registration forms. Fees for Extension classes are set by the Board of Trustees of The California State University and are subject to change without notice. Current fees are shown in the *Extension Catalog.* Check and booklet must be sent together to the **Business Office, California State University, Fresno; Fresno, CA 93740.**

Students are expected to attend all class meetings and will require permission from the instructor to enter any class after the first regular meeting.

Note in the schedule any special preregistration instructions.

Many classes are limited in size because of staffing and classroom restrictions. Preregistration is required for some classes and highly recommended for all. The university reserves the right to restrict registration in any class in which physical facilities or the nature of the class makes this necessary. Workshops are designated with a *"W"* following the schedule number.

For registration materials and information contact the **Division of Extended Education, California State University, Fresno; Fresno, CA 93740.** The completed registration forms and check or money order for payment of fees should be sent promptly. No registration is final until the forms and fees are received and processed by the university.

Withdrawal or Change of Program

For regular classes: Any changes in the student's program or withdrawal during the session must be made by completing the official forms, as detailed below. These forms may be secured from the Divison of Extended Education. There is no fee for a change of program. If a student withdraws from one or more courses by submitting a Request for a Change of Program form prior to the first class meeting and submits a

Request for Refund of Fees form, the full fee is refunded. Withdrawal on or after the first class meeting, 65 percent of fees collected will be refunded until 25 percent of the course time has elapsed. After 25 percent of the course time has elapsed, no refund will be made. In courses of fewer than five meetings duration there will be no refund made. No refund of fees is made unless requested by the student.

For short workshops: If a student withdraws from a workshop prior to the first class meeting, the full fee is refunded. On or after the first meeting no refund is made.

If a class is cancelled by the Division of Extended Education, all fees will be refunded. However, the student must request this refund.

Refund of Fees

Contact the Division of Extended Education for regulations concerning refund of fees. The student is responsible for the following procedures:

1. Complete and file a Request for a Change of Program form.
2. Complete and file a Request for Refund of Fees form.
3. The dean of Extended Education must approve the Request for Change of Program form.
4. Submit the forms to the Division of Extended Education.

Permanent Records

The university permanent records will show Extension work only at the request of the matriculated student. Extension units do not count as residence credit. For information regarding courses, course fees and instructional costs write to the Dean of Extended Education, California State University, Fresno.

Concurrent Enrollment—Extension

Extension students may enroll in regular session classes. Such concurrent enrollment is limited to upper-division and graduate courses and to lower-division courses not readily available at nearby community colleges. Enrollment requires the approval of the instructor. An Extension student is expected to meet all course prerequisites, to participate fully in the class, to meet all class requirements, and to pay the appropriate Extension fees. The grade received is entered on the student's Extension record. Concurrent enrollment does not constitute admission to CSU, Fresno. For further information contact the dean of Extended Education.

A student may not register for classes concurrently through extension during a semester in which he/she is enrolled as a regularly matriculated student.

Credit by Examination may not be taken through extension.

Course Numbering System—Extension

Lower-division courses are numbered 1–99 and are designed for first- and second-year students but open to others. Upper-division courses are numbered 100–199 and are designed for third-, fourth-, and fifth-year students; enrollment is permitted by second-semester sophomores with adequate preparation who have completed a minimum of 45 units. They are counted as graduate work for students with graduate status; permitted for use on a master's degree program only with departmental approval. Courses numbered 100G–199G are for graduate students only; designed for use in the first year of two-year master's degree programs; intensive combination of material normally offered at the undergraduate level. Graduate courses are numbered 200–299 and are open to holders of baccalaureate degrees and, with prior approval of the instructor, to second-semester seniors with superior preparation and ability; designed for use on master's degree programs; when taught by Extension, count as upper division in master's degree programs. Courses numbered 300–399 are designed to meet professional needs which cannot be served by regular established course offerings. These courses are offered only through Extension and summer sessions. They assume completion of the bachelor's degree and/or appropriate professional service and are focused upon the problems that enrolled students encounter in their professional service. Although these courses are designed primarily for purposes other than the partial fulfillment of degree and credential requirements, they may, with approval by the department, be applied toward the major. They may be used as part of the 40-unit upper-division requirement for the B.A. degree and as electives in the fulfillment of the total requirements for a baccalaureate degree and/or credential. They may not be used to meet the requirements of a master's degree.

NON-CREDIT PROGRAMS

Special projects may include a variety of activities. Non-credit workshops and professional conferences are conducted when sponsored by departments in cooperation with community agencies. Non-credit courses are offered for self-improvement, personal interest, cultural enrichment or developing skills. The Division of Extended Education is involved in special projects which include educational programs for older adults, Elderhostel Programs, summer sports programs for young people, foreign study programs conducted each summer and winter, English for foreign students, and external degree programs in several academic areas. Special projects and programs can be developed to meet various community needs and interests.

SUMMER SESSIONS

The California State University, Fresno, summer sessions offer an opportunity to students to take a variety of cultural, professional, vocational, and avocational courses. The summer courses are designed to meet the needs of a variety of interest groups, as well as teachers in service, our regular college students, and high school students. Others will find many courses of general, cultural and avocational interest. The program for teachers includes courses that satisfy the requirements for all standard professional credentials, as well as for various degrees and credentials. Work completed in the summer sessions counts as residence credit.

Summer session students are permitted to earn a total of 16 units during 12 weeks of instruction. Students with proper justification and approval may earn units in excess of the maximum. All units earned are applicable towards a degree or credential program. Continuance of any course depends on the number of students enrolling.

Admission Requirements

No matriculation is required for summer classes. The following are eligible to attend summer session:

- High school graduates or 18 years of age (note exception: regarding high school juniors below).
- Students at California State University, Fresno, or other collegiate institutions.

- Other individuals who have met course prerequisites.
- Teachers holding credentials valid for teaching in California.

For students attending summer session at CSU, Fresno, for the first time . . . registration in the summer sessions does not insure the privilege of enrolling as a regular student in the fall semester. Students planning to enroll full- or part-time for the fall semester should call the Admissions Office for deadline dates and procedures. Students holding baccalaureate degrees who are attending CSU, Fresno, for the first time and who are planning to complete master's degrees at CSU, Fresno should consult the dean of the Division of Graduate Studies. Students planning to complete credential program should consult with the dean of the School of Education and Human Development at their earliest opportunity. High school graduates planning to enter CSU, Fresno in the fall must file applications for admission and submit copies of their high school transcripts. It would be to the advantage of the entering freshmen to do this prior to the beginning of the summer sessions. High school students who have completed their junior year and upon recommendation of their principal or counselor may apply for admission to summer session classes at CSU, Fresno. Interested students should contact Dr. Carroll C. Cotten, admissions officer, to arrange for an interview. Credit earned during summer will be placed on permanent record and may be applied toward a degree at CSU, Fresno. Most lower-division courses are open to high school students providing prerequisites are met where applicable.

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 that would be charged if the courses were taken for credit. Credit for courses audited may not subsequently be granted on the basis of the audit.

Credit Allowance

Summer session students are permitted to earn units of credit in relation to the number of weeks in the various summer session programs. The following schedule indicates the number of units allowable for the number of weeks in each session: three-week session—4 units allowable; four week session—5 units allowable; five week session—7 units allowable; six week session—8 units allowable. Completion of a maximum of twelve weeks is possible in a single summer.

Excess Program

Students may register and receive credit for more than the allowable number of units each summer session by obtaining prior approval from the department head in which the major program of summer credit is to be taken. All excess units earned are applicable to a degree or credential. Any student denied permission to take an excess program may request a review of the action by the dean of the school in which the department is located.

Minimum Class Size

Summer sessions must be financially self-supporting. While it is a desire of the administration to publish in the schedule accurate faculty assignments, changes are necessary because of late resignations and insufficient class registrations. Therefore the university reserves the right (1) to cancel a course if not justified by sufficient enrollment; (2) to change the hour at which a class is scheduled; (3) to close class to further enrollment; and (4) to change the previous published staff assignment.

Fees

Registration and payment of fees must be made during the registration period. A fine is assessed for late registration at any time after days and hours announced for registration. Registration is complete only when all required forms are completed, filed and fees are paid. No out-of-state fee is required of non-resident students in the summer session. For registration procedures, summer fee schedule and refunds see *Summer Session Catalog.*

Advising

Academic advisement by departments offering courses is available during registration periods to assist students in course selections. It is recommended that students in the categories indicated proceed as follows—Regular semester students attending summer session should confer with faculty advisers during the spring semester. Students attending summer session who are planning to complete a degree at CSU, Fresno should go to the **Office of Advising Services (Joyal Administration Bldg., Room 219)** for specific advising at the beginning of summer session. Students attending summer sessions only, who are planning to complete degree requirements at another institution should confer with academic advisers at that institution. Students may during the session confer with the Counseling Center about future educational plans and/or personal concerns.

Degrees and/or Credentials

Students planning to complete degree requirements during the summer session must file degree application at the **Evaluations Window #1 or in the Evaluations Office, Room 109, Joyal Administration Building** at the beginning of the summer session. Students completing work for a credential during summer must file application with the **credential analyst in Room 120, Education/Psychology Building.** There is only one date on which master's degrees are granted during the summer, the end of the summer session.

Housing

The residence halls on campus are available to students during any summer session or workshop on campus. The halls are modern, air-conditioned buildings and are attractively furnished and decorated throughout. The majority of students are housed two to a room; however a limited number of single rooms and suites are available. There are no cooking facilities in the halls. Meals can be obtained from the campus cafeteria. Summer housing applications are available in the Housing Office beginning in May. Applications can be requested by writing to the **Housing Office, CSU, Fresno; Fresno, CA 93740.** Confirmation of housing will be determined based on the receipt date of completed application which requires advance payment of fees. To facilitate the processing of applications, all requirements should be met at least two weeks prior to occupancy.

Faculty Responsibility

Summer session instructors are responsible for maintaining standards of academic performance consistent with those prescribed for regular campus courses.

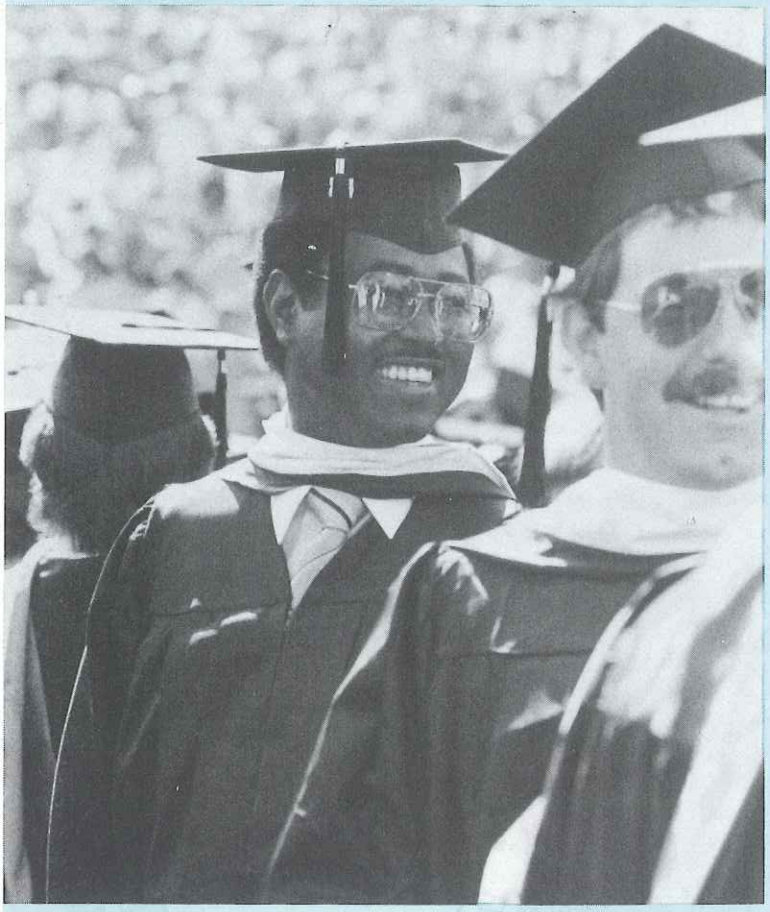
A *Summer Session Catalog* may be obtained from the **Division of Extended Education (San Ramon 3, Room 141, corner of Maple and San Ramon Avenues)** or by writing to the **Dean of Extended Education, CSU, Fresno; Fresno, CA 93740.**



DIVISION OF GRADUATE STUDIES AND RESEARCH

GRADUATE STUDIES AND RESEARCH

Division of Graduate Studies and Research
Vivian A. Vidoli, Dean
David A. Ross, Assistant Dean
Thomas Administration Bldg., Room 132
(209) 294-2448



The Division of Graduate Studies and Research embraces all graduate programs and activities in the university, including programs leading to the master of arts degree in 22 fields, the master of science degree in 16 fields, the master of business administration, the master of city and regional planning, the master of public administration, and the master of social work. Graduate degree curricula are designed both as the first graduate degree for students contemplating doctoral study and as terminal degrees for persons engaged in business administration, public school teaching including community college, social work, employment in government agencies, and other fields in which the master's degree is ordinarily the highest degree earned.

The master's degree program at CSU, Fresno is administered through the Division of Graduate Studies and Research and is under the general supervision of the Dean, Division of Graduate Studies and Research, who is guided by the policy recommendations of the Graduate Council.

Graduate Degrees Offered and Authorized Options

Accountancy, M.S.*
  Financial Accounting, Taxation
Agricultural Business, M.S.
Agriculture, M.S.*
  Agricultural Chemistry, Animal Science, Food Science and Nutrition, Plant Science
Art, M.A.

