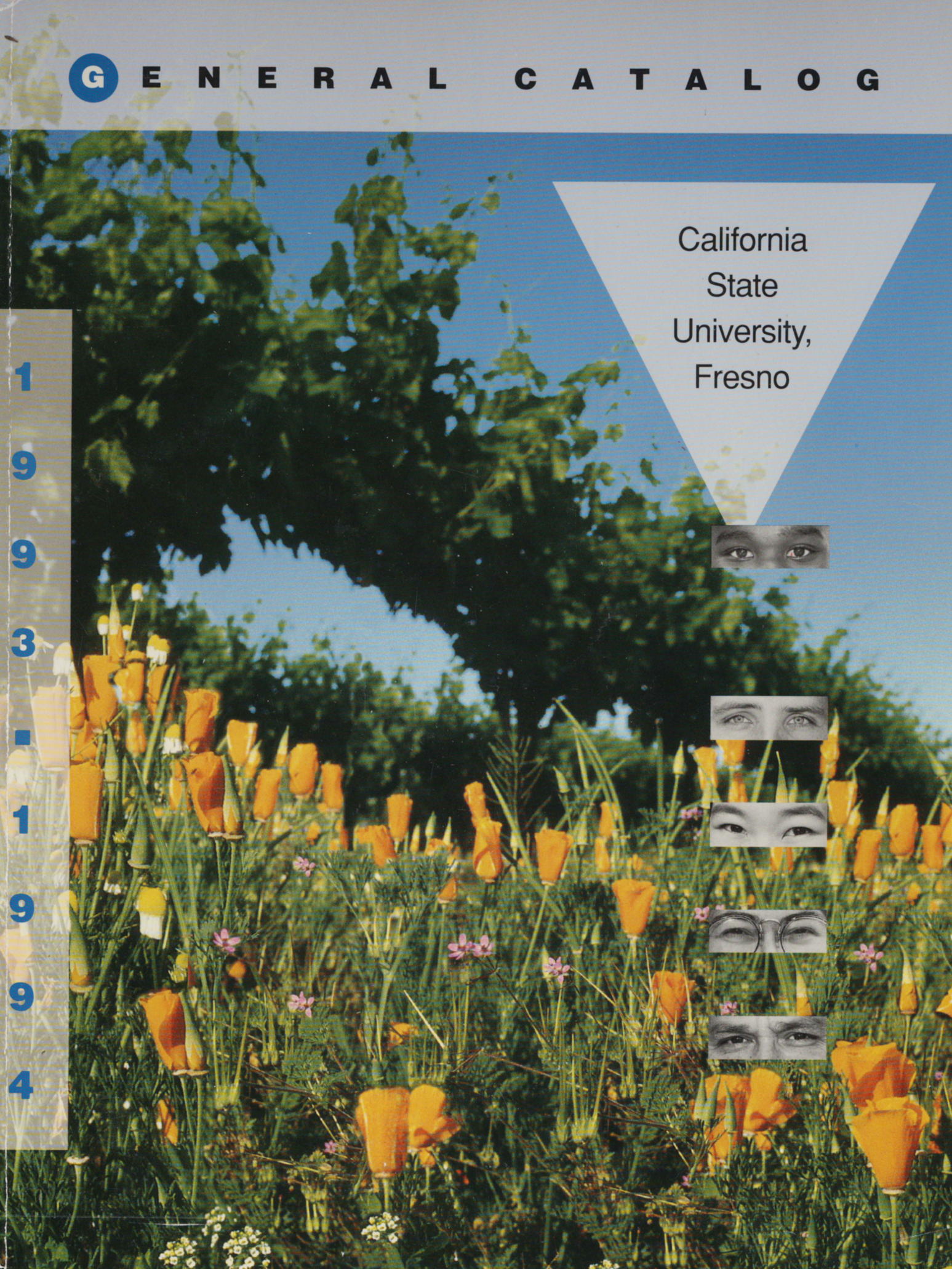
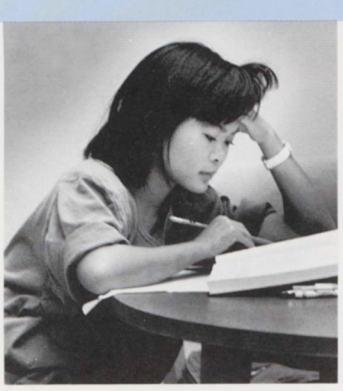
GENERAL CATALOG

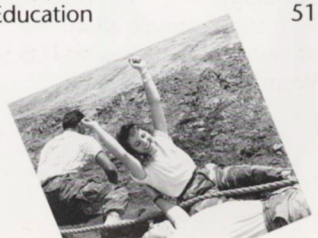


California State University, Fresno

1993-1994

Contents





Features

Academic Calendar	4
The California State University	6
Trustees and Officers	8
President's Message	9
Preview	10
This Is CSU Fresno	17

The University's Schools

School of Agricultural Sciences and Technology	30
School of Arts and Humanities	31
The Sid Craig School of Business and Administrative Sciences	32
School of Education and Human Development	33
School of Engineering	34
School of Health and Social Work	35
School of Natural Sciences	36
School of Social Sciences	37

Sources/Resources

Activities and Student Life	40
Advising Services	41
Alumni Association	42
Associated Students	43
Athletics	44
Auxiliaries	45
Career Development and Employment Services	46
Computer Services	47
Developmental Learning Resource Center	48
Disabled Student Services	49
Educational Opportunity Program	50
Extended Education	51
Health and Counseling Services	52
Housing	53
Instructional Media Services	54
International Programs	55
International Student Services and Programs	56
Library Services	57
Migrant Services	58
Orientation and Transition Services	59
Outreach Services	60
Reentry Programs	61
Student Affairs	62
Students for Community Service	63
Testing Services	64
Veterans Affairs	65

Admissions, Fees, and Financial Assistance

Admission Requirements and Registration Process	68
Fees and Expenses	80
Financial Aid	83

Academic Regulations

Academic Regulations	90
Academic Placement	97
Degree Requirements	100
Degree Programs, Majors, and Minors	104
General Education	106

Courses and Programs

Course Prefixes, Symbols, and Terms 116
Aerospace Studies 118
Agriculture – Agricultural Economics 120
Agriculture – Animal Sciences and Agricultural Education 127
Agriculture – Child, Family, and Consumer Sciences 135
Agriculture – Enology, Food Science, and Nutrition 141
Agriculture – Industrial Technology 149
Agriculture – Plant Science and Mechanized Agriculture 158
Anthropology 168
Armenian Studies 172
Art 173
Asian American Studies 178
Athletics 179
Biology 180
Business – Accountancy 193
Business – Finance and Business Law 196
Business – Information Systems and Decision Sciences 200
Business – Management 204
Business – Marketing and Logistics 208
Business – Graduate Program 210
Chemistry 214
Chicano and Latin American Studies 221
Classical Studies – Interdisciplinary Minor 225
Communicative Disorders 226
Computer Science 233
Criminology 238
Economics 243
Education – Interdepartmental Programs and Courses 247
Education – Counseling and Special Education 251
Education – Curriculum, Teaching, and Educational Technology 259
Education – Educational Research, Administration, and Foundations 268
Education – Literacy and Early Education 272
Education – Graduate Programs 277
Engineering – Civil and Surveying Engineering and Construction 281
Engineering – Edwards Air Force Base Program 294
Engineering – Electrical and Computer Engineering 298
Engineering – Mechanical and Industrial Engineering 304
English 310
Ethnic Studies 316
Foreign Languages and Literatures 320
Geography 330
Geology 337
Gerontology 341
Health and Social Work – Interdisciplinary Courses 343
Health Science 344
History 350
Humanities – Interdisciplinary Minor 356
Liberal Studies 357
Linguistics 359
Mass Communication and Journalism 363
Mathematics 369
Military Science 374
Music 376
Natural Science – Interdisciplinary Courses 383
Nursing 385
Peace and Conflict Studies 394
Philosophy 395
Physical Education and Human Performance 399
Physical Therapy 406
Physics and Physical Science 411
Political Science 417
International Relations – Graduate Program 419
Public Administration – Graduate Program 420
Psychology 425
Recreation Administration and Leisure Studies 431
Social Science Major 435
Social Work Education 437
Sociology 441
Speech Communication 444
Theatre Arts – Drama and Dance 450
Women's Studies 456

Special Programs 460
Division of Graduate Studies 468
University Administration and Policies 480
Faculty and Administration 488
Subject Index 522
Campus Directory 528
Campus Map Inside Back Cover

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This issue marks the 10th year that the General Catalog has benefited from the creative touch of Priscilla Helling. We extend a special thanks to Priscilla for sharing her artistic talent with us.

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Academic Calendar 1993-94

FALL SEMESTER 1993

AUGUST 1993

1 ADMISSION APPLICATION cycle for Spring 1994 begins (Aug. 1-Oct. 15)
7 Telephone REGISTRATION and ADD/DROP for Fall 1993 begins (Aug. 7-20)
24 SEMESTER begins
ACADEMIC ASSEMBLY for faculty
26 DISCOVERY '93 — orientation for new undergraduates who missed earlier sessions
27 LATE REGISTRATION begins ($25 late fee)
Auditors and "60+ Years" students may register
ADD/DROP period begins
30 INSTRUCTION begins
APPLICATION period for degrees to be granted in December 1993 begins (Aug. 30-Sept. 10)

SEPTEMBER 1993

1-30 Filing period for applications for Spring 1994 student teaching — Multiple and Single Subject
3 LATE REGISTRATION ends
Last day to:
- pay registration fees
- request permission for concurrent enrollment at another college

6 Labor Day — no classes; all offices closed
7 NEW STUDENT CONVOCATION — welcoming event for new students
7-10 WELCOME WEEK '93 — events, activities, and programs for new and continuing students, faculty, and staff
10 Last day to file an application for BACHELOR'S and MASTER'S DEGREES to be granted in December 1993
13 Last day to:
- ADD CLASSES
- DROP CLASSES without a serious and compelling reason
- register for Credit by Examination
- file for refunds by resident students; nonresidents see *Schedule of Courses*, "Fee Refund Schedule"

27 Last day to:
- change to *or* from credit/no credit grading
- change from credit registration to audit registration or audit registration to credit registration
- take examination for Credit by Examination

OCTOBER 1993

11 Last day for faculty to submit Credit by Examination grade
15 ADMISSION APPLICATION and documentation deadline for Spring 1994 Telephone Registration;
Final ADMISSION APPLICATION and documentation deadline to attend the Spring 1994 semester;
last day for graduate students to apply for ADVANCEMENT TO CANDIDACY this semester to be eligible for graduation in May 1994
25 Last day to file edited, committee-approved MASTER'S THESIS for December 1993 graduation

NOVEMBER 1993

1 ADMISSION APPLICATION cycle for Fall 1994 begins (Nov. 1-June 1)
Admission deadline to School of Education basic credential programs (Multiple and Single Subject), advanced credential programs, and master's degrees for Spring 1994
Filing period for scholarships for the 1994-95 academic year begins (Nov. 1-Feb. 1)
8 Advising and S.T.A.R. Registration fee payment for Spring 1994 begins
12 Last day to DROP CLASSES for SERIOUS and COMPELLING REASONS, except by complete withdrawal from the university
16-17 ADVISING DAY — orientation with academic advising for new undergraduates and their parents, Spring 1994 semester; participants only need to attend one day
25-26 THANKSGIVING RECESS; the library will post holiday hours

DECEMBER 1993

3 Last day to pay fees for Spring 1994 semester to participate in Telephone Registration
10 Last day of INSTRUCTION
Last day to:
- withdraw from a complete program
- submit grade substitution request form for Fall 1993 without a late fee

13-17 SEMESTER EXAMINATIONS
23 FALL SEMESTER ends
Last day to:
- submit incomplete make-up work or request extension of time for incomplete grades from Fall 1992
- submit to the Graduate Office departmental clearance paperwork on behalf of December 1993 master's degree candidates (include a photocopy of the completed final report on incomplete or in-progress work, if needed for graduation)

24 Campus closed (Dec. 24-31)
WINTER RECESS (Dec. 24-Jan. 25)

AUGUST 1993

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SEPTEMBER 1993

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Key: Calendar dates in **color** denote classes in session.

DECEMBER 1993

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

SPRING SEMESTER 1994

JANUARY 1994

3 WINTER SESSION begins (Jan. 3-21)
Financial Aid application filing period for priority consideration for the 1994-95 academic year begins (Jan. 3-March 1)

8 Telephone REGISTRATION and ADD/DROP for Spring 1994 begins (Jan. 8-21)

17 Martin Luther King Jr. Day — campus closed

26 SEMESTER begins

27 ADVISING DAY — orientation with academic advising for new undergraduates who missed earlier sessions

28 LATE REGISTRATION begins ($25 late fee)
Auditors and "60+ Years" students may register
Last day for faculty to submit CHANGES and CLEARANCES (incomplete grades, approved petitions, departmental approvals, transfer transcripts) required for graduation with a bachelor's degree at the end of the Fall 1993 semester
ADD/DROP period for Telephone Registration participants begins

31 INSTRUCTION begins
APPLICATION period for degrees to be granted in May 1994 begins (Jan. 31-Feb. 11)

FEBRUARY 1994

1 Last day to file applications for scholarships for the 1994-95 academic year

1-28 Filing period for applications for Fall 1994 student teaching — Multiple and Single Subject

4 LATE REGISTRATION ends
Last day to:
- pay registration fees
- request permission for concurrent enrollment at another college

11 Last day to:
- ADD CLASSES
- DROP CLASSES without a serious and compelling reason
- register for Credit by Examination
- file for refunds by resident students; nonresidents see *Schedule of Courses*, "Fee Refund Schedule"
- file an application for BACHELOR'S and MASTER'S DEGREES to be granted in May 1994

21 Presidents' Day — no classes; all offices closed

28 Last day to:
- change to *or* from credit/no credit grading
- change from credit registration to audit registration or audit registration to credit registration
- take examination for Credit by Examination

MARCH 1994

1 Filing deadline for Financial Aid for the 1994-95 academic year

14 Last day for faculty to submit Credit by Examination grade

18 Last day for graduate students to apply for ADVANCEMENT TO CANDIDACY this semester to be eligible for graduation in August 1994 or December 1994

28 SPRING RECESS (March 28-April 1)

APRIL 1994

1 Admission deadline to School of Education basic credential programs (Multiple and Single Subject), advanced credential programs, and master's degrees for Fall 1994

4 Last day to file edited, committee-approved MASTER'S THESIS for May 1994 graduation

21-24 VINTAGE DAYS (April 21-24)

22 Last day to DROP CLASSES for SERIOUS and COMPELLING REASONS, except by complete withdrawal from the university

MAY 1994

20 Last day of INSTRUCTION
Last day to withdraw from a complete program
ADMISSION APPLICATION and documentation deadline for Fall 1994 Telephone Registration

23-26 SEMESTER EXAMINATIONS

28 83rd annual COMMENCEMENT

31 SUMMER SESSION begins (May 31-Aug. 19, tentative); see *Summer Session Catalog*

JUNE 1994

1 SPRING SEMESTER ends
Final ADMISSION APPLICATION and documentation deadline to attend the Fall 1994 semester
Last day to:
- submit incomplete make-up work or request extension of time for incomplete grades from Spring 1993
- submit to the Graduate Office departmental clearance paperwork on behalf of May 1994 master's degree candidates (include a photocopy of the completed final report on incomplete or in-progress work, if needed for graduation)

24 Last day for faculty to submit CHANGES and CLEARANCES (incomplete grades, approved petitions, departmental approvals, transfer transcripts) required for graduation with a bachelor's degree at the end of the Spring 1994 semester

JANUARY 1994

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MARCH 1994

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MAY 1994

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JUNE 1994

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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. Ten years later, the system became The California State University. Today, all 20 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 University, San Marcos — began admitting students in fall 1990.

Responsibility for The California State University is vested in the board of trustees, consisting of ex officio members, alumni and faculty representatives, and members 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 of 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 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 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.

In fall 1992, the system enrolled approximately 347,000 students, taught by more than 17,000 faculty. 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 1.2 million persons have been graduated from the 20 campuses since 1960.