Biology, M.A.
Business, M.B.A., M.S.
Chemistry, M.S.
City and Regional Planning, M.C.R.P.
Communicative Disorders, M.A.*
  Audiology, Speech Pathology, Education of the Deaf
Counseling, M.S.*
  Marriage, Family and Child Counseling,
    Career Development Counseling
Criminology, M.S.
  Corrections, Law Enforcement
Education, M.A.*
  Administration and Supervision, Bilingual/Cross Cultural Education, Curriculum and Instruction, Early Childhood Education, Reading, School Counseling
Engineering, M.S.*
  Civil Engineering
English, M.A.
  Composition
  Creative Writing
  Literature
Geography, M.A.
Geology, M.S.
Health Science, M.S.*
  Environmental Health, Health Education, Health Services Administration
History, M.A.
Home Economics, M.S.
  Home Economics Education
Industrial Arts, M.A.
International Relations, M.A.
Linguistics, M.A.
  English as a Second Language, French, German
Marine Sciences, M.S.
Mass Communication, M.A.*
  Electronic Media, Print Media
Mathematics, M.A., M.S.
Microbiology, M.A.
Music, M.A.*
  Music Education, History and Literature, Performance Theory and Composition
Nursing, M.S.*
  Clinical Specialization, Primary Care/Nurse Practitioner, Nursing Administration, Nursing Education
Physical Education, M.A.
Physics, M.A., M.S.
Psychology, M.A., M.S.
Public Administration, M.P.A.
Rehabilitation Counseling, M.S.
Social Work, M.S.W.
Spanish, M.A.
Special Education, M.A.
Special Major, M.A.
Speech, M.A.*
  Theatre Arts, Speech Communication

* In these programs, a student may *not* earn a degree without also declaring an option.

Types of Graduate Curricula

Master of Arts degree (M.A.) curricula are offered in art, biology, communicative disorders, education, English, geography, history, industrial arts, international relations, linguistics, mass communication, mathematics, microbiology, music, physical education, physics, psychology, rehabilitation counseling, Spanish, special education, special major, and speech. These curricula are designed to improve professional competence in educational service; to develop ability for continued formal or self-directed study in a field of specialization; and to afford an opportunity to broaden cultural background, develop personal and social responsibility, and prepare for community leadership.

Master of Science degree (M.S.) curricula are offered in accountancy, agricultural business, agriculture, business, chemistry, civil engineering, counseling, criminology, geology, health science, home economics, marine sciences, mathematics, nursing, physics, and psychology. These curricula are designed to improve competence in occupational fields.

Professional master's degree curricula. The Master of Business Administration, the Master of Public Administration, the Master of Arts in rehabilitation counseling, the Master of Social Work, and the Master of City and Regional Planning are professional two-year degrees designed to provide a high level of competence and preparation for leadership in these respective fields.

Graduate Peer Recruitment

The Graduate Division in cooperation with the Student Affirmative Action Program office seeks to increase the diversity of its student population and welcomes inquiries from academically qualified students who are members of underrepresented socio-ethnic groups. The graduate peer recruitment effort provides information concerning application procedures, admission deadlines and financial support to all prospective graduate students. Phone a peer recruiter at **(209) 294-2448.**

Teaching and Graduate Assistantships

A number of teaching and graduate assistantships are available to graduate students who are enrolled in a master's degree program and whose previous records show outstanding achievement in academic work, outstanding subject matter competence in the major field, and the special qualities necessary to the duties assigned. An assistant works under the direction of a regular staff member, assists in such functions as the supervision of laboratories or other small groups, the evaluation of student work, the preparation of course materials, or the conduct of authorized research. An assistant receives a stipend ranging from $1,430 to $5,930 for the academic year.

For information write to the **Dean, Division of Graduate Studies and Research,** specifying field of graduate study and any special abilities that may justify assignment as a graduate assistant.

Definition of Full-Time Student

Depending on the use of the term, there are several definitions of full time. *For the purposes of reporting enrollments,* students taking 12 or more units are considered full-time and students taking less than 12 units are considered part-time. *For purposes of financial aid* (loans, veterans assistance, etc.), a full-time student takes 12 "equivalent units" wherein each graduate unit (200-level) attempted by a graduate student is considered as 1.5 units and each undergraduate unit (100-level or below) counts at face value. For example, a student enrolled for eight 200-level units would be considered a full-time student. Three-quarter time and half-time are defined to be 9 to 11½ and 6 to 8½ "equivalent units" respectively. Under certain circumstances, a student enrolled in Graduate Continuation (zero units) to complete requirements for the master's degree (including Thesis 299, Project 298, and the Comprehensive Examination) may qualify for full-time status or a fraction thereof. The Graduate Office will verify the student's appropriate status in such cases through his/her major adviser upon request from the student.

Graduate and Postbaccalaureate Admission Requirements

Admission Requirement Summary

Graduate and postbaccalaureate applicants may apply for a degree objective, a credential or certificate objective, or may have no program objective. Depending on the objective, the CSU will consider an application for admission in one of four categories:

- *Postbaccalaureate Unclassified*—you will qualify for admission as an unclassified postbaccalaureate student if you **1)** hold an acceptable bachelor's degree from a regionally accredited institution or have equivalent preparation as determined by the campus; **2)** have a grade point average of at least 2.50 in your last 60 semester (90 quarter) units; and **3)** are in good standing at the last college you attended. In unusual circumstances, a campus may make exceptions to these criteria.

If eligible in postbaccalaureate unclassified standing, you may qualify for:

- *Postbaccalaureate Classified* standing to enroll in a credential or certificate provided you satisfy the additional professional, personal, scholastic, and other standards, including qualifying examinations, as the campus may prescribe; or
- *Graduate Conditionally Classified* standing to enroll in a graduate degree curriculum if in the opinion of appropriate campus authority you can remedy any deficiencies by additional preparation; or
- *Graduate Classified* standing to enroll in a graduate degree curriculum if you satisfactorily meet the professional, personal, scholastic, and other standards, including qualifying examinations, as the campus may prescribe.

Applications for Admission to Post-Baccalaureate and Graduate Studies may be obtained in the Office of Admissions. All new and continuing students (students who desire to pursue studies after having received a baccalaureate degree), are required to file this application.

All students who meet the admission requirements for post-baccalaureate studies will receive a notice of ***unclassified standing*** from the Office of Admissions. Admission to ***classified standing*** involves the additional step of an evaluation of the student's record and other documents in accordance with the admission criteria of the program in question. Admission to classified graduate standing is the responsibility of the Office of the Division of Graduate Studies and Research. Admission to classified post-baccalaureate standing in credential programs is the responsibility of the School of Education and Human Services.

Admission to a state university or college with post-baccalaureate unclassified standing does not constitute admission to graduate degree or credential curricula.

Post-baccalaureate students interested in pursuing a second bachelor's degree or a second undergraduate major should contact the appropriate department or the Division of Graduate Studies and Research.

A graduate of a nonaccredited college may be granted admission with ***unvalidated unclassified post-baccalaureate standing,*** upon the filing of the application and two copies of official transcripts of all college work. Such a student may be eligible for placement in regular post-baccalaureate or graduate standing when he or she has cleared all undergraduate deficiencies and has maintained, in residence at CSU, Fresno, a grade-point average of 3.0 on 12 units of approved upper-division work or an average of 2.5 on 24 units of approved upper-division work. (Prospective applicants to master's degree programs, see also *Master's Degrees—Grade Requirements,* pp. 468–469.) When a student with unvalidated post-baccalaureate standing has met the above requirements, it is his or her responsibility to request a new statement of standing from the Admissions Office.

International Graduate Student Admission

TOEFL Requirement. All graduate and postbaccalaureate applicants, regardless of citizenship, whose preparatory education was principally in a language other than English must demonstrate competence in English. Those who do not possess a bachelor's degree from a postsecondary institution where English is the principal language of instruction must receive a minimum score of 550 on the Test of English as a Foreign Language (TOEFL). Applicants to the English program must attain a score of 600. The TOEFL scores, Graduate Record Examination Aptitude Test Scores, application, and official academic documents should reach the university Admissions Office at least six months before the semester for which admission is desired. Applicants to the Accountancy and M.B.A. programs must submit Graduate Management Admissions Test scores; applicants to the M.P.A. and Agricultural Business programs may submit either G.M.A.T. or G.R.E. scores. The TOEFL is administered at various centers throughout the world. For further information about the TOEFL, write or phone the educational attaché at the nearest U.S. embassy or consulate office or write to the **Testing Office, California State University, Fresno; Fresno, CA 93740, U.S.A.**

The Office of the Dean of Graduate Studies and Research will forward inquiries to the appropriate department.

Requests for applications for international admission should be directed to **International Admissions, California State University, Fresno; Fresno, CA 93740, U.S.A.**

Note: The university's Division of Graduate Studies and Research accepts graduate students from abroad with strong academic preparation. During the first semester at CSU, Fresno, foreign graduate students whose native language is not English and who are studying in this country for the first time must enroll in special courses in American language and civilization through the International Study program. These required courses are assigned according to the results of on-campus testing and are designed to speed adaptation to the new environment and to provide the greatest possibility of success in graduate studies.

Admission to Master's Degree Programs—Graduate Standing

Applications for admission to graduate studies are returned to the Office of Admissions. Simultaneously, the applicant must ensure that official transcripts of all previous college or university level work also are sent to the Office of Admissions by the registrar of institutions previously attended. In addition, G.R.E. or G.M.A.T. scores as required by the department to which you apply also must be forwarded to the university. Check with the department to ascertain whether an additional departmental application and letters of recommendation are required. In order to ensure adequate consideration for admission, applicants are advised to submit all complete official documentation by established deadlines.

Applicants to all master's degree programs gain admission in either classified or conditionally classified graduate standing. Many programs impose additional requirements beyond the criteria stated here and the student is invited to consult departmental descriptions elsewhere in this catalog. To be eligible to receive the master's degree at CSU, Fresno, students must be advanced to candidacy and complete all other requirements specified in this catalog by the Division of Graduate Studies and Research and the specific program. Furthermore, candidates for the master's degree must demonstrate a command of the field of specialization and a competence in independent investigation, analysis, and synthesis beyond the scope of individual courses. Students wishing to change their major must contact the Division of Graduate Studies and Research and apply for the change formally. Students are not admitted to master's degree programs unless they have received an admission notice from the Division of Graduate Studies and Research.

Graduate Standing-Conditionally Classified

A student eligible for admission to a California State University campus under the unclassified postbaccalaureate standard above, but who has deficiencies in prerequisite preparation which in the opinion of the appropriate campus authority can be met by specified additional preparation, including qualifying examinations, may be admitted to an authorized graduate degree curriculum with conditionally classified standing.

A student who indicates on the application for admission that he or she wishes to pursue a master's degree objective is considered for classified graduate standing. Applicants who do not meet all the specified criteria for admission to a master's degree program with full classified standing may be recommended for conditionally classified standing by the graduate committee of the program in question. Such a recommendation is accompanied by a statement of the additional requirements (i.e. appropriate baccalaureate preparation including prerequisites) which must be met before full classified standing is granted. This information is communicated to the student by the Office of the Division of Graduate Studies and Research. It is the student's responsibility to request a change in classification status as soon as the specified conditions have been met. Forms for this purpose may be obtained in the Office of the Division of Graduate Studies and Research or from your graduate adviser.

Note: Students who have been granted conditional admission to a graduate program are required to complete all conditions for achieving classified status (full admission) to the program by the semester in which a minimum of 10 units to be used toward the master's degree is completed. In programs of 60

units, except counseling, classification must occur prior to the completion of 30 units. Failure to attain classified standing in a timely manner as outlined above may result in the loss of units to be applied toward the degree since excess units may not be listed on the Petition for Advancement to Candidacy.

Graduate Standing-Classified

A student eligible for admission to a California State University campus in unclassified or conditionally classified standing may be admitted to an authorized graduate degree curriculum of the campus as a classified graduate student if he or she satisfactorily meets the professional, personal, scholastic, or other standards for admission to the graduate degree curriculum including qualifying examinations, as the appropriate campus authority may prescribe.

Only those applicants who show promise of success and fitness will be admitted to master's degree curricula, and only those who continue to demonstrate a satisfactory level of scholastic competence and fitness shall be eligible to proceed in such curricula. (See also, *Grade Requirements,* pp. 468–469.)

Admission to classified graduate standing in a master's degree program at CSU, Fresno requires satisfactory scores on the Graduate Record Examination (G.R.E.) Aptitude Test, or for accountancy and business students, the Graduate Management Admission Test (G.M.A.T.). Applicants for admission to the agricultural business and MPA programs may submit either G.R.E. or G.M.A.T. scores. Check with the master's program to which you wish to apply to determine the minimum score required for you to achieve. Although some programs require a passing score in either the verbal or the quantitative portions of the G.R.E., students must complete all portions, including the analytical portion, of the examination. These tests plus the advanced test are part of a nationally standardized group of examinations prepared and scored by the Educational Testing Service and are given several times a year in various parts of the world; students taking the test at any of the testing centers may request that their scores be sent to the CSU, Fresno Testing Office. The Testing Office administers the tests on the Fresno campus. Information about dates, fees, and application procedures may be obtained from the Testing Office or the Office of the Division of Graduate Studies and Research.

G.R.E. Aptitude Test or G.M.A.T. score reports must be on file in the CSU, Fresno Graduate Office in time for consideration along with the application for admission to graduate standing. It is necessary therefore that the appropriate test be taken well in advance of the first semester of graduate study. While the G.R.E. Aptitude Test is a general requirement, in the absence of satisfactory test scores, departments have the option of recommending other types of diagnostic tests or substituting other measures of aptitude for those students whose records otherwise indicate probable success in graduate study.

Note: A student normally attains classified standing at admission. However, if prerequisites were assigned under conditional classification, classified standing must be attained no later than the semester in which a student completes 10 units, including transfer and post-baccalaureate credit, to be used toward the master's degree. In 60 unit programs, counseling excepted, a limitation of 30 units is applicable. A student is expected to attain classified standing either at admission or during the first semester of studies. Candidates for classification are expected to possess a 3.0 or better grade point average in course work undertaken for use toward the master's degree.

Advancement to Candidacy

Classified graduate standing gives a student permission to work towards qualifying for candidacy. Advancement to candidacy gives a student permission to proceed toward qualifying for the degree and must have been attained prior to enrollment in the culminating experience (i.e. 299 thesis, 298 project, comprehensive examination). Requirements for advancement to candidacy include the following:

1. Classified graduate standing. If a student is not classified by the semester in which a minimum of 10 units to be used toward the master's degree is completed, then not more than 10 units (including transfer and post-baccalaureate credit) completed before achieving full classified standing at CSU, Fresno, may be listed on the Petition for Advancement to Candidacy. Work taken during the semester of classification is considered to be completed in classified standing and may be listed on the Petition for Advancement to Candidacy. Exception: In 60-unit programs, except counseling, the above limitation applies only to the last 30 units.
2. Completion of any additional prerequisites which the adviser specifies in writing.
3. If required, satisfactory completion of the Graduate Record Examination Advanced Test or departmental qualifying examination. The Graduate Record Examination Advanced Test in the major subject field is required of students working toward the master of arts degree in biology, English (literature option only), international relations (government), music, psychology, and the Master of Science degrees in geology, marine sciences, mathematics, and physics. A departmental qualifying examination is required in agricultural business, art, criminology, geography, industrial arts, mass communication, nursing, physical education, physics (M.A.), public administration, rehabilitation counseling, social work, Spanish, speech, and city and regional planning.
4. A minimum grade point average of 3.0 (both overall and at CSU, Fresno) on all upper-division and graduate course work from the date of embarking on the first course of the proposed master's degree program. (See also, *Grade Requirements,* pp. 468–469.)
5. Satisfactory completion of the foreign language requirement for those programs having such a requirement. (See *Foreign Language Requirement,* p. 466.)
6. Departmental recommendation for advancement to candidacy on a petition form available in the Office of the Division of Graduate Studies and Research. 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. On this petition form the student, in consultation with his adviser, lists the coherent set of courses which, when approved, will constitute his degree program.
7. Completion in graduate standing at CSU, Fresno, of at least 9 units of the proposed program with a 3.0 average on all completed work appearing on the program.
8. Submission to the Office of the Dean, Division of Graduate Studies and Research, of the properly signed petition for advancement to candidacy. Advancement to candidacy

must be attained no later than the semester (or summer) preceding the semester (or summer) in which the student applies for, and is granted, the master's degree. The student is responsible for adhering to deadlines established by the Graduate Division for the submission of Advancement forms. Approximate deadlines are October 1 (fall) and March 1 (spring). Forms received after these deadlines are considered late and will be processed as time allows. Students may not expect to be advanced to candidacy and to graduate in the same semester.

9. In keeping with the university's graduate-level writing proficiency requirement, all graduate students must demonstrate their competence with regard to writing skills prior to advancement to candidacy. The department will note on the Petition for Advancement to Candidacy form the means by which the student has met the writing skills requirement. (See also *University Writing Skills Requirement,* p. 99.) Credit earned on the undergraduate university examination assigned solely to meet this requirement may not be used on a graduate student's approved program. Certain 200 series courses with significant assignments indicative of a successful graduate level writing proficiency may be used to meet the writing requirement. These courses, if approved, may be included on a student's program for the master's degree. For a list of courses approved for this purpose consult either the graduate dean or the program adviser. The written departmental qualifying examination may be used to meet this requirement.

New Directions Admissions

Students with a bachelor's degree in one field may wish to work on a master's degree in an unrelated field. In many programs, certain minimal undergraduate prerequisites may be required. In other programs, requirements may be substantially greater.

For complete information, consult the departmental graduate adviser in the program that interests you.

Foreign Language Requirement

Foreign language is not a general requirement for admission to or completion of the master's degree program at California State University, Fresno.

However, for advancement to candidacy, demonstration of competence, usually equivalent to that achieved through two years of collegiate study of one foreign language, is required in specified majors in which upper-division and graduate courses demand such competence. Consult your graduate adviser or the chair of the foreign language department for information about placement tests.

Competence in the use of a foreign language is required for advancement to candidacy for the Master of Arts degree in English, music (vocal performance and music history only). The foreign language requirement for the M.A. in International Relations is a prerequisite for graduation rather than Advancement to Candidacy. Ordinarily the requirement calls for demonstration of the ability to read materials of the major in one appropriate foreign language. Geology and history, however, specify that a student doing a thesis involving a foreign country must have a reading knowledge of the language of that country. Curricula not specified above do not require a foreign language.

Maximum Study Load

Graduate courses require substantially more concentrated study than do undergraduate courses. A normal load is from 9 to 12 units and the maximum allowable load is 16 units for full-time master's degree students when one or more courses in the 200 series are included. Requests for exceptions to this policy must be addressed to the Graduate Division on a petition for academic overload. Students employed full time may take a maximum of 6 units. For maximum units during the summer session see the *Summer Session Catalog.*

Program Requirements

The program requirements for the Master of Arts and Master of Science degrees assume substantial undergraduate preparation in the field. See school and departmental statements in this catalog for particulars. A student lacking this preparation will find it necessary to exceed the minimum requirements indicated below.

The approved degree program for the master's degree is a coherent pattern of (1) specific requirements for the program and (2) additional courses selected to meet the student's particular needs. It consists of at least 30 units completed after the bachelor's degree and five 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 schools or departments and approved by the Graduate Council are acceptable on the unit requirement. 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 approved program must be consistent with the following policies:

1. At least 21 units of the program must be CSU, Fresno, residence credit, and all units used toward the degree, must be completed within 5 years. Courses that were used to satisfy the requirements of a previous degree may not be used on the program.
   a. Transfer credit may be used toward a master's degree only if the institution offering the work is accredited (A-rated) and would use it on a comparable master's degree program, and if it is judged by appropriate university authorities to be particularly relevant to the individual student's program. The student must present appropriate documentation (official transcripts of work completed, catalog copies of course descriptions and grading system at other institutions). Extension and concurrent credit are not regularly used on master's degree programs. Concurrent enrollment is restricted to non-degree-seeking professionals and may not be used to by-pass the university fee structure. In the event that the extension course is offered under conditions similar to those for a course normally usable on a master's program, a student may request special permission to use such an extension course on his program. Two-hundred series courses taken through Extension count as upper-division courses when used toward the master's degree. If approved, a maximum of 9 transfer (including Extension) units may be used on a 30 unit program. 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 Graduate Council.
   b. Credit by Examination may be used to fulfill prerequisites, but may not apply toward the 30 units.

c. Saturday-School courses may not be used on a student's program for the master's degree.

d. Credit for course work earned through *CR-NC* in fall 1978 and in subsequent semesters may not be applied toward the master's degree unless the course has been designated as available for *CR-NC* only by the Graduate Council. A maximum of 6 units of *CR-NC* only credit may be applied to a 30 unit master's degree program and a maximum of 12 units of *CR-NC* only credit may be applied to a 60 unit program.

e. With approval of the departmental graduate adviser, post-baccalaureate credit allowed for work taken in the semester or summer in which the baccalaureate degree is granted may be applied toward a master's degree, if it meets master's degree criteria in all respects.

f. However, the amount of post-baccalaureate credit used toward the master's degree may not exceed one-third of the student's entire approved program.

g. Courses may not be included on the advancement to candidacy form if they do not fall within the 5-year limit. See *Post-Baccalaureate Credit*, page 100.

h. Refer to catalog section concerning Independent Study.

2. A minimum of one-half of the courses in a student's program for the master's degree must be graduate level courses numbered in the 200 series. Most programs require more than the minimum 15 units in a 30-unit program, or more than 30 units in a 60-unit program.

3. Normally, substitutions for regular departmental requirements must be accompanied by an adequate written justification appended to the advancement form.

4. A culminating experience is required for each master's degree. Acceptable culminating experiences include thesis, project or comprehensive examination. Individual departments permit one or more culminating experiences described below.

   a. A thesis is the written product of the systematic study of a significant problem. It clearly identifies the problem, states the major assumptions, explains the significance of the undertaking, sets forth the sources for and methods of gathering information, analyzes the data, and offers a conclusion or recommendation. The finished product must evidence originality, critical and independent thinking, appropriate organization and format, clarity of purpose and accurate and thorough documentation. Normally an oral defense of the thesis will be required.

   b. A project is a significant undertaking of a pursuit appropriate to the fine and applied arts or to professional fields. It must evidence originality and independent thinking, appropriate form and organization, and a rationale. It must be described and summarized in a written abstract that includes the project's significance, objectives, methodology and a conclusion or recommendation. An oral defense of the project may be required.

   c. A comprehensive examination is an assessment of the student's ability to integrate the knowledge of the area, show critical and independent thinking, and demonstrate mastery of the subject matter. The results of the examination must evidence independent thinking, appropriate organization, critical analysis, and accuracy of documentation. A record of the examination questions and responses shall be maintained.

5. It is the student's responsibility to complete the specific courses listed on his/her approved program and to assure that the Degree Clearance form has been forwarded to the Graduate Division from the department. Once a program has been approved by the Graduate Council, it may be changed only on the written request of the student and his/her department or school adviser and with the approval of the dean, Division of Graduate Studies and Research. Forms for requesting such program adjustment are available in the Office of the Division of Graduate Studies and Research.

Criteria for Thesis and Project

No academic distinction is made between a thesis and a project. Either one is equally acceptable as a means of fulfilling the requirements for the master's degree. Specific departmental instructions or requirements should, however, be ascertained by the candidate before enrollment in Course 299.

Whether a student is preparing a thesis or a project it should be noted that quality of work accomplished is a major consideration in judging acceptability. The finished project must evidence originality, appropriate organization, clarity of purpose, critical analysis, and accuracy and completeness of documentation where needed.

Critical and independent thinking should characterize every project. Mere description, cataloging, compilation, and other superficial procedures are not adequate.

The quality of writing, format, and documentation must meet standards appropriate for publication in the scholarly journals of the field, or be consistent with the dictates of an authorized stylebook.

1. To be eligible to enroll for thesis or project, a student must have
   (a) been advanced to candidacy for the master's degree.
   (b) maintained a *B* (3.0) average on his approved program.
   (c) completed at least 9 units of his/her approved program on the Fresno campus.
   (d) completed any course in research techniques required by his major department.
   (e) secured a thesis committee, consisting of a chair and at least two other members; for project committee requirements, the student should check with his/her department.
   (f) secured approval of his/her thesis plan from the division or department graduate committee and filed in the Office of the Division of Graduate Studies and Research an official thesis committee assignment form.

2. Registration for thesis may be processed during either the regular or late registration periods of any semester after the requirements (listed in (a) through (f) above) have been met or special permission for exceptions has been granted. If, however, a student fails to enroll within one semester (excluding summer sessions) after his official acceptance by a thesis committee, the committee chair has the option of dissolving the committee, in which case a new committee must be appointed and new forms filed before registration can be processed. A student planning to register for thesis after a break in regular session

attendance must be readmitted to the university. (See *Registration*, p. 76.)

3. A student whose thesis work is planned to extend over more than the semester in which he first enrolls may select one of the following options (with the approval of his graduate adviser): (a) he may register in 299 each term he is working on the thesis with the number of units for each registration reduced so that the total number of units accumulated in 299 does not exceed the limit set by the department; (b) register for the total number of units of 299 in one semester and complete work in subsequent semesters under Graduate Studies Continuation, a zero-unit course required for enrollment purposes; (c) option (a) supplemented by GS Continuation when the maximum number of units is attained with the thesis still incomplete. (See *Continuous Enrollment* below.)
4. If work in 299 is not completed at the end of the term of registration, but is progressing satisfactorily, an *SP* (Satisfactory Progress) grade is recorded. If the *SP* grade is not replaced within two years by a letter grade, the department may require the student to re-register for the course.
5. The student and the thesis chair should set a deadline for the completion of the semifinal draft. It should be no later than seven weeks before the last day of scheduled final examinations. This date should be early enough so that the chair and the other members of the committee can clear the draft before the student must meet the deadline for clearance by the dean of the division of Graduate Studies and Research. The latter deadlines are approximately November 1 (fall), April 1 (spring) and June 1 (summer).
6. Before a thesis is officially accepted by the Graduate Division, it must meet Graduate Division criteria on matters of format, documentation, and quality of writing. The semifinal draft, signed by the thesis committee members as acceptable and ready for final typing should be submitted to the Office of the Division of Graduate Studies and Research at least six 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 be accepted, but the student runs the risk of a delay in the granting of the degree and may be requested to reapply for the degree to be granted in a subsequent semester (or summer). Students are urged to follow meticulously *Specifications and Instructions for the Master's Thesis or Project;* copies are available in the Kennel Bookstore.
7. The final thesis (an original for microfilming and 2 photocopies) signed by the thesis committee and ready for binding, together with the school or departmental clearance and a receipt for the binding and microfilming fee (payable in the California State University, Fresno Association office) must be submitted to the Office of the Division of Graduate Studies and Research, before the last day assigned by the thesis consultant. The original copy will be bound with the other copies if so desired, with payment of the required fee.

Continuous Enrollment

It is the policy of the Division of Graduate Studies and Research that a graduate student must be enrolled at the university if university faculty, library, or laboratory resources are used while completing a grade of *SP* in either thesis or project, an *SP* or *I* in any other course, or while preparing to take a comprehensive examination. This policy does not apply when the student is simultaneously enrolled in any regular course for a letter grade. To otherwise maintain enrollment as required, a student enrolls in Graduate Studies Continuation through Extended Education or in GS 299 through regular (university) enrollment. In either case, the student may obtain further information from the Graduate Division. A student who must suspend work for more than one semester on the thesis or other courses in which the *SP* grade was given should apply for a planned educational leave of absence. Summer sessions are exempt from the continuous enrollment policy. (See also *Other Graduate Curricula—Graduate Studies and Planned Educational Leave of Absence*, pp. 92–93.)