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(510) 881-3000

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Dr. Curtis L. McCray, President
(310) 985-4111

California State University, **Los Angeles**
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Dr. James M. Rosser, President
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Dr. Blenda J. Wilson, President
(818) 885-1200

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Pomona, CA 91768
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San Diego State University
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Dr. Thomas B. Day, President
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Imperial Valley Campus
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San Francisco State University
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San Francisco, CA 94132
Dr. Robert A. Corrigan, President
(415) 338-1111

San Jose State University
One Washington Square
San Jose, CA 95192
Dr. J. Handel Evans, Acting President
(408) 924-1000

California Polytechnic State University, **San Luis Obispo**
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Dr. Warren J. Baker, President
(805) 756-1111

California State University, **San Marcos**
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San Marcos, CA 92069
Dr. Bill W. Stacy, President
(619) 752-4000

Sonoma State University
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Rohnert Park, CA 94928
Dr. Ruben Arminana, President
(707) 664-2880

California State University, **Stanislaus**
801 West Monte Vista Avenue
Turlock, CA 95380
Dr. Lee R. Kerschner, Interim President
(209) 667-3122

Office of the Chancellor

The California State University
400 Golden Shore
Long Beach, CA 90802-4275
(310) 985-2500

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The California State University

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

To be appointed
State Superintendent
of Public Instruction
721 Capitol Mall, Sacramento 95814

Barry Munitz
Chancellor
The California State University
400 Golden Shore
Long Beach 90802-4275

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President

Anthony M. Vitti
Chair

R. James Considine Jr.
Vice Chair

Barry Munitz
Secretary-Treasurer

Correspondence with Trustees should be sent:
c/o Trustees Secretariat
The California State University
400 Golden Shore, Suite 214
Long Beach, CA 90802-4275

Appointed Trustees

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

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1994

Roland E. Arnall
1998

Marian Bagdasarian
1996

John E. Kashiwabara, M.D.
1994

James H. Gray
1998

Terrance W. Flanigan
1999

R. James Considine Jr.
1995

Martha C. Fallgatter
1995

William D. Campbell
1995

Ralph R. Pesqueira
1996

Ted J. Saenger
1997

Anthony M. Vitti
1997

Ronald L. Cedillos
1999

Bernard Goldstein, Ph.D.
1993

Arneze Washington
1993

William Hauck
2001

Joan Otomo-Corgel
2001

Rosemary Thakar
2001

Office of the Chancellor

The California State University
400 Golden Shore
Long Beach, CA 90802-4275
(310) 985-2500

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Chancellor

Molly Corbett Broad
Senior Vice Chancellor,
Administration and Finance

Harold H. Haak
Interim Senior Vice Chancellor,
Academic Affairs

June M. Cooper
Vice Chancellor,
Human Resources and Operations

Louis V. Messner
Vice Chancellor,
Business Affairs

Fernando C. Gomez
General Counsel

Stephen J. MacCarthy
Director,
Public Affairs and University Relations

William J. Dermody
Executive Assistant to the Chancellor

President's Message

John D. Welty

It's just a book — this *General Catalog* — and if you let it, it will reveal a great deal of information about California State University, Fresno. With the turn of each page, you will uncover more and more facts about a new and exciting world. Through the eyes of our students, faculty, staff, and administrators you will sense the pride each person feels in being a part of this great university. These eyes also reveal the rich diversity in our university family.

We are proud of our students. They bring a diversity of backgrounds — ethnic, cultural, socioeconomic — and their harmony echoes through the campus. We are also seeing more students reentering after years away from school, and we are impressed with the number of students who are the first in their family to attend a university.

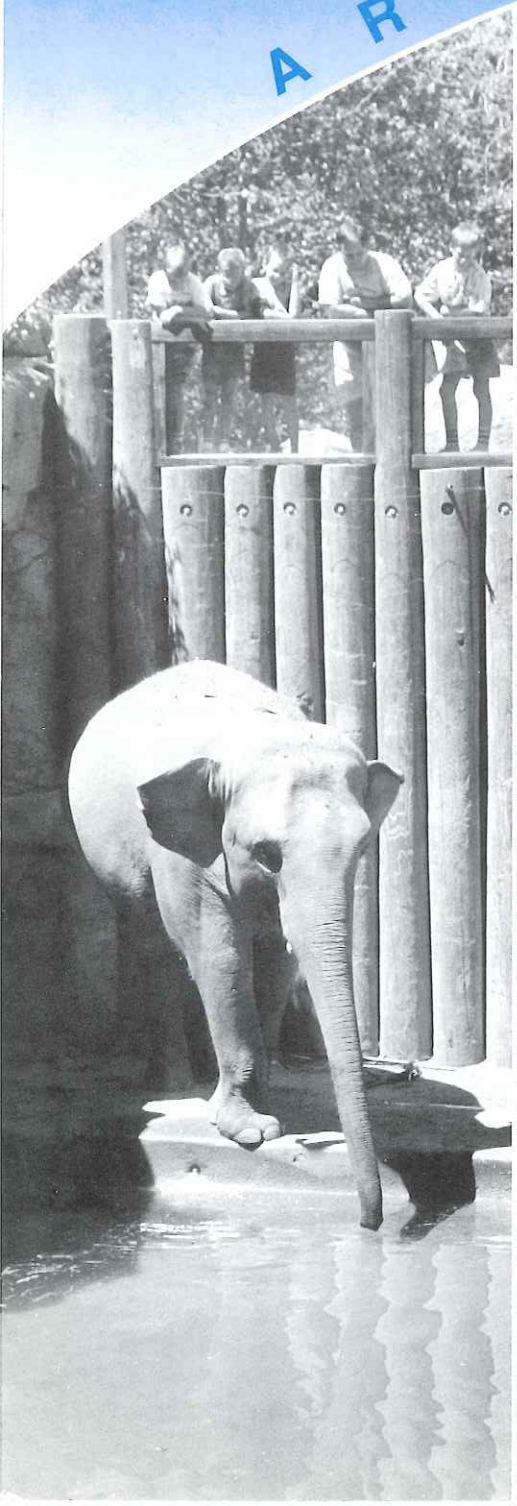
As with our ever-changing student body, the depth and breadth of our programs of study continually undergo evolutionary change. Each year, we update our fields of study to keep pace with new technologies and to reflect global concerns. This catalog introduces four new degree programs, a B.A. in Chicano Studies, a B.A. in Physical Science, a Master of Physical Therapy, and a Master of Public Health.

At CSU Fresno learning never stops. You will find dedicated professors who care about their students and are willing to give of their time on an individual basis. Your fellow students will reach out through student organizations that are as diverse as the student body itself. Staff and administrators will advise, counsel, and guide you through the challenges that face you today and the ones you will meet tomorrow.

No doubt you'll purchase a number of books while attending this university, but it is this book that will guide you through your life as a university student. We hope you will refer to this *General Catalog* time and time again.

PREVIEW

AROUND CSUF



California State University, Fresno began as a two-year state normal school with 150 students in 1911, largely preparing teachers for their profession.

Today, CSU Fresno is a stimulating center of intellectual and cultural activity, dedicated to academic excellence, integrity, and freedom. With nearly 19,000 students registered, the university recognizes its commitment to develop qualified professionals who will become tomorrow's leaders in every walk of life.

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 is documented in a variety of ways, including recognition from national and international associations. Eighty-nine 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 4,000 trees, the CSU Fresno campus sits at the northeast edge of Fresno, against a backdrop of the beautiful Sierra Nevada. Designated as an arboretum in 1978, the campus and its parklike setting creates a beautiful environment for making new friends and pursuing a quality education.

The 327-acre main campus features more than 46 traditional and modern buildings. An additional 34 structures are on the 1,083-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. The campus has two student unions, indoor and outdoor theaters for drama and music, and swimming facilities. Students can also make use of many individual and team sport facilities, a baseball stadium at Beiden Field that seats 4,575 spectators, and a 41,000-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.

Around CSUF you'll find adventure at every corner, from Wildwater Adventures in Clovis to the serenity of Woodward Park ... theatre and jazz thrive in the Tower District and more than 500 species of mammals, birds and reptiles call the Chaffee Zoological Gardens "home."

University

The Community. Fresno's metropolitan area has a population of more than 510,500, 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.

All year round, nature lovers and outdoor sports enthusiasts can choose from a variety of parks to visit while in Fresno. One favorite haven is Lost Lake Park. Only 24 miles northeast of Fresno, Lost Lake boasts of a 70-acre primitive nature study area and a 38-acre lake. Recently, a part of the park was filled with 70,000 tons of sand to create seven volleyball courts and play host to the Pro Beach Volleyball tournament.

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 University Student Union and the Satellite Student Union are visited by students throughout the day and evening.

Isabel Allende
A celebrated novelist, Isabel Allende is most known for her internationally acclaimed best-selling novel, *The House of the Spirits*. Born in Santiago, Chile, and the niece of the late President Salvador Allende, her novels keep alive the memory of her family and country.

Mary Cunningham Agee
Mary Cunningham Agee is president of Semper Enterprises Inc., a venture capital and strategy consulting firm. She is also executive director of The Nurturing Network Inc. which offers support and services to college and working women. Among her most recent achievements is her book, *Powerplay*, which was on the best-seller list of *The New York Times*.