Time Limitations and Validation

A period of five years is allowed for the completion of all requirements for the master's degree. This time limit is indicated for each student on the approved advancement to candidacy form. A student whose program has been interrupted by military service should consult the dean of the Division of Graduate Studies and Research about provisions for military extensions. Outdated course work will not be approved for inclusion on the Petition for Advancement to Candidacy at the time formal approval is granted to the petition. Those courses completed more than five years before the date for completion of all requirements for the master's degree cannot be used to meet total unit requirements except through validation as follows:

Out of date coursework may only be validated if such work has been previously approved on this Petition for Advancement to Candidacy. A maximum of one-third of required degree units may thus be validated by such means as are recommended by the department and approved by the graduate dean.

Grade Requirements

All graduate students will be held to the scholarship standards listed under *Academic Regulations,* pages 88–94. *The following provisions also apply to master's degree programs.*

A student admitted to a master's degree program in conditional classified or classified standing is required to maintain a minimum grade-point average of *B* on all work taken subsequent to admission to the program.

No course with a grade below *C* may apply on an approved program for the master's degree.

To be eligible for advancement to candidacy, a student must have earned at least a *B* average (both overall and at CSU, Fresno) on all 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, a student must have been advanced to candidacy and must have maintained a minimum grade-point average of *B* on his/her approved program.

To be eligible for the granting of the degree, a student must have maintained a *B* average on his/her complete approved program. Any grade earned in a course on the approved 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 at least a 3.9 grade point average on all course work taken from the first semester of the

approved master's degree program. A minimum G.P.A. of 3.9 must also be attained on the approved program to qualify.

Appeals and Petitions

Graduate (master's degree) students wishing to request substitutions or modifications in a department's degree requirements should initiate their request through the department's graduate committee. Requests for exceptions to established university policies governing graduate study may be addressed to the dean, Division of Graduate Studies and Research. Grade protests must be submitted to the Student Academic Petitions Committee through the director of Advising and Orientation according to university policy. Information concerning grade protest procedures is available in the Office of the Dean of Students.

Request That Master's Degree Be Granted

A request that the master's degree be granted (which includes the graduation fee payable in the Business Office) must be filed in the first two weeks of the semester in which the work is to be completed. In addition, applicants must be enrolled (See *Continuous Enrollment,* p. 468). During the summer, the request should be filed before the end of the first week of the first session. (See *Academic Calendar, Schedule of Courses, and Fees and Expenses.*) Application forms are available in the Student Records and Evaluations Office. Prior to filing a request for the master's degree to be granted, the student should check with the graduate committee chairman of the master's program concerned in order to ensure that all program requirements have been, or will soon be, completed. Diplomas for those completing degree requirements during summer sessions and at midyear will be awarded approximately four to six months after the end of the term.

Failure to complete requirements for the degree during the semester (or summer) of the application necessitates the filing of a new application, including a re-application fee, for the semester of actual completion. Such reapplication is subject to the same time schedule as the original application.

Check Sheet for the Master's Degree

This summary of the basic requirements for the master's degree is designed for the convenience of graduate students. However, it is not a substitute for knowledge of required procedures as identified by the department or the university in official publications. Students should consult the *Schedule of Courses, the General Catalog,* and see an adviser.

Completing a master's degree at CSU, Fresno involves the following steps:

A. Admission
   1. Admission to the university as a post-baccalaureate student.
   2. Admission to a master's program in Classified Standing.

B. Advancement to Candidacy for the degree;

C. Completion of final requirements for the degree to be granted.

Procedures	Date Completed
ADMISSION TO THE UNIVERSITY	
1. File parts *A* and *B* of the application for admission to California State University within the established filing period.	_____
2. In order for your application to be processed, you must ensure that the following are also on file:	
a) Have two official transcripts of all previous college-level work (CSU, Fresno excluded) sent to the Office of Admissions and Records.	_____
b) Submit acceptable G.R.E. Aptitude Test Scores to the University Testing Office. G.R.E. Bulletins may be obtained in the Graduate Office and in the Testing Office. Students in Accountancy and Business take the G.M.A.T. Students in Agricultural Business and Public Administration may take either the G.M.A.T. or the G.R.E.	_____
c) Check with the department to which you wish to apply to determine whether a separate departmental application and letters of recommendation are required.	_____
3. You will receive a Notice of Admission to Post-baccalaureate, unclassified standing from the University Admissions Office.	_____
ADMISSION TO A MASTER'S DEGREE PROGRAM—CLASSIFIED STANDING	
Records of applicants who have indicated their interest in a degree program are forwarded for review by the department. Students are then notified of their standing in the department:	
1. Consult with your departmental adviser.	_____
2. If initial admission to your program was conditional, classified standing must be achieved as soon as possible. Only *10 units,* from semesters prior to the one in which you are classified, may later be approved for your Advancement to Candidacy. *Exception:* If yours is a program of 60 units, you must be classified within the first 30 units. This exception does not apply to Counseling.	_____
3. When all prerequisites and/or required examinations have been completed, request your graduate adviser to forward to the graduate office a Change in Classification form recommending full classification on your behalf.	_____

Advancement to Candidacy

Advancement to Candidacy should be completed after the first nine units of graduate study have been completed. A minimum grade point average of 3.0 is required.

1. When eligible to petition for advancement to candidacy (completion of nine units), consult your graduate committee adviser, design a final program, and file a Petition for Advancement to Candidacy with the Graduate Office. _____
2. Apply for and take the Departmental Qualifying Examination, or Advanced G.R.E. if required. _____
3. Complete the graduate-level writing proficiency requirement of your department. _____
4. Demonstrate competence in a foreign language if required for your major. _____
5. Attain advancement to candidacy no later than the semester preceding the one in which you plan to apply for the degree to be granted. Your department has information concerning appropriate deadlines for submitting candidacy papers. _____
6. Obtain any change in your program, if needed, with the approval of your department and the graduate office on a Program Adjustment Request ("PAR") form. _____

Completion of Final Requirements

All degree requirements must be completed within a five-year period, starting with the first semester of your master's degree program.

Candidates Assigned to Thesis or Project (Plan A)

If you indicated Thesis 299 or Project 298 on your Advancement to Candidacy form, the following applies:

1. File a Thesis Committee Assignment form in the Graduate Office or file a Project Committee Assignment form in your department or school. _____
2. Enroll in Thesis 299 or Project 298 through your major department within one semester of the formation of a thesis committee. In each succeeding semester, as you continue to work on your thesis or project you must enroll in a Graduate Studies Continuation course in the Graduate Office if you are not enrolled in any regular coursework. Students completing a project will follow the procedures established by the department or school.

   Students completing a thesis observe items #3–6 below. _____
3. Submit the SEMIFINAL DRAFT of the thesis, which has been signed and approved by your Thesis Committee as ready for final typing, to the thesis consultant in the Office of the Dean, Graduate Division. The semifinal draft is usually due during the first week of November, April, or July. Check with the Graduate Office for the exact deadline date for the semester or summer when you expect to finish your thesis. _____
4. After obtaining committee members' signatures on the final approval page, submit the thesis in FINAL FORM to the Office of the Dean, Division of Graduate Studies, for a last check by the thesis consultant. _____
5. Submit the original and at least two copies of the thesis to the Office of the Dean, Division of Graduate Studies, before the date assigned by the thesis consultant. _____
6. Pay the binding fee at the California State University, Fresno, Association Office by the assigned date for final submission. _____

Candidates Assigned to Non-Thesis (Plan B)

1. Consult your adviser and arrange to take the comprehensive examination and to meet any other departmental requirements outstanding. If you are not enrolled in any regular coursework during the semester of your scheduled examination, you must enroll in Graduate Studies Continuation through the Graduate Office. _____

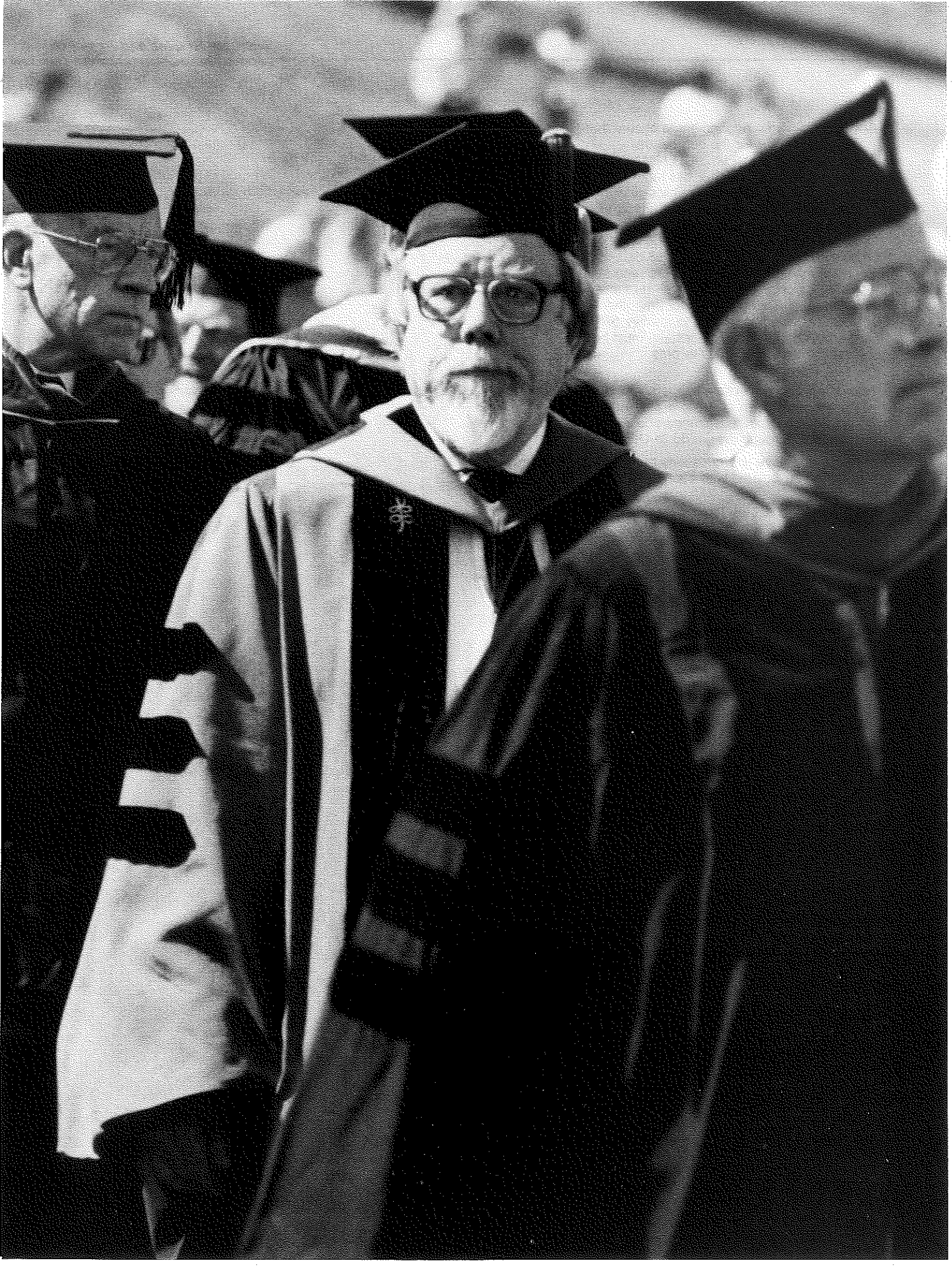
ALL STUDENTS

1. During the first two weeks of the session in which you will complete the requirements for the master's degree, file an APPLICATION FOR THE MASTER'S DEGREE TO BE GRANTED with the Evaluations Office prior to the deadline date listed in the *Schedule of Courses.* _____
2. You will receive in early May a letter of instructions from the Graduate Office concerning the annual Hooding and Commencement Ceremonies. _____
3. Complete the course work listed on the Approved Advancement to Candidacy form. _____
4. You must complete all Incomplete (*I* or *SP*) grades prior to graduation. _____
5. Arrange to take any final examinations that may be required. _____

6. Check with your department to ensure that all requirements for the degree are completed, and that your CLEARANCE FOR THE MASTER'S DEGREE has been forwarded to the Graduate Office prior to the "grades due deadline" at the end of the semester. You may find it useful to remind faculty that grades for the culminating experience (299, 298 or comprehensive examination) are recorded on a clearance form rather than on the usual grade sheet. Grades for any other courses, including grades to remove *SP* grades from previous semesters, must be sent to Admissions and Records. _____

Note: Continuous enrollment is required in any course for which you have been awarded a grade of *SP*. GS Continuation has been described above in Plan *A*. Instructions are available through the Graduate Office.

If you should have any questions regarding the academic regulations associated with earning a master's degree, see an adviser.





UNIVERSITY ADMINISTRATION AND POLICIES

California State University, Fresno

Advisory Board

The Advisory Board consists of community leaders who are interested in the welfare of the university. The board advises the president of the university in matters that relate to the advancement of the university in its relation to the community.