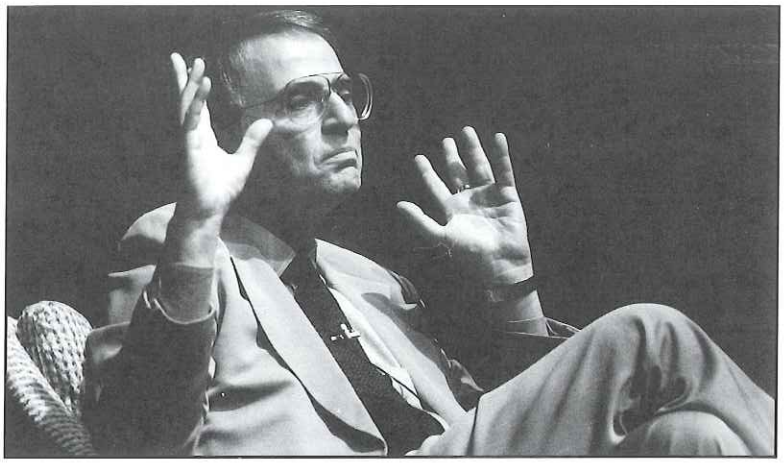
Lecture Series

The University Lecture Series is an educational forum featuring distinguished speakers, performers, and public figures. The Lecture Series seeks to make available unique opportunities which benefit both campus and community. The programs are open to all who wish to attend.

Featured speakers and performers have included President Gerald Ford, reporter Charlayne Hunter-Gault, journalist Ellen Goodman, artist Judy Chicago, dancer Mikhail Baryshnikov, lawyer Elliot Richardson, Israeli U.N. Ambassador Abba Eban, activist Maki Mandela, historian Martin Marty, politician Geraldine Ferraro, Senator Edmund Muskie, singers Sweet Honey in the Rock, playwright Luis Valdez, Nobel Laureate Elie Wiesel, and Marian Wright Edelman, an advocate of disadvantaged children.

The Lecture Series is funded in part by the Office of the Provost and Vice President for Academic Affairs, the University Student Union Board, and the Associated Students Inc. In addition, special programs may be planned, supported, or jointly sponsored by off-campus groups or organizations.

Governor Mario Cuomo
As governor of New York, Mario Cuomo has focused the state's attention on education, homelessness, the infrastructure, governmental ethics, solid waste management, income tax reduction, and economic development.



Carl Sagan
Carl Sagan is professor of astronomy and space sciences and director of the laboratory for planetary studies at Cornell University. He played a leading role in the Mariner, Viking, and Voyager expeditions to the planets.

Shelton "Spike" Lee
Best known for "Malcom X," award-winning director Shelton "Spike" Lee also wrote, directed, and co-starred in "Do The Right Thing" and "Mo' Better Blues."

President Jimmy Carter
The 39th President of the United States, Jimmy Carter, receives a warm CSUF welcome. President Carter's most significant achievements were the signing of the Camp David Accords and his concern for human rights around the world.

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:

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

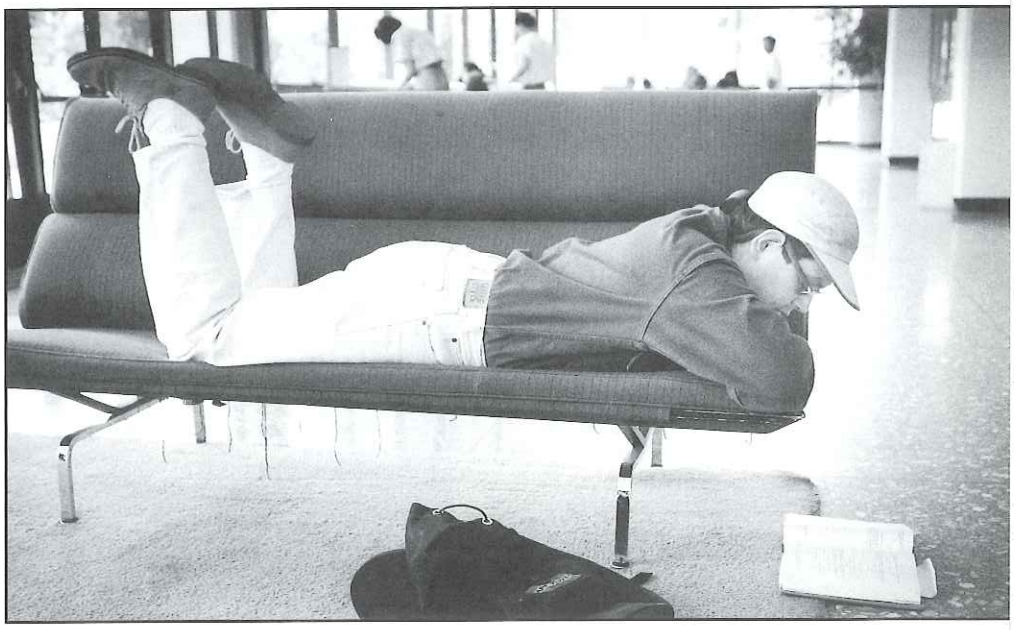
The University's Mission

The university offers a high-quality educational opportunity to qualified students at the bachelor's and master's levels, as well as in joint doctoral programs in selected professional areas. To carry out this mission, the university provides a General Education program and other opportunities, to expand students' intellectual horizons, foster lifelong learning, prepare them for further professional study and instill within them an appreciation of cultures other than their own. The university offers undergraduate degrees and programs in the liberal arts and sciences as well as in a variety of professional disciplines emphasizing agriculture, business, engineering and technology, health and human services, and education, preparing students for productive careers and responsible world citizenship. Building upon the strength of these undergraduate programs, graduate programs provide opportunities for personal and career enhancement through advanced study, preparing students for positions of leadership in the arts, sciences and professions.

The university encourages and protects free inquiry and expression, ensuring a forum for the generation, discussion and critical examination of ideas. By emphasizing the primacy of quality teaching and the close interaction between faculty and students, the university seeks to stimulate scholarly inquiry and discourse, inspire creative activity, heighten professional and technical competencies, encourage and support research and its dissemination, and recruit and develop outstanding teacher-scholars/artists.

The university fosters an environment in which students learn to live in a culturally diverse and changing society. Within that environment, it strives to develop a community founded upon mutual respect and shared efforts, in which individuals can communicate openly and work together to enrich the lives of all and to further the growth and excellence of the university. The university seeks and encourages historically under-represented students to embark upon and complete a university education.

The university serves the San Joaquin Valley while interacting with the state, nation, and world. The university is a center of intellectual, artistic and professional activity. Through applied research, technical assistance, training and other related public service activities, the university anticipates continuing and expanding partnership and linkages with business, education, industry and government.



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 accelerated, both academically and physically. In 1949, CSU Fresno offered its first master's degree; today, it offers this degree in 43 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 a 1,410-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.

In Fall 1991, the School of Education and Human Development began offering an interdisciplinary doctoral degree (Ed.D.) in educational leadership, offered in partnership with the University of California.

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 Agricultural Sciences and Technology, Arts and Humanities, the Sid Craig School of Business and Administrative Sciences, Education and Human Development, Engineering, Health and Social Work, Natural Sciences, and Social Sciences, the Division of Extended Education, and the Division of Graduate Studies.

Fresno Normal School, in 1911, had an enrollment of 150 students, most of whom were women. By 1940 enrollment had increased to 2,000 students, by 1964, to 7,500. In the fall of 1992, more than 18,900 students registered at California State University, Fresno.

The presidents, in order of tenure are:

Charles L. McLane (1911-27)
Frank W. Thomas (1927-48)
Arnold E. Joyal (1948-64)
Frederic W. Ness (1964-69)
Karl L. Falk (Acting) (1969-70)
Norman A. Baxter (1970-80)
Harold H. Haak (1980-91)
John D. Welty (1991-)

ΑΦΑ

This Is CSU Fresno

"Climb the mountains and get their good tidings. Nature's peace will flow into you as sunshine flows into trees. The winds will blow their own freshness into you, and the storms their energy, while cares will drop off like autumn leaves."

John Muir

You, the students, are the heart and soul of California State University, Fresno. Along with your diverse bloodlines, you bring life to this campus with your endless inquiries and expressions of amazement.

Your diversity – as well as that of the faculty and staff – is easily matched by more than 200 student organizations. In this section, we are spotlighting eight student organizations. We would have enjoyed shining the light on all of the student groups found on this campus, but obviously that wasn't possible. Information about student organizations is available at the Student Life Center in the University Student Union. But for now, take a look at CSU Fresno and "meet" some dedicated people who give so much more than they take.

Dedicated club members (from left) Adrienne McGraw, Chris Warner, Kathy Donnelly, Jamie Johnson, and Nicole Smith sit on top of newspapers that will go to the recycling center. Several large recycling containers that hold paper, newspapers, cardboard, cans, and bottles are located on Barstow Avenue between Maple and Woodrow avenues.

"We need to keep contacting him and expressing our concerns. He's a 'Greener' president."