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Rutherford B. Gaston
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Mrs. Judith T. Lau, Vice Chair
Mrs. Juanita Perry
Armando O. Rodriguez
Donald J. Schafer, Chair
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J. Frank Villegas

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Budget Officer.....Iris Matlosz
Accounting Officer.....Robert P. Vega
Director of Institutional Research.....Harold L. Best
Assistant Director of Institutional Research.....Jeannine M. S. Raymond

Vice President for Academic Affairs.....Judith L. Kuipers
Assistant Vice President for Academic Affairs—Academic Personnel.....Michael J. Biechler
Assistant Vice President for Academic Affairs—Instructional Program Planning and Development.....J. Leonard Salazar
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Assistant Dean.....Carl L. Pherson
Assistant Dean, Ag. Oper.....Harry P. Karle
Assistant Dean, Director, CATI.....Jon D. Shaver
Dean of the School of Arts and Humanities.....Joseph Satin
Assistant Dean.....Robert G. Ware
Dean of the School of Business and Administrative Sciences.....Joseph J. Penbera
Assistant Dean.....Dwayne G. Schramm
Dean of the School of Education and Human Development and Director of Teacher Education.....Homer M. Johnson
Assistant Dean.....Robert H. Monke
Dean of the School of Engineering.....Elden K. Shaw
Assistant Dean.....Karen L. Frair
Dean of the School of Health and Social Work.....Richard D. Ford
Associate Dean.....Sanford M. Brown
Dean of the School of Natural Sciences.....Kin-Ping Wong
Assistant Dean.....Jerrome Mangan
Dean of the School of Social Sciences.....Peter J. Klassen
University Librarian.....Lillie S. Parker
Dean of the Division of Graduate Studies and Research.....Vivian A. Vidoli
Assistant Dean.....David A. Ross
Grants and Contracts Developmental Specialist.....James R. Leonard
Post Awards Manager.....Robert D. Epperson
Dean of the Division of Extended Education.....*(To be appointed)*
Assistant Dean.....*(To be appointed)*
Special Assistant to VPAA/Director, Instructional Media Services.....David F. Quadro
Assistant Director.....Wymond W. Eckhardt
Coordinator of Instructional Telecommunication Center.....Russ A. Hart
Special Assistant for Academic Public Service and Coordinator of Cooperative Education.....Kenneth C. Pascal

Vice President for Administration and University Relations.....Lynn D. Hemink
Assistant Vice President.....Gaylord O. Graham
Assistant to the Vice President and Director of Development and Planning.....Paul E. Bissonnette
Facilities Planner.....Paul R. Epp
Chief of Police.....William A. Anderson
Director of Auxiliary Services.....Earle L. Bassett
Director of the Center for Information Processing.....James R. Morris
Assistant Director for Instruction and Research.....Steven A. Saltzberg
Assistant Director, Technical Services.....John P. Howard
Manager, Administrative Programming.....Rik H. Clausen
Director of Communications.....James E. Forden
Director of Development and Community Relations.....Richard K. Francois
Director of Personnel Services.....Nita R. Kobe
Payroll Officer.....Susan M. Vaquilar
Director of Plant Operations.....C. Ronald Hicks
Director of Procurement and Administrative Services.....James P. Van Auken
Director of Public Information.....James B. Miller
Executive Director of the Alumni Association.....Barbara A. Christl

Dean of Student Affairs.....William H. Corcoran
Associate Dean.....Thomas P. Boyle
Associate Dean.....Manuel Perez
Assistant Dean.....Gary L. Riley
Director of Admissions/Records/Evaluations (Acting).....Carroll C. Cotten
Director of Advising, Orientation and Testing Services.....J. Richard Arndt
Assistant Director.....Walter J. Pierce
Director of Career Development and Employment Services.....James F. Kelly
Assistant Director.....Caroline Williams
Director of College Assistance Migrant Program.....Raul Diaz
Director of Educational Opportunity Program.....Robert P. Hernandez
Assistant Director.....Ruth Tarver
Director of Financial Aids.....Joseph W. Heuston, Jr.
Director of Housing.....John C. Wetzel
Assistant Director.....Charles C. Miller
Director of Reentry Program.....Arlene L. Bireline
Director of Student Programs.....Cleo Bash
Assistant Director.....Robert E. Lundal
Director of Student Counseling Services.....Esteban Steve Sena
Director of International Student Services and Programs.....Carol B. Munshower
Director of Student Health Services.....Robert M. Paull, M.D.
Assistant Director.....Iona F. Hammond, M.D.

Director of Upward Bound.....Sandra Mason
Director of Veterans Affairs and
Extended Outreach.....Ernest Shelton

Director of Athletics.....Gary A. Cunningham
Associate Athletic Director.....John W. Easterbrook
Assistant Athletic Director.....Diane Milutinovich
Sports Information Director.....Scott L. Johnson

Auxiliary Organizations
Director of Auxiliary Services.....**Earle L. Bassett**
California State University, Fresno Foundation
Agricultural Foundation of California State
University, Fresno
California State University, Fresno Association, Inc.
College Union, Director.....Cleo Bash
Controller.....Peter Prestegard
Administrator of Campus Food Services...Richard Finlay
Bookstore Manager.....Lawrence F. Taylor
California State University, Fresno Athletic Corporation
Chair, Board of Directors.....Gaylord O. Graham
Director of Athletics.....Gary A. Cunningham
General Manager.....Les L. Snyder, Jr.

School and Division Deans, Department Chairs, and Program Coordinators

School of Agriculture and Home Economics ..... Charles M. Smallwood
Agricultural Economics ..... Herbert O. Mason
Animal Science and Agricultural Education ..... John A. Jacobs
Enology, Food Science and Nutrition ..... Dean R. Frazeur
Family Studies and Home Economics ..... Eugene W. Krebs
Industrial Technology ..... Gary E. Grannis
Plant Science and Mechanized Agriculture ..... Allan A. Hewitt

School of Arts and Humanities ..... Joseph Satin
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Communication Arts and Sciences ..... Ronald D. Johnson
English ..... Roger D. Chittick
Foreign Languages ..... Keith Sauer
Journalism ..... James B. Tucker
Linguistics ..... P. J. Mistry
Music ..... Phyllis A. Irwin
Philosophy ..... Warren L. Kessler

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Finance and Industry ..... Paul M. Lange
Information Systems and Decision Sciences ..... Harry G. Costis
Management and Marketing ..... Gerald L. Jones
Aerospace Studies ..... Lt. Col. Shaun M. Sullivan
Military Science Program (Coordinator) ..... Lt. Col. James W. Henderson

School of Education and Human Development ..... Homer M. Johnson
Advanced Studies ..... H. Dan Smith
Administrative Services Program ..... (Coordinator) Marvin B. Wampler
Graduate Degrees Program ..... (Coordinator) Robert H. Monke
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Special Education Program ..... (Coordinator) Deanna E. Schilling
Teacher Education ..... Carl R. Stutzman
Bilingual/Program ..... (Coordinator) Cecilio Orozco
Early Childhood Education Program ..... (Coordinator) Doris O. Smith
Liberal Studies Program ..... (Coordinator) Ivan H. Rowe
Multiple Subjects Program ..... (Coordinator) Bonnie L. Dutton
Research & Development ..... (Coordinator) Ric S. Brown
Reading Specialist Program ..... (Coordinator) Pennelope A. Dyer
Single Subjects Program ..... (Coordinator) Jolyne S. Daughetry

School of Engineering ..... Elden K. Shaw
Civil and Surveying Engineering ..... Karl E. Longley
Electrical Engineering ..... Chung K. Liu
Mechanical and Industrial Engineering ..... Delbert E. Robison

School of Health and Social Work ..... Richard D. Ford
Athletics ..... Gary A. Cunningham
Communicative Disorders ..... Kenneth G. Shipley
Health Science ..... Ronald C. Schultz
Nursing ..... Karen H. Nishio
Physical Education ..... Joanne W. Schroll
Recreation Administration Program ..... (Coordinator) Audrey M. Fagnani
Physical Therapy Program ..... (Coordinator) Darlene L. Stewart
Rehabilitation Counseling Program ..... (Coordinator) E. W. (Bud) Stude
Social Work Education ..... Wynn C. Tabbert

School of Natural Sciences ..... Kin-Ping Wong
Biology ..... William K. Collin
Chemistry ..... Kenneth H. Russell
Computer Science ..... Harold B. Haslam
Geology ..... Jon C. Avent
Mathematics ..... Noal C. Harbertson
Physics ..... John R. Donaldson
Psychology ..... Alex Gonzalez

School of Social Sciences ..... Peter J. Klassen
Anthropology ..... Dirk van der Elst
Chicano-Latino Studies Program ..... (Coordinator) Manuel Figueroa
Criminology ..... Max D. Futrell
Economics ..... Izumi Taniguchi
Ethnic Studies Program ..... (Coordinator) Robert S. Mikell
Geography ..... James S. Kus
History ..... John C. Kendall
Political Science ..... Philip F. Beach
City & Regional Planning Prog. (Coord.) ..... Wayne V. Merchen
Sociology ..... Joel G. Best
Women's Studies Program ..... (Coordinator) Susan S. Arpad

Division of Extended Education ..... *(To be appointed)*

Division of Graduate Studies and Research ..... Vivian A. Vidoli

Library
University Librarian ..... Lillie S. Parker
Assistant University Librarian ..... Stephanie Hillman
Acquisitions Department ..... Sandra L. Gothe
Catalogue Department ..... Vincent J. Smith, Jr.
Circulation Department ..... Christy V. Gade
Curriculum and Juvenile Collections ..... Betty Jo Peterson
Government Publications Department ..... Erland L. Jacobsen
Music Library ..... Ronald J. Harlan
Periodicals Department ..... A. Gerald Gothe
Reference Department ..... William F. Heinlen
Department of Special Collections ..... Ronald J. Mahoney

The Consortium of The California State University

The Consortium of the CSU — "The 1,000-Mile Campus" — is a separate, fully accredited, degree-granting institution of the CSU. It draws on the combined resources of the 19 campuses to offer external statewide and regional degree, certificate, and credential programs.

The Consortium was established in 1973 to meet the needs of adults who find it difficult or impossible to participate in regular on-campus programs. Instruction is thus provided to students in convenient places at convenient times. Currently, programs are offered in more than 100 sites throughout California.

Full- and part-time CSU faculty, as well as qualified experienced practitioners, go where the students are, or provide opportunities for individualized study. Programs can be tailored to meet the specific needs of employees in business, industry, education, or government.

Consortium programs are upper division or graduate level. All courses offer residence credit leading to bachelor's or master's degrees. Credit and course work are transferable statewide. Programs are financed by student fees.

Academic policy for The Consortium is recommended by the Consortium Advisory Committee, a committee of the Academic Senate of the CSU. Degrees or certificates are awarded by The Consortium in the name of the Board of Trustees of the CSU. The Consortium is accredited by the Western Association of Schools and Colleges.

For more information contact: The Consortium of The California State University, 6300 State University Drive, Long Beach, California 90815-4666; (213) 498-5690.

The statewide Admissions and Records Office may be reached by dialing the following local numbers: Los Angeles and Long Beach areas (213) 498-4119; all other areas in California toll-free (800) 352-7517.

The following Consortium program is currently being offered at CSU, Fresno:

Statewide Nursing Program
Director, Mary J. Banigan, Ph.D., R.N.
(209) 294-4234

Privacy Rights of Students in Education Records

The Federal Family Educational Rights and Privacy Act of 1974 (20 U.S.C. 1232g) and regulations adopted thereunder (34 C.F.R. 99) and California Education Code Section 67100 et seq., set out requirements designed to protect the privacy of students concerning their education records maintained by the campus. Specifically, the statute and regulations govern access to student records maintained by the campus, and the release of such records. In brief, the law provides that the campus must provide students access to records directly related to the student and an opportunity for a hearing to challenge such records on the grounds that they are inaccurate, misleading, or otherwise inappropriate. The right to a hearing under the law does not include any right to challenge the appropriateness of a grade as determined by the instructor. The law generally requires that written consent of the student be received before releasing personally identifiable data about the student from records to other than a specified list of exceptions. The institution has adopted a set of policies and procedures concerning implementation of the statutes and the regulations on the campus. Copies of these policies and procedures may be obtained at the Office of the Dean of Student Affairs. Among the types of information included in the campus statement of policies and procedures are: 1) the types of student records and the information contained therein; 2) the official responsible for the maintenance of each type of record; 3) the location of access lists that indicate persons requesting or receiving information from the record; 4) policies for reviewing and expunging records; 5) the access rights of students; 6) the procedures for challenging the content of student records; 7) the cost that will be charged for reproducing copies of records; and 8) the right of the student to file a complaint with the Department of Education. An office and review board have been established by the Department to investigate and adjudicate violations and complaints. The office designated for this purpose is: The Family Educational Rights and Privacy Act Office (FERPA), U.S. Department of Education, 330 *C* Street, Room 4511, Washington, D.C. 20202.

The campus is authorized under the Act to release public "directory information" concerning students. "Directory information" includes the student's name, address, telephone listing, date and place of birth, major field of study, participation in officially recognized activities and sports, weight and height of members of athletic teams, dates of attendance, degrees and awards received, and the most recent previous educational agency or institution attended by the student. The above designated information is subject to release by the campus at any time unless the campus has received a prior written objection from the student specifying information that the student request not be released. Written objections should be sent to the Office of Admissions.

The campus is authorized to provide access to student records to campus officials and employees who have legitimate educational interests in such access. These persons are those who have responsibilities in connection with the campus academic, administrative or service functions and who have reason for using student records connected with their campus or other related academic responsibilities.

Use of Social Security Number. Applicants are required to include their Social Security account number in designated places on applications for admission pursuant to the authority contained in Title 5, *California Administrative Code,* Section 41201. The Social Security account number is used as a means of identifying records pertaining to the student as well as identifying the student for purposes of financial aid eligibility and disbursement and the repayment of financial aid and other debts payable to the institution.

Research on Human Subjects

California State University, Fresno, has adopted provisions for the conduct of research that employs or influences humans. All research at the university must comply with these provisions. Students must familiarize themselves with the provisions by inquiring in the departmental offices or the office of the dean of their school.