Kristi Hutchison,
Ecology Society founder,
on President John Welty

Although the Ecology Society's greatest moment in the sun may be the annual Earth Day, the group shines year-round with its message for students to make every day Earth Day.

"First and foremost, the goal of the Ecology Society is to educate people," says Kristi Hutchison, the student who founded the Ecology Society. "Education is the best way to change things, and people respond when they hear what we are doing. They *want* to help. They *want* to do something. And that 'something' is changing their lifestyles to improve the environment."

Among their efforts to bring about change, club members encourage the campus community to recycle paper, newspaper, bottles, and cans. In addition, they collaborate with the track team to provide the appropriate recycling bins. By promoting such simple habits as recycling, the group is able to meet another one of its goals: to promote the belief that every individual effort makes a difference.

"It's important for people to realize that one person does make a difference," says club President Adrienne McGraw. "Some people think, 'What can I do? I am only one person.' Well, let's say there are a million people who think that, and if all those million people did something positive to help the environment, they would be helping the Earth heal itself."

Multae Gentes, Una Terra.
Many People, One Earth.

Taking it slowly, two visitors enjoy the exhibits during a campus Environmental Organizations Fair on Earth Day. Oh yes, Karen Williams (left) and Christine Tuason also found the exhibits informative.

Academic Excellence Organization for African American Athletes

"AEO sends a message that there has to be a balance between mind and body and soul. You can't put all your eggs in the athletic basket."

Keith Carodine,
Former AEO adviser

Balancing school and sports since her days as a track star and honor student at nearby Clovis High School, Janisha Richardson carried her success to CSUF as a sprinter and AEO member.

AEO members (from left) Leroy Kelly, Janisha Richardson, and Dana Steward work at the on-campus chicken gumbo sale.

Naim Shah, founder of AEO 4 AAA, welcomes guests to the first AEO Student Athlete Awards Banquet.

If you have a *vision,* you have to share it. At least that's how one distinguished looking young man sees it.

Not too long ago Naim Shah had a vision . . . an idea that Fresno State's African American athletes wanted to get involved in academics.

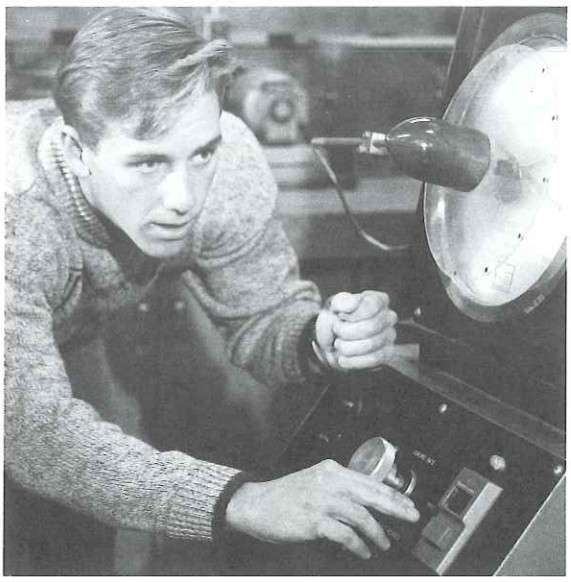
Coming to this university on a football scholarship, Naim was a gifted athlete. After one successful year and then reconstructive knee surgery, he quickly learned that football could not be his top priority. He also discovered that many of his fellow athletes felt the same way about their priorities. They wanted to excel in the classroom as well as on the playing field.

Thanks to Naim's vision, the Academic Excellence Organization for African American Athletes is now a reality! These student athletes share a bond, being African American and about the same age and sometimes coming from the inner cities. When they need support, they can turn to their peers — *their friends* at AEO.

The driving force behind AEO is to keep things in perspective for these young student athletes. The dreams of multimillion dollar contracts motivate them, but the key is to keep some realism about the game. After all, only a select few make it to the pros. That's reality.

"The focus is for athletes," Naim explains, "but AEO is open to *all* students. From the athletic standpoint, it introduces us to a different world — networking, study groups, workshops, and guest speakers. Career consultants talk to us about interviewing techniques, how to put a resume together, and things of that nature. Speakers come in from various disciplines. They talk about what it takes to be successful in their particular professional areas. It exposes us — the athletes — to people working in the real world and teaches us how to prepare ourselves so we can become successful."

AEO — believed to be the first organization of its kind in the nation — was founded in September 1991 by Naim and several other student athletes who recognized the need for additional academic support and professional career development. The organization inspires and motivates members to pursue academic excellence.



The properties of concrete vary according to its ingredients. Here, John Ennis tests the strength of a concrete recipe by breaking a cylinder in a test machine.

"If we're just as competitive as other universities, like Berkeley and Cal Poly, young people will stay in the Valley. CSU Fresno is very competitive."

John Ennis,
ASCE member and
former president

They're not varsity athletes. But if the students in the American Society of Civil Engineers look like a team, that's because they're learning to work effectively with others in their field, just as a team would.

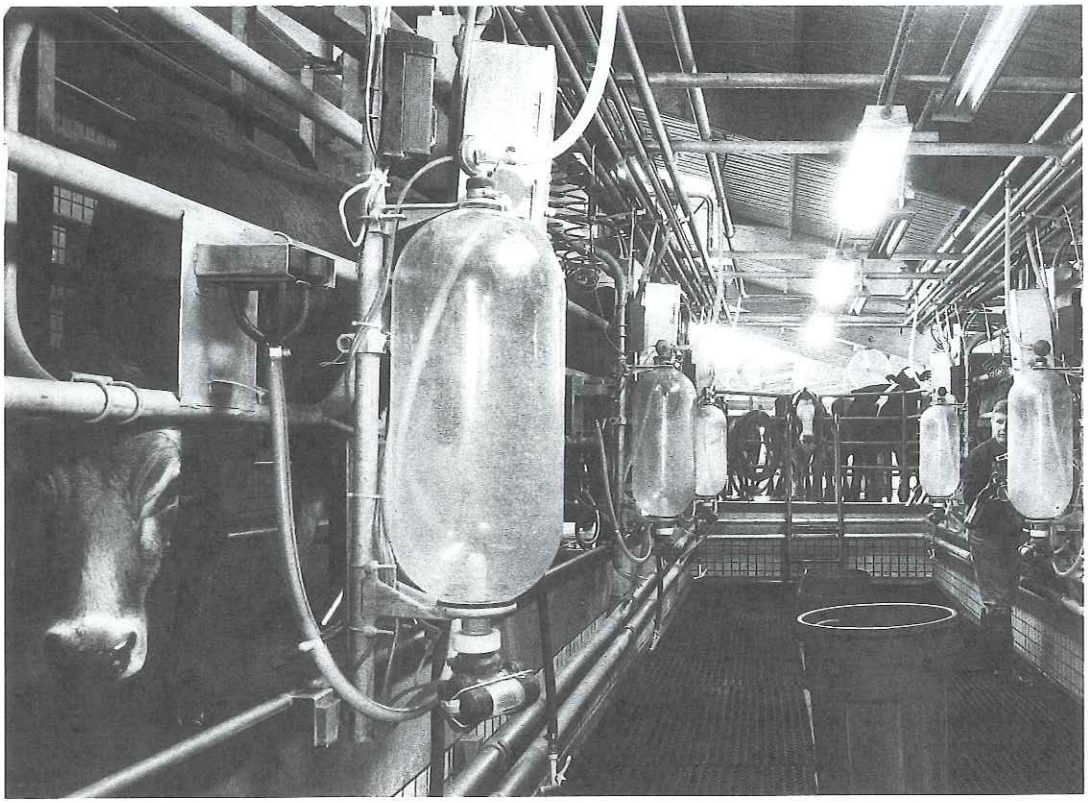
"Civil engineering is not an individual-type profession. You have to learn how to network and how to work with others toward a common goal," says Professor John Johnston, the club's adviser. "Civil engineering projects in the real world require a lot more than just number crunching. Engineers have to know how to organize people, time and money to get the job done. And they have to know how to communicate effectively."

To help students practice these skills, the national ASCE organization began sponsoring concrete canoe competitions as part of the annual student chapter conferences. For the competition, ASCE student groups design and build their own canoes each year. Not only must the canoes float, but they're raced against other schools' boats. Papers and speeches are also part of the competition. With a trim 170-pound canoe in 1993, the Fresno team placed third overall in the Mid-Pacific competition.

Though the student chapter is involved in other activities such as hosting professional speakers on campus and working on service projects, ASCE member John Ennis says that the canoe and other competitions are an important part of his learning experience.

"We have a lot of fun putting each other to the test and coming up with solutions for better structures and projects for society," Ennis says. "As for the canoe, it's a great satisfaction to know that you built something and *it works*."

The results of months of planning and construction are about to be put to the test as ASCE members prepare to launch their concrete canoe for the first time. Shown in this picture is the 1992 canoe, which weighed in at 260 pounds.



"The Dairy Club helps people learn about the food industry. Most people don't know where dairy products come from, except that they come from the store."

Professor David Bremel, Dairy Club adviser

Scott Hansford milks the cows during the afternoon shift at the dairy. Members alternate milking duties, which are scheduled twice daily — at 2:30 a.m. and 2:30 p.m.

If you think milk helps only in creating a balanced diet, think again. For agriculture students here, knowledge and experience in the dairy field make for a well-rounded and balanced education.

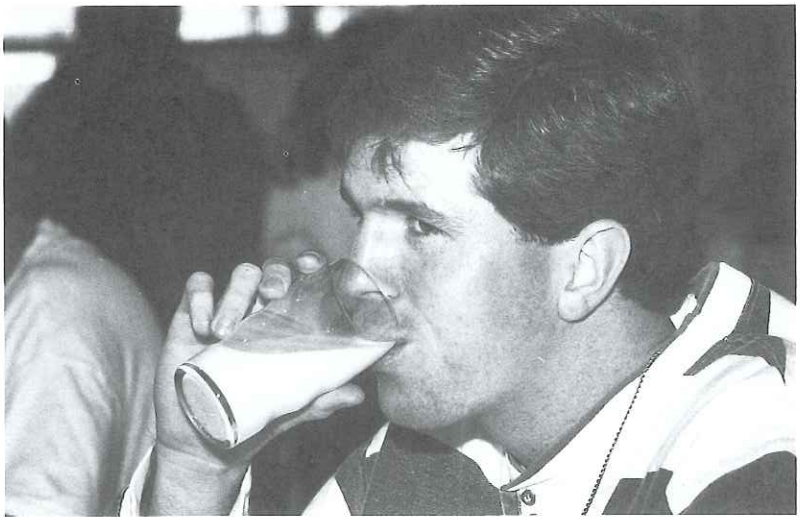
The CSUF Dairy Club keeps up with the nation's dairy industry by scheduling field trips to some of the nation's largest dairy farms. The club also competes and interacts with other college dairy clubs in the United States to gain a sense of the industry outside California. Some members are involved with the California Milk Advisory Board, which provides summer marketing internships to qualified students throughout the state. And the club's annual cattle sale is a key activity in maintaining community interaction.

"We're always involved in activities that help students learn more about agriculture and provide experiences that classes can't teach people," says Professor David Bremel, who has been the club's adviser since 1985. "To employers, the experience shows that the students have been active outside of their formal study."

Members also gain social contact and develop a network with their peers (future colleagues) and the community.

"It's good to interact with people who have the same interests," says club President Patti Hurtgen, "and since we do a lot of activities with the community, it's a good opportunity to interact with off-campus community dairy organizations that could be potential employers. We keep in close touch, and that way they *know* our students have a great interest in the dairy industry."

At the Residence Dining Hall, a student enjoys a *delicious* glass of milk supplied by the campus dairy.



Experimentation in college doesn't happen just in the science labs and agricultural fields. The Experimental Theatre Company has been challenging its student members to experiment with theatrical productions since the organization was founded in the late 1960s.

Students in E.T.C. have met the challenge. Their student-run performances of classic, contemporary, and original works supplement the Theatre Arts Department's main productions and earn high marks with audiences.

E.T.C.'s inaugural season included Harold Pinter's *The Homecoming* and a rendition of Marty Crowley's 1967 off-Broadway hit *The Boys in the Band.* The off-Broadway version was critically acclaimed for its "tasteful" portrayal of a homosexual theme in a time when homosexuality was considered to be neurosis, according to reviewer Otis L. Guernsey Jr.

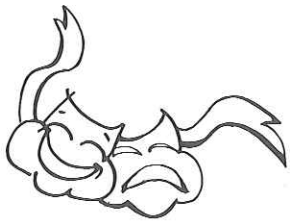
While the times, students and the university have changed, much of E.T.C. has remained the same. Each semester's group has experienced its own share of triumphs and errors. Every company has also continued to challenge itself, never taking the easy route in a play's production, but learning with each experience.

"For newcomers, E.T.C. is a good place to learn," says Skip Longfellow, student director for the Fall 1992 production of *The Physicists*. "And it's a good way for them to get their foot in the door for future Theatre Arts productions."

Members also earn unit credit by enrolling in either Drama 89 or Drama 189, but students don't have to be theatre arts majors to enroll.

"E.T.C. is open to all students — theatre arts majors and non-theatre arts majors," says Kathleen McKinley, E.T.C.'s faculty adviser. "Anyone who wants to be involved, can be involved."

Ellen Horn portrays Fraulein Doktor Mathilde Von Zahnd in *The Physicists.*



"You realize it is not only 'experimental' in terms of the work they've produced but also in their production approach."

Ronald Johnson, Theatre Arts Department chair

Set design and construction are a crucial aspect of the production, handled by cast and crew who take time on a Saturday to complete the task.

At a Chicanos in Law meeting, (from left) John Garcia, Arturo Hines, and Keith Rodriguez discuss business matters, upcoming events, and budget issues.

Leti Escobar (left) donates time to raise money at a used book and bake sale.

What's in a name? For Chicanos in Law, a name holds more than identity. The organization's name pays tribute to the club's founders, who created the group in 1978 to inform prelaw students about law school preparation requirements and to encourage other minority students to consider law careers.

"Students are always concerned with the name, but to be true to the original intent of the club, we've kept the name," says Tony Garduque, the club's adviser. "These days there are more, but not enough women and bilingual attorneys. Chicanos in Law was formed to increase the number of Hispanics in the legal field, but it has never been limited to Hispanics."

To encourage minorities in the law field, Chicanos in Law supports activities such as the annual Law Day, where representatives from law schools visit the campus to provide information about admission, financial aid, and other aspects of their schools. Chicanos in Law also provides local internship program information, a suggested reading list for prelaw students, and field trips to various law schools in California.

Despite its name, Chicanos in Law's membership includes an ethnically diverse group of students.

"We have Southeast Asians, African Americans, and other minorities as well as non-minorities because," Garduque says, "Chicanos in Law is the only law organization on campus that has lasted."

"California, as a whole, is changing. It would be in the interest of everyone to know about other ethnic backgrounds."

Arturo Hines, chair of Chicanos in Law, *on the benefits of involvement in a diverse organization*

"We want to be known in the community for what we *do* for the community," says Anna Baird, former vice president of the CSUF chapter of Beta Alpha Psi, the national scholastic and accounting fraternity.

"We go into the community and say 'Here we are. We're an organization with 75 people. What can we do for you?'"

And the answer is simple ... if you're an accountant that is. The volunteer hours these students put in add up very quickly. These fraternity members are *busy*. They help the young, the old, the less fortunate, and work diligently on such projects as Adopt-A-Highway, Kiddie Tutoring, and the Volunteer Income Tax Assistance Program.

Beta Alpha Psi also deserves credit for starting Project Outreach, a program that brings high school students onto campus so they can learn more about the college application process and financial aid. While all high school students are welcome to participate, minority students are especially encouraged to look into the opportunities of a college education as well as learn about careers in accounting.

In return, members discover that the community gives back. Representatives from community firms meet with members and speak about accounting opportunities. These firms also donate funds that provide scholarships to students who earn points through their involvement with Beta Alpha Psi each semester.

It's Saturday morning — 6:30 to be exact — and James Powell is volunteering at the Poverello House in downtown Fresno. While Powell carries bags of groceries for recipients of the food donations, other fraternity members are inside packing the food into the bags.

"I learned more accounting through Beta Alpha Psi than through any other experience I've had."

Anna Baird,
Beta Alpha Psi member

"One semester, we gave $3,000 in scholarships," says Maureen Crane, the fraternity's faculty adviser. "That money was donated by firms and professionals."

Beta Alpha Psi, however, is not just all work and accounting. Picnics, banquets, intramural sports, and participation in Vintage Days provide members fun social activities.

"It becomes your social life, it really does," Baird says. "We have an incredibly close-knit group. We go on office tours and get together on weekends to do homework. We get together to see movies. We are very, very close."

Sharon Evendon (left) and Suzette Girouard (center) provide free income tax assistance to a community member.

Every spring, Beta Alpha Psi invites Fresno high school students to campus. After a campus tour, fraternity members and their guests participate in workshops on how to get through the college application process.