Measles and Rubella Immunizations Health Screening Provisions

The campus shall notify certain students, born after January 1, 1957, of the CSU requirement to present proof of measles and rubella immunizations by the beginning of the next term of enrollment. At the beginning of the next term of enrollment, those so notified who have not presented acceptable proof of the immunizations shall be notified further of the need to comply before receiving registration materials to enroll for the succeeding term.

Persons subject to these health screening provisions include: new students enrolling fall 1987 and later; readmitted students reenrolling fall 1987 and later; students who reside in campus residence halls; students who obtained their primary and secondary schooling outside the United States; students enrolled in dietetics, medical technology, nursing, physical therapy, and any practicum, student teaching, or field work involving preschool-age children, school-age children, or taking place in a hospital or health care setting.

The Student Health Center shall provide immunizations without cost to those students unable to obtain acceptable proof of immunizations.

Nondiscrimination Policy

Sex

The California State University does not discriminate on the basis of sex in the educational programs or activities it conducts. Title IX of the Education Amendments of 1972, as amended, and the administrative regulations adopted thereunder prohibit discrimination on the basis of sex in education programs and activities operated by California State University, Fresno. Such programs and activities include admission of students and employment. Inquiries concerning the application of Title IX to programs and activities of California State University, Fresno may be referred to the **affirmative action coordinator (employment matters)** or the **Office of the Dean of Student Affairs (student matters),** the campus officer(s) assigned the administrative responsibility of reviewing such matters or to the **Regional Director of the Office of Civil Rights, Region 9, 221 Main Street, 10th Floor, San Francisco, California 94105.**

Sexual Harassment

Discrimination on the basis of sex is prohibited by Title VII of the Civil Rights Act as well as Title IX of the Education Act. Sexual harassment is a violation of Section 703 of Title VII.

Sexual harassment refers to the unwanted imposition of sexual attention usually in the context of a relationship of unequal power, rank, or status, as well as the use of one's position of authority in the university to bestow benefits or impose deprivations on another. This applies equally to all students, staff, faculty, and administrators at California State University, Fresno. Harassment includes verbal, nonverbal, and/or physical conduct that has the intent or effect of unreasonable interference with individuals' or groups' education or work performance. This may also include actions that create an intimidating, hostile, or offensive working or learning environment. Both men and women can be the victims of sexual harassment.

Students who believe they are a victim of sexual harassment should contact Mrs. Carol Munshower, the individual designated by the university president to review student complaints. Mrs. Munshower can explain the informal and/or formal complaint procedures available to students on our campus. Should you have concerns related to sexual harassment, please contact **Mrs. Munshower, Joyal Administration Building, room 211, phone 294-2782.**

Handicap

The California State University does not discriminate on the basis of handicap in admission or access to, or treatment or employment in, its programs and activities. Section 504 of the Rehabilitation Act of 1973, as amended, and the regulations adopted thereunder prohibit such discrimination. The director of Institutional Research has been designated to coordinate the efforts of California State University, Fresno to comply with the act and its implementing regulations. Inquiries concerning compliance may be addressed to **Dr. Harold L. Best** at **Thomas Administration Building, Room 105, phone 294-3906.**

Race, Color, or National Origin

The California State University complies with the requirements of Title VI of the Civil Rights Act of 1964 and the regulations adopted thereunder. No person shall, on the grounds of race, color, or national origin be excluded from participation in, be denied the benefits of, or be otherwise subjected to discrimination under any program of The California State University.

Student Discipline

Inappropriate conduct by students or by applicants for admission is subject to discipline as provided in Sections 41301 through 41304 of Title 5, *California Administrative Code.* These sections are as follows:

Article 1.1, Title 5, *California Administrative Code*

41301. Expulsion, Suspension, and Probation of Students. Following procedures consonant with due process established pursuant to Section 41304, any student of a campus may be expelled,suspended, placed on probation or given a lesser sanction for one or more of the following causes which must be campus related:

(a) Cheating or plagiarism in connection with an academic program at a campus.

(b) Forgery, alteration or misuse of campus documents, records, or identification or knowingly furnishing false information to a campus.

(c) Misrepresentation of oneself or of an organization to be an agent of a campus.

(d) Obstruction or disruption, on or off campus property, of the campus educational process, administrative process, or other campus function.

(e) Physical abuse on or off campus property of the person or property of any member of the campus community or of members of his or her family or the threat of such physical abuse.

(f) Theft, of, or non-accidental damage to, campus property, or property in the possession of, or owned by, a member of the campus community.

(g) Unauthorized entry into, unauthorized use of, or misuse of campus property.

(h) On campus property, the sale or knowing possession of dangerous drugs, restricted dangerous drugs, or narcotics as those terms are used in California statutes, except when

lawfully prescribed pursuant to medical or dental care, or when lawfully permitted for the purpose of research, instruction or analysis.

(i) Knowing possession or use of explosives, dangerous chemicals or deadly weapons on campus property or at a campus function without prior authorization of the campus president.

(j) Engaging in lewd, indecent, or obscene behavior on campus property or at a campus function.

(k) Abusive behavior directed toward, or hazing of, a member of the campus community.

(l) Violation of any order of a campus president, notice of which had been given prior to such violation and during the academic term in which the violation occurs, either by publication in the campus newspaper, or by posting on an official bulletin board designated for this purpose, and which order is not inconsistent with any of the other provisions of this Section.

(m) Soliciting or assisting another to do any act which would subject a student to expulsion, suspension or probation pursuant to this Section.

(n) For purposes of this Article, the following terms are defined:

(1) The term "member of the campus community" is defined as meaning California State University Trustees, academic, non-academic, and administrative personnel, students, and other persons while such other persons are on campus property or at a campus function.

(2) The term "campus property" includes:

(A) real or personal property in the possession of, or under the control of, the Board of Trustees of the California State University, and

(B) all campus feeding, retail, or residence facilities whether operated by a campus or by a campus auxiliary organization.

(3) The term "deadly weapons" includes any instrument or weapon of the kind commonly known as a blackjack, slingshot, billy, sandclub, sandbag, metal knuckles, any dirk, dagger, switchblade knife, pistol, revolver, or any other firearm, any knife having a blade longer than five inches, any razor with an unguarded blade, and any metal pipe or bar used or intended to be used as a club.

(4) The term "behavior" includes conduct and expression.

(5) The term "hazing" means any method of initiation into a student organization or any pastime or amusement engaged in with regard to such an organization which causes, or is likely to cause, bodily danger, or physical or emotional harm, to any member of the campus community; but the term "hazing" does not include customary athletic events or other similar contests or competitions.

(o) This Section is not adopted pursuant to Education Code Section 89031.

(p) Notwithstanding any amendment or repeal pursuant to the resolution by which any provision of this Article is amended, all acts and omissions occurring prior to that effective date shall be subject to the provisions of this Article as in effect immediately prior to such effective date.

41302. Disposition of Fees: Campus Emergency; Interim Suspension. The President of the campus may place on probation, suspend, or expel a student for one or more of the causes enumerated in Section 41301. No fees or tuition paid by or for such student for the semester, quarter, or summer session in which he or she is suspended or expelled shall be refunded. If the student is readmitted before the close of the semester, quarter, or summer session in which he or she is suspended, no additional tuition or fees shall be required of the student on account of the suspension.

During periods of campus emergency, as determined by the President of the individual campus, the President may, after consultation with the Chancellor, place into immediate effect any emergency regulations, procedures, and other measures deemed necessary or appropriate to meet the emergency, safeguard persons and property, and maintain educational activities.

The President may immediately impose an interim suspension in all cases in which there is reasonable cause to believe that such an immediate suspension is required in order to protect lives or property and to insure the maintenance of order. A student so placed on interim suspension shall be given prompt notice of charges and the opportunity for a hearing within 10 days of the imposition of interim suspension. During the period of interim suspension, the student shall not, without prior written permission of the President or designated representative, enter any campus of the California State University other than to attend the hearing. Violation of any condition of interim suspension shall be grounds for expulsion.

41303. Conduct by Applicants for Admission. Notwithstanding any provision in this Chapter 1 to the contrary, admission or readmission may be qualified or denied to any person who, while not enrolled as a student, commits acts which, were he enrolled as a student, would be the basis for disciplinary proceedings pursuant to Sections 41301 or 41302. Admission or readmission may be qualified or denied to any person who, while a student, commits acts which are subject to disciplinary action pursuant to Section 41301 or Section 41302. Qualified admission or denial of admission in such cases shall be determined under procedures adopted pursuant to Section 41304.

41304. Student Disciplinary Procedures for the California State University. The Chancellor shall prescribe, and may from time to time revise, a code of student disciplinary procedures for the California State University. Subject to other applicable law, this code shall provide for determinations of fact and sanctions to be applied for conduct which is a ground of discipline under Sections 41301 or 41302, and for qualified admission or denial of admission under Section 41303; the authority of the campus President in such matters; conduct related determinations on financial aid eligibility and termination; alternative kinds of proceedings, including proceedings conducted by a Hearing Officer; time limitations; notice; conduct of hearings, including provisions governing evidence, a record, and review; and such other related matters as may be appropriate. The Chancellor shall report to the Board actions taken under this section.

Cheating and Plagiarism

Cheating: Cheating is the practice of fraudulent or deceptive acts for the purpose of improving a grade or obtaining course credit. Typically, such acts occur in relation to examinations. It is the intent of this definition that the term *cheating* not be limited to examinations situations only, but that it include any and all actions by a student that are intended to gain an

unearned academic advantage by fraudulent or deceptive means.

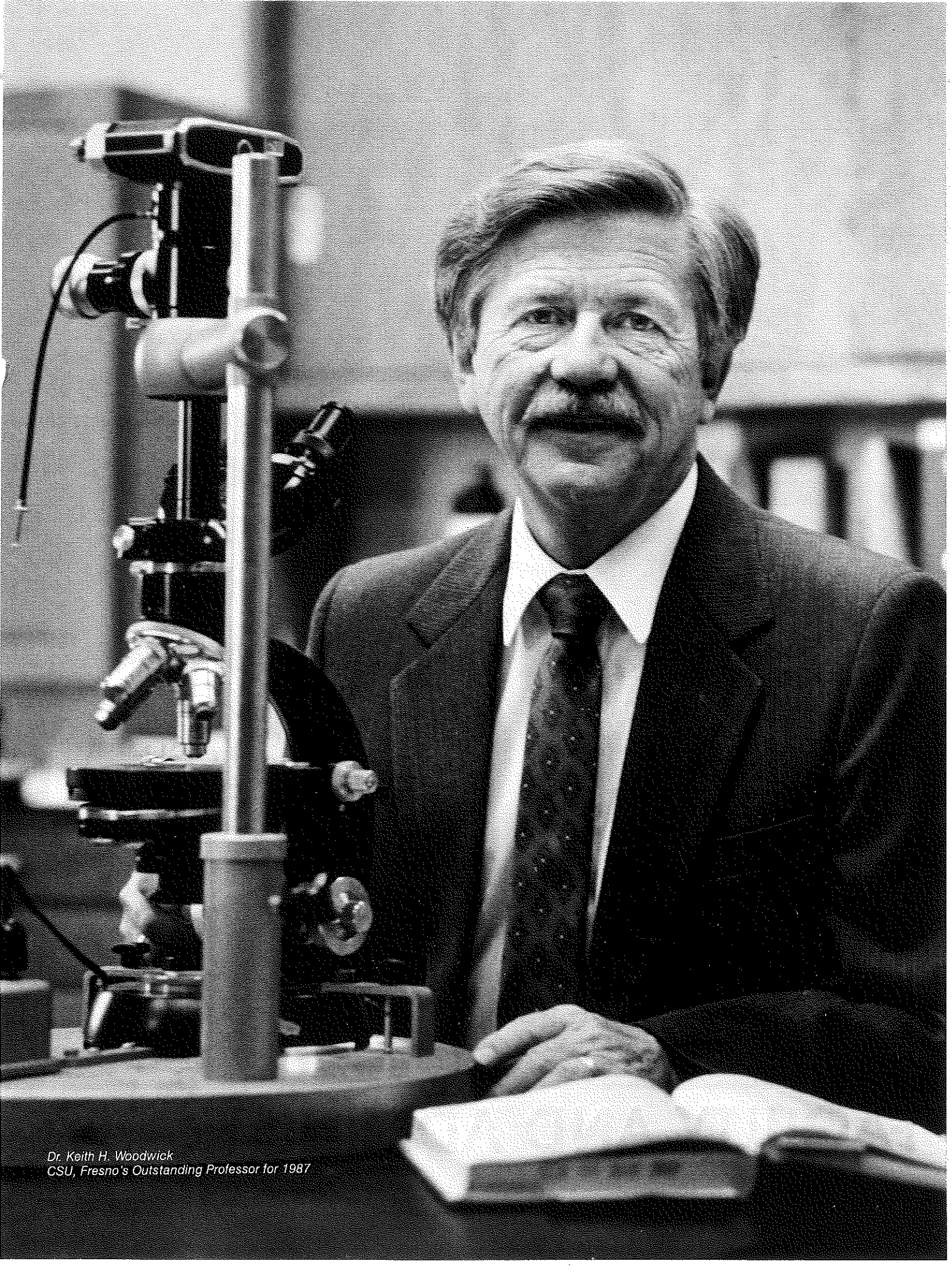
Plagiarism: Plagiarism is a specific form of cheating that consists of the misuse of the published and/or unpublished works of another by representing the material so used, as one's own work.

Career Placement Policy

The Career Development and Employment Office may furnish, upon request, information about the employment of students who graduate from programs or courses of study preparing students for a particular career field. This information includes data concerning the average starting salary and the percentage of previously enrolled students who obtained employment. The information may include data collected from either graduates of the campus or graduates of all campuses in The California State University.