Central California Association for the Education of Young Children

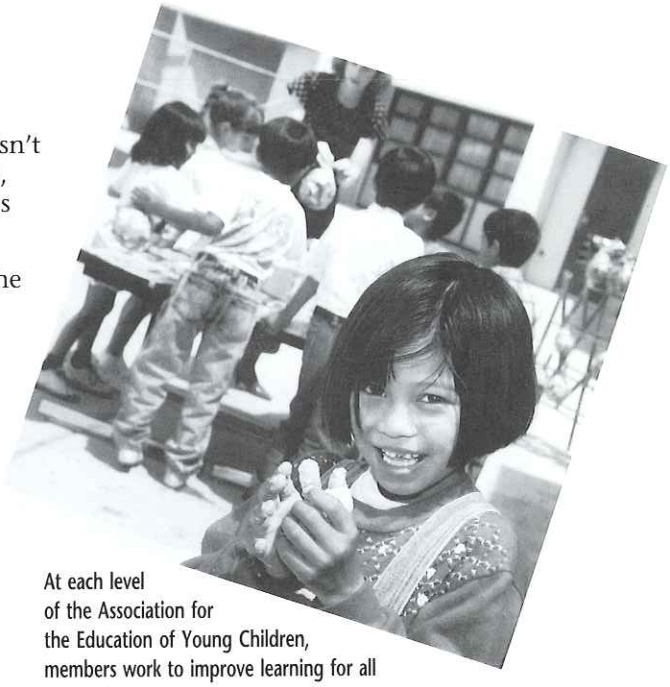
Educating young children isn't always as easy as A-B-C and 1-2-3, but for student teachers, help is as easy as CCAEYC.

Part of a national organization, the student chapter of the Central California Association for the Education of Young Children offers information, support, and professional contacts to students who plan to work with children from birth through age 8.

"Everything we do is oriented toward children," says Jennifer Taylor, president of CCAEYC's student chapter and an early childhood education major. "Whether it's networking to share our ideas about working with children, or learning what we can do to be children's rights advocates, or donating to the Juvenile Collection in the Henry Madden Library, we're directly or indirectly helping young children."

Although the majority of campus members are student teachers, membership is not limited to those in the Credential Program, as reflected by the information and activities sponsored by the organization. In addition to providing current teaching methods, CCAEYC also serves as a children's advocacy group, through which its members can learn about the legislative process affecting them. Members regularly attend meetings that feature guest speakers who demonstrate techniques for effectively educating the youngsters they will care for and teach in the future.

"Each meeting has a different speaker who gives a lot of information about ways to work with children," Taylor says. "Even if you don't use the material from the meeting immediately, you'll probably use it in your own classroom or with your family."



At each level of the Association for the Education of Young Children, members work to improve learning for all youngsters.

Student teacher Jennifer Taylor gains knowledge through her experiences with CCAEYC and gives it back tenfold to the students in her classroom. Here, she teaches young students the art of papier maché.

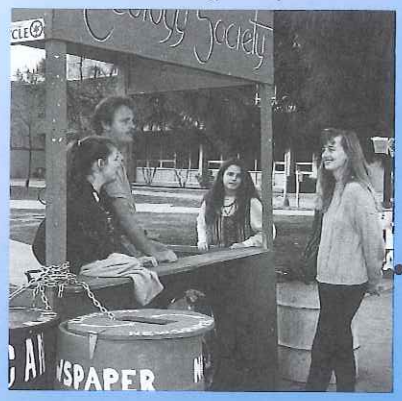
"This organization is good for teachers and people who care about children. It really takes training to talk with kids and to discipline them in a healthy way."

Laura Kreutz, first-semester member of CCAEYC

Every meeting of CCAEYC is devoted to learning new teaching methods that members can use in their future classrooms or at home with their own children.

AEO 4 AAA . . .

Whether it's the Ecology Society . . .

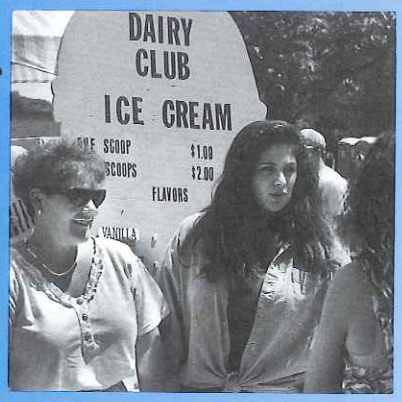


the American Society of Civil Engineers . . .

Look
closely at
California State University,
Fresno
and you will see the lifelong
friendships it has
to offer you.

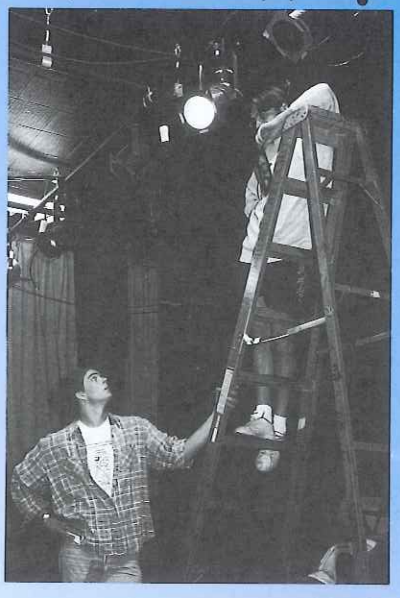
the CSUF Chapter of CCAEYC . . .

the Dairy Club . . .



Chicanos in Law . . .

the Experimental Theatre Company . . .



Beta Alpha Psi . . .

or
any
one
of the other 200+ organizations on this campus,

your involvement
WILL MAKE A DIFFERENCE!

The University's Schools

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

Henry David Thoreau

The Mission of the School

The School of Agricultural Sciences and Technology focuses on quality undergraduate and graduate level education in food and agriculture, industrial technology, home economics, and related disciplines. In fact, the school has received national recognition for outstanding programs in agricultural business, irrigation technology, and viticulture, while also achieving accreditation by national organizations for programs in dietetics, industrial technology, and interior design. Students majoring in the school's degree programs are provided educational opportunities which emphasize problem-solving by applying basic sciences, up-to-date technology, and business management techniques.

You will discover that this school has dedicated, outstanding faculty. They are ready to help you network with other students who have similar interests in numerous on-campus clubs, as well as with industry professionals in various state and national organizations. The faculty and staff are ready to involve you in applied research and service activities and industry internships. You could also benefit from production projects on the newly remodeled 1,083-acre University Agricultural Laboratory. The combination of great faculty, good facilities and equipment, and tremendous industry support make CSU Fresno the ideal place to invest your career preparation.

What does this mean to you? You will become one of our alumni who hold important positions in agribusiness, manufacturing, education, research, human services, and government around the world. Our alumni are recognized for their solid basic science foundation, their experience in applied research, their hands-on problem solving skills, and their global view of the world in which they must function.

The School of Agricultural Sciences and Technology

Agriculture Building, Room 102
(209) 278-2061
Dean: **Daniel P. Bartell**

The School of Agricultural Sciences and Technology includes the departments of Agricultural Economics; Animal Sciences and Agricultural Education; Child, Family, and Consumer Sciences; Enology, Food Science, and Nutrition; Industrial Technology; and Plant Science and Mechanized Agriculture. The 1,083-acre University Farm Laboratory and the California Agricultural Technology Institute are integral parts of the school.