FACULTY AND ADMINISTRATIVE INDEX



Dr. Keith H. Woodwick
CSU, Fresno's Outstanding Professor for 1987

Note: Numbers in parentheses indicate year of appointment at California State University, Fresno.

HAAK, HAROLD H., *President* (1980)
Professor, Department of Political Science
B.A., M.A., University of Wisconsin;
Ph.D., Princeton University.

ABOU-GHORRA, IBRAHIM M. (1956)
Professor, Department of Psychology
B.A., Cairo University; Diploma, Ain-Shams University (Egypt); Diploma, Cairo Institute of Higher Studies; M.A., Ohio State University; Ph.D., University of Southern California; Licensed Psychologist.

ABRAMSON, SHAREEN (1981)
Associate Professor, Department of Teacher Education
B.A., University of California, Los Angeles; M.A., Antioch University; Ph.D., Vanderbilt University.

ADAMS, CORA M. (1986)
Associate Professor, Department of Social Work Education; Field Coordinator
B.A., California State University, Sacramento; M.S.W., D.S.W., University of Utah.

ADAMS, KATHERINE L. (1983)
Assistant Professor, Department of Communication Arts and Sciences
B.S., M.A., University of Wyoming.

ADAMS, R. C. (1965)
Professor, Department of Communication Arts and Sciences; Coordinator, Telecommunications Program
B.A., Idaho State College; M.A., Ph.D., University of Oregon.

ADAMS, RONALD G. (1980)
Head Basketball Coach, Department of Athletics
B.A., Fresno Pacific College; M.A., California State University, Fresno.

ADRIAN, MERLE S. (1973)
Professor, Department of Industrial Technology
B.S., M.A., California State University, Fresno; Ed.D., University of Southern California.

AIKEN, JOYCE B. (1956–1958; Spring 1962)
Professor, Department of Art
B.A., M.A., California State University, Fresno.

ALDEN, H. LEE, JR. (1960)
Associate Professor, Department of Communication Arts and Sciences
B.A., University of Virginia.

ALDRICH, LESLIE L. (1955)
Professor, Department of Industrial Technology
B.A., Willamette University; M.A., Oregon State College.

ALI, MIR K. (1968)
Professor, Department of Mathematics
B.S., M.A., Osmania University; M.S., Montana State University; Ph.D., Washington State University.

ALLEN, DERYLE K. (1961)
Counselor
B.A., Southwestern State College (Oklahoma); M.Ed., Ed.D., University of Oklahoma.

ALLEN, KATHLEEN R. (1981)
Lecturer, Department of Information Systems and Decision Sciences
B.A., California State University, Fresno; M.A., University of California, Los Angeles.

ALLISON, ROBERT J. (1967)
Professor, Department of Economics
B.A., M.S., Ph.D., University of Colorado.

ALVARADO, ANDREW J. (1978)
Professor, Department of Social Work Education
B.S., M.S.W., California State University, Fresno; Ed.D., University of California, Los Angeles.

ANDERSON, DAVID C. (1966)
Professor, Department of Management and Marketing
B.S., M.S., West Virginia University; D.B.A., Georgia State University.

ANDERSON, HEATHER B. (1986)
Lecturer, Department of Art
B.A., M.A., University of California, Berkeley; M.A., Ph.D., University of Oregon.

ANDERSON, LAWRENCE L. (1971)
Associate Professor, Department of Art
B.A., M.A., San Jose State College.

ANDERSON, R. GENE (1970)
Professor, Department of Communication Arts and Sciences
B.A., M.A., Baylor University; Ph.D., University of Colorado.

ANDERSON, RANDY J. (1982)
Professor, Department of Information Systems and Decision Sciences
B.S., M.A., Arizona State University; Ph.D., North Texas State University.

ANDERSON, TIMOTHY R. (1983)
Assistant Professor, Department of Physical Education
B.A., M.S., University of Kentucky.

ANDERSON, WILLIAM K. (Spring 1985)
Lecturer, Department of Civil and Surveying Engineering
B.S., California State University, Fresno.

ANDRADE, ALICIA Y. (1981)
Counselor
B.A., M.S.W., California State University, Fresno.

ARCE, GINA (1957)
Professor, Department of Biology
B.A., M.A., George Peabody College; Ph.D., Vanderbilt University.

ARNDT, J. RICHARD (1973)
Director, Advising, Orientation, and Testing
B.S., Wheaton College; M.S., Ed.M., Oregon State University; Ph.D., Michigan State University.

ARNOLD, ROBERT F. (1968)
Professor, Department of Mathematics
B.S., M.A., California State University, Fresno; Ph.D., University of California, Berkeley.

ARPAD, SUSAN S. (1986)
Professor, Coordinator, Women's Studies Program
B.A., Tulane University; M.A., Ph.D., University of Delaware.

ASAHINA, ROBERTA REESE (1984)
Associate Professor, Department of Journalism
B.A., M.A., University of Utah; Ph.D., Tufts University.

ATKINS, VIRGINIA F. (1984)
Lecturer, Department of Physical Education
B.S., Northern Arizona University; M.S., Arizona State University; Ph.D., Oregon State University.

AU, TONY M. (1985)
Associate Professor, Department of Industrial Technology
B.S., National Taiwan Normal University; M.S., University of Wisconsin, Stout; Ph.D., University of Minnesota.

AUERNHEIMER, BRENT J. (Spring 1986)
Lecturer, Department of Computer Science
B.A., M.S., University of California, Santa Barbara.

AVENT, CAROL L. (1966)
Professor, Department of Nursing
B.A., Boston University; M.S., University of Colorado.

AVENT, JON C. (1965)
Professor, Chair, Department of Geology
B.S., University of Colorado; M.S., Ph.D., University of Washington.

AVERY, GEORGE E. (1959)
Professor, Department of Teacher Education
B.S., Colorado State University; Ed.D., University of Maryland.

AYCOCK, LINNEA M. (1983)
Associate Professor, Department of English
B.A., M.A., California State University, Fresno; Ph.D., University of Iowa.

AYER, SALLY L. (1971)
Professor, Department of Physical Education
B.A., Colorado State College; M.A., Northern Arizona University; Ed.D., University of Utah.

BACA, MARIO L. M. (1983)
Associate Professor, Department of Teacher Education
B.S.Ed., University of New Mexico; M.A., University of Washington; Ph.D., University of New Mexico.

BACON, CONSTANCE C. (1983)
Associate Professor, Department of Communication Arts and Sciences
B.S., Georgia State University; M.A., Auburn University; Ph.D., University of Oklahoma.

BADR, SAYED A. (1970)
Professor, Department of Plant Science and Mechanized Agriculture
B.S., Ain-Shams University (Egypt); M.S., Ph.D., University of California, Davis.

BAKER, DENNIS M. (1984)
Professor, Department of Accountancy
B.S., California State University, Fresno; Ph.D., University of California, Los Angeles; C.P.A.

BALDIS, BETTE J. (1971)
Associate Professor, Department of Communicative Disorders
B.Ed., M.S., Illinois State University.

BALLARD, O. DUANE, JR. (1968)
Professor, Department of Physical Education
B.S., M.S., Brigham Young University; R.P.T., Stanford University.

BANIGAN, MARY J. (1980)
Professor, Department of Nursing
B.S.N., College of Mt. St. Joseph, Ohio; M.S., University of Colorado; Ph.D., University of Utah.

BANIGAN, MARY L. (1984)
Lecturer, Department of Nursing
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BARABAS, ARTHUR H. (1983)
Associate Professor, Department of Geology
A.B., Princeton University; M.Phil., Ph.D., Yale University.

BARTA, JOHN M. (1968)
Professor, Department of Foreign Languages
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BASDEN, BARBARA H. (1973)
Professor, Department of Psychology
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BASDEN, DAVID R. (Spring 1969)
Professor, Department of Psychology
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BASH, CLEO (1985)
Director, Student Programs
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BASSETT, EARLE L. (1948)
Director of Auxiliary Services
B.A., California State University, Fresno.

BATHURST, LEONARD H., JR. (1954)
Assistant Dean, Division of Extended Education; Professor, Department of Teacher Education
B.A., M.Ed., Ed.D., Pennsylvania State University.

BATISTA, JUAN C. (1986)
Associate Professor, Department of Agricultural Economics
B.A., California State University, Humboldt; M.S., Ph.D., Cornell University.

BATTENBURG, JOSEPH R. (1981)
Professor, Department of Mechanical and Industrial Engineering
B.S., Andrews University; B.S.E., University of Michigan, Ann Arbor; M.S.E., University of Southern California; Ph.D., University of Wisconsin, Madison.

BEACH, PHILIP F. (1964)
Professor, Chair, Department of Political Science
B.A., University of Washington; M.A., Ph.D., Northwestern University.

BEAMAN, M. TERESA (1986)
Assistant Professor, Department of Music
B.A., Yale College; M.M., Yale University School of Music; D.M.A., State University of New York at Stony Brook.

BEDROSIAN, SARAH G. (1959–1960; 1962)
Professor, Department of Information Systems and Decision Sciences
B.A., M.A., California State University, Fresno; D.B.A., University of Southern California.

BENKO, STEPHEN A. (1969)
Professor, Department of History
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BENNETT, BOB G. (1969)
Head Baseball Coach, Department of Athletics
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BENNINGA, JACQUES S. (1983)
Associate Professor, Department of Teacher Education
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BERGMANN, RALPH H. (1979)
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BERLINER, ANN E. (1984)
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BERRETT, RICHARD D. (1969)
Professor, Department of Family Studies and Home Economics
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BEST, HAROLD L. (1970)
Director of Institutional Research; Professor, Department of Management and Marketing
B.A., M.A., Ph.D., George Washington University; Licensed Psychologist.

BEST, JOEL (1970)
Professor, Department of Sociology
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BETANCOURT, RAUL (1972)
Professor, Department of Psychology
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BETTS, CHRIS (1980)
Associate Professor, Department of Management and Marketing
B.A., M.B.A., University of New Mexico; Ph.D., University of Houston.

BEVANS, BONNIE JO (1970)
Professor, Department of Physical Education
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BHANGOO, MAHENDRA S. (1976)
Professor, Department of Plant Science and Mechanized Agriculture
B.S., Agra University; M.S., University of California, Los Angeles; Ph.D., Kansas State University.

BIECHLER, MICHAEL J. (1970)
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B.S., Eau Claire State University; M.A., Ph.D., Michigan State University.

BIEHLER, WAYNE E. (1951)
Professor, Department of Plant Science and Mechanized Agriculture
B.S., Fort Hays Kansas State College; M.S., University of California, Davis.

BILDERBACK, D. LOY (1962)
Professor, Department of History
B.A., M.A., University of Kansas; Ph.D., University of Washington.

BILLINGS, ROBERT S. (1957)
Professor, Department of English
B.A., University of New Hampshire; M.A., Boston University; Ph.D., State University of Iowa.

BIRELINE, ARLENE (1985)
Director, Reentry Program
B.A., California State College, Stanislaus; M.A., Chapman College.

BISSONNETTE, PAUL E. (1972)
Director of Physical Development and Planning
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BJERK, ROGER C. (1969)
Professor, Department of History
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BLACKERBY, BRUCE A. (1963)
Professor, Department of Geology
B.A., University of California, Riverside; Ph.D., University of California, Los Angeles.

BLANTON, RONALD L. (1965)
Professor, Department of Industrial Technology
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BLOMGREN, GLEN H. (1962)
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BLOOM, MELANIE M. (1985)
Lecturer, Department of Communication Arts and Sciences
B.A., Wayne State University; M.A., Ph.D., Ohio University.

BLOOM, VINCENT L. (1970)
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BLUEM, JOHN R. (1984)
Assistant Soccer Coach, Department of Athletics
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BLUESTEIN, GENE (1963)
Professor, Department of English
B.A., Brooklyn College; M.A., Ph.D., University of Minnesota.

BLUESTONE, SYDNEY (1963)
Professor, Department of Chemistry
B.S., Brooklyn College; Ph.D., Rutgers University.

BOARD, ROBERT R. (1964)
Registrar
B.S., University of Santa Clara.

BOCHIN, HAL W. (1969)
Professor, Department of Communication Arts and Sciences
B.S., John Carroll University; M.A., University of Wisconsin; Ph.D., Indiana University.

BOCHIN, JANET S. (Spring 1973)
Senior Assistant Librarian, Acquisitions Department
B.M., M.L.S., University of Texas at Austin; M.A., California State University, Fresno.

BOHNSTEDT, JOHN W. (1956)
Professor, Department of History
B.A., Michigan State University; M.A., Ph.D., University of Minnesota.

BONHAM, CLIFFORD V. (1964)
Professor, Department of Social Work Education
B.A., M.S.W., University of California, Berkeley.

BOWDEN, SHIRLEY J. (1968)
Professor, Department of Enology, Food Science, and Nutrition
B.S., University of California, Los Angeles; Dietetic Internship, Johns Hopkins; M.S., California State University, Fresno; Ph.D., Oregon State University; Registered Dietitian.

BOWEN, THOMAS G. (1969)
Professor, Department of Anthropology
B.A., Grinnell College; M.A., Ph.D., University of Colorado.

BOWEN, WAYNE S. (1964)
Professor, Department of Foreign Languages
B.A., Ohio State University; M.A., Emory University, Georgia; Ph.D., Ohio State University.

BOWERMAN, EARL H. (1979)
Professor, Department of Plant Science and Mechanized Agriculture
B.S.A., M.S., University of Arkansas; Ph.D., Rutgers University, New Brunswick.

BOWERMAN, KAREN D. (1979)
Professor, Department of Management and Marketing
B.A., Wichita State University; M.A., Kansas University; Ph.D., Texas A & M University.