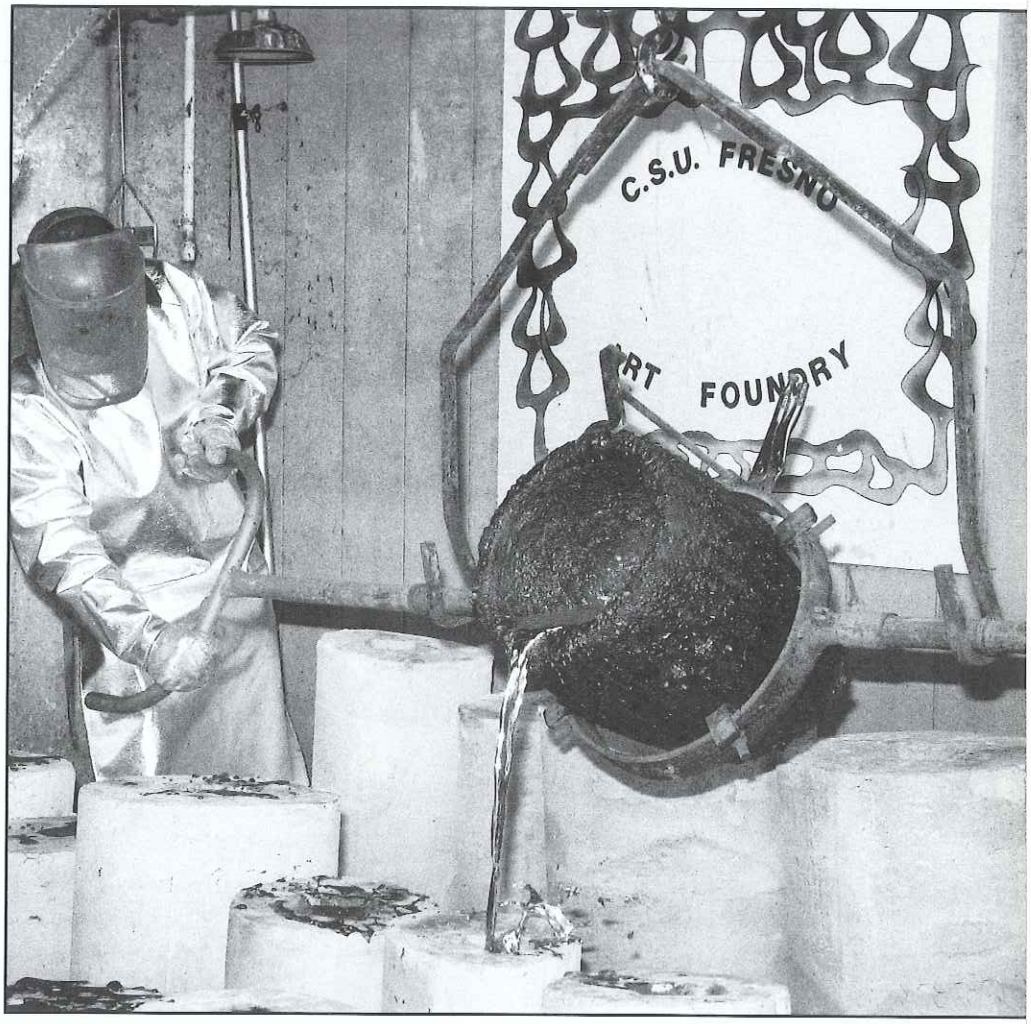
The Mission of the School

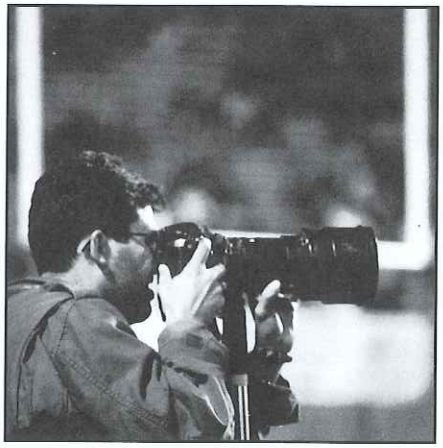
The study of the arts and humanities provides a foundation in vision, depth, and discernment for all areas of knowledge. From the "Know thyself" of philosophy to the "Get it right" of journalism, the arts and humanities illuminate everything from self to society.

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 classical studies and the humanities interdisciplinary minors are also housed in the school.

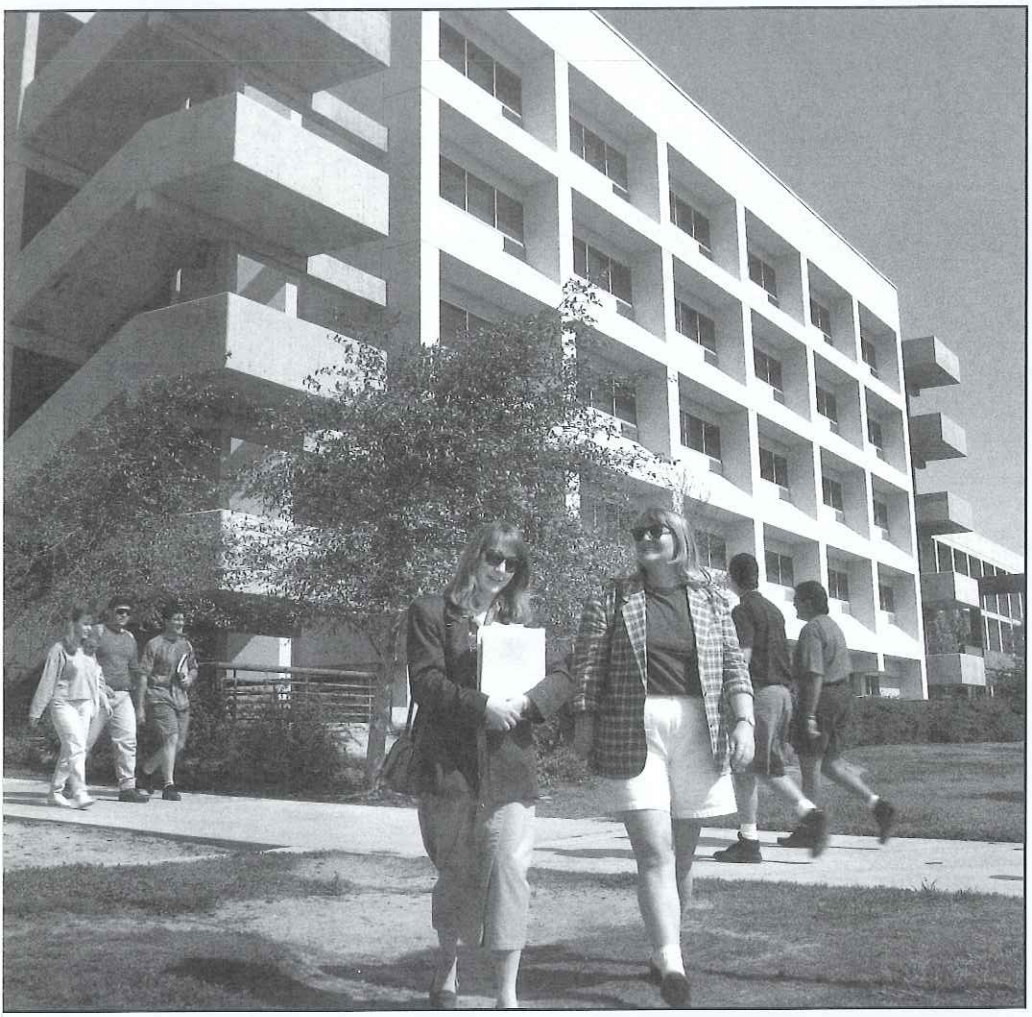




The School of Arts and Humanities

San Ramon 4, Room 222
(209) 278-3056
Dean: **Luis F. Costa**

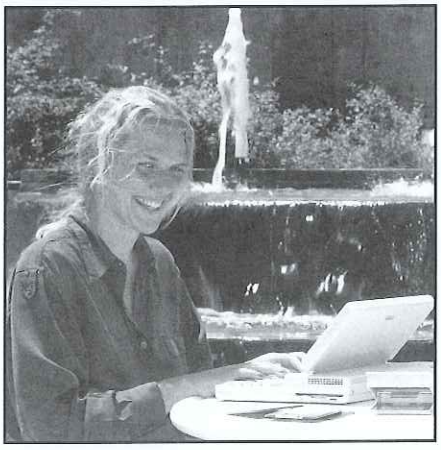
The School of Arts and Humanities includes the departments of Art, English, Foreign Languages and Literatures, Linguistics, Mass Communication and Journalism, Music, Philosophy, Speech Communication, and Theatre Arts. Classical Studies, Interdisciplinary Humanities, and the London Semester are integral programs of the school.



The Sid Craig School of Business and Administrative Sciences

Peters Building, Room 282
(209) 278-2482
Interim Dean: **Peter Simis**

The Sid Craig School of Business and Administrative Sciences includes the departments of Accountancy, Finance and Business Law, Information Systems and Decision Sciences, Management, Marketing and Logistics, Aerospace Studies, and Military Science. The Graduate Business Program and the University Business Center are integral parts of the school.



The Mission of the School

The primary mission of the Sid Craig School of Business and Administrative Sciences is to provide high quality, nationally accredited undergraduate and graduate degree programs. This commitment to high quality will be demonstrated by an emphasis on teaching excellence and attainment of knowledge, by a concern for ethical behavior, and by a dedication to meeting the needs of students, faculty, and organizations at both domestic and international levels. Our goal is to be the leading school of business in the California State University system.

We will provide responsible academic and business leadership and service to the increasingly diverse cultures in our service area. This leadership and service will be delivered through applied research, professional and continuing education, consulting, contracting and other activities. In so doing, we will be major facilitators of economic growth in the San Joaquin Valley.

The school's undergraduate and graduate programs are accredited by the American Assembly for Collegiate Schools of Business (AACSB) and the Western Association of Schools and Colleges (WASC). The school's programs have been continuously accredited by AACSB since 1959. Only a select number of business schools in the nation earn this distinction.

The Mission of the School

The School of Education and Human Development (SOEHD) has