BOYLE, THOMAS P. (1972)
Associate Dean of Student Affairs
B.A., M.A., University of California, Santa Barbara.

BRADY, ROLAND H. (Spring 1986)
Associate Professor, Department of Geology
B.S., Sonoma State University; Ph.D., University of California, Davis.

BRAHMA, CHANDRA S. (1980)
Professor, Department of Civil and Surveying Engineering
B.S., Calcutta University; M.S., Michigan State University; Ph.D., Ohio State University; Registered Professional Engineer.

BREEN, THOMAS E. (1966)
Professor, Department of Psychology
B.S., University of Illinois; M.A., Ph.D., Louisiana State University.

BREMEL, DAVID H. (Spring 1985)
Associate Professor, Department of Animal Science and Agricultural Education
B.S., University of Minnesota of Minneapolis-Saint Paul; M.S., Ph.D., University of Kentucky.

BRENGELMAN, FREDERICK H. (1957)
Professor, Department of Linguistics
B.A., Dana College; M.A., University of Nebraska; Ph.D., University of Washington.

BRENNER, ROBERT D. (1968)
Professor, Department of Teacher Education
B.A., Ottawa University; M.A., Ed.D., Northern Colorado University.

BREWER, HOWARD H. (1978)
Associate Professor, Department of Communication Arts and Sciences
B.A., Ohio State University; M.F.A., University of Hawaii.

BREWER, RAY E. (1965)
Professor, Department of Advanced Studies
B.S., Kansas State University; M.A., New Mexico State University; Ed.D., University of Arizona; Licensed Educational Psychologist.

BRIGHAM, THOMAS M. (1953)
Professor, Department of Social Work Education
B.A., San Francisco State College; M.S.W., University of California, Berkeley; Registered Social Worker.

BROOKS, WAYNE A. (1956)
Professor, Department of Finance and Business Law
B.A., St. Ambrose College; J.D., University of Iowa; L.L.M., Stanford University; J.S.D., University of California, Berkeley; Member, Iowa Bar, California Bar.

BROUWER, JAMES M. (1964)
Associate Professor, Department of History
B.A., M.A., Yale University.

BROWN, LYNDA M. (1984)
Lecturer, Department of Health Science
B.A., M.S., California State University, Fresno.

BROWN, RICHARD S. (1976)
Professor, Department of Advanced Studies; Coordinator, Research and Development
B.A., North Texas State University; M.A., Incarnate Word College; Ed.D., University of Houston.

BROWN, SANFORD M. (1976)
Associate Dean, School of Health and Social Work; Professor, Department of Health Science
B.S., Ursinus College; M.P.H., University of Michigan; Ph.D., University of Kansas; Registered Sanitarian.

BROWN, SHELDON J. (1956)
Professor, Department of Physics
B.A., Ph.D., University of California, Los Angeles.

BROWNELL, JAMES R. (1969)
Professor, Department of Plant Science and Mechanized Agriculture
B.S., Pennsylvania State University; M.S., University of Minnesota; Ph.D., University of California, Davis.

BROYLES, DON R. (1968)
Professor, Department of Political Science
B.A., Sacramento State College; M.A., Ph.D., Claremont Graduate School.

BRYAN, GERALD O. (1973)
Professor, Department of Management and Marketing
A.B., M.A., University of Northern Colorado; D.B.A., Arizona State University.

BRYON, JEANETTE P. (1956)
Professor, Department of Communication Arts and Sciences
B.A., University of Maine; M.A., University of North Carolina.

BUCHER, MANFRED (1982)
Lecturer, Department of Physics
Diplom-Physiker, Dr. Phil. Nat., Goethe University (West Germany).

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EMERITI 1986–87

(Parentheses indicate years of service at CSU, Fresno)

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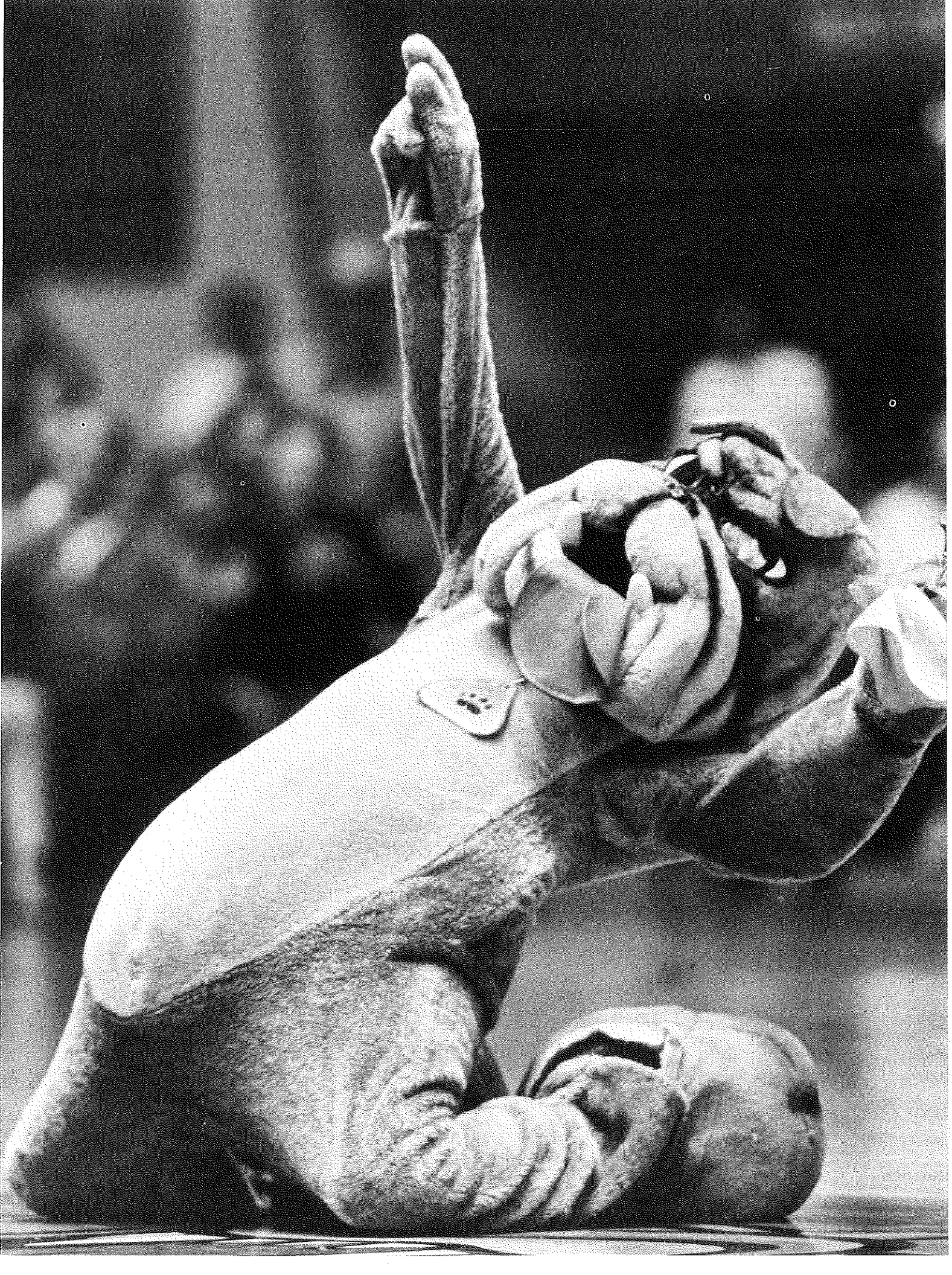
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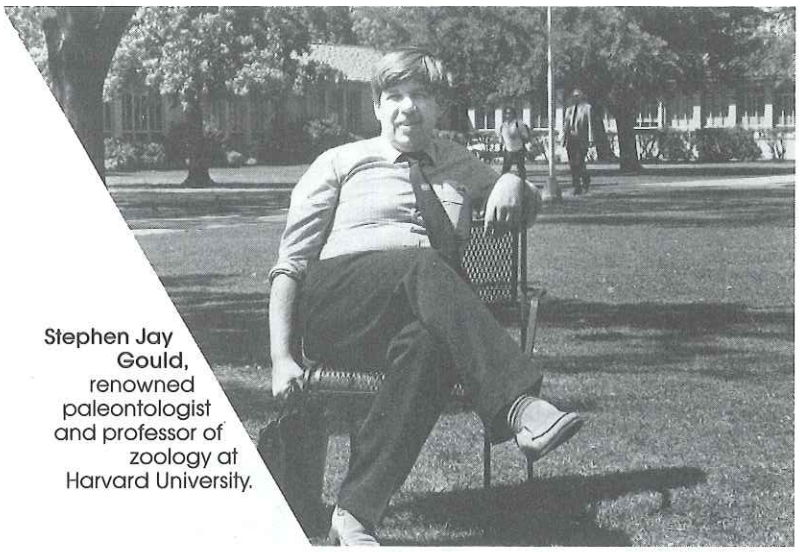
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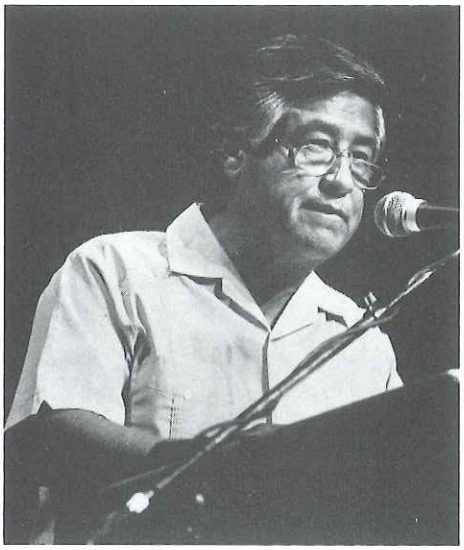
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Cesar Chavez, world-recognized founder and leader of the United Farm Workers Organization.



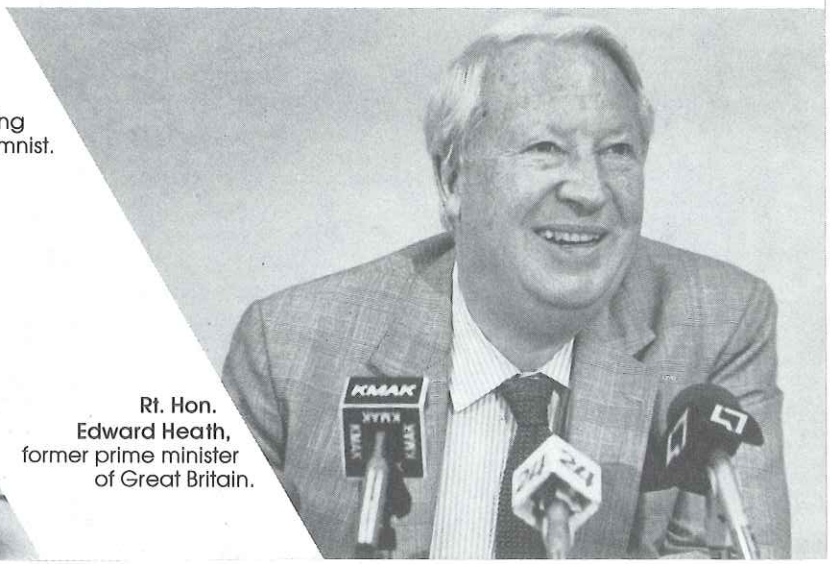


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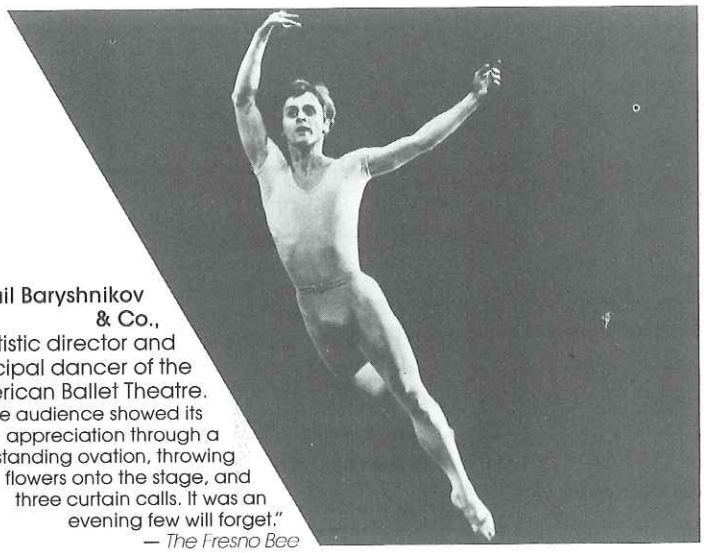
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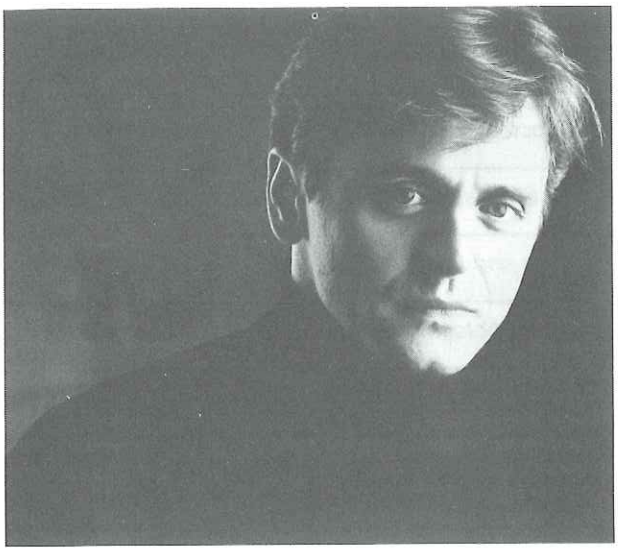
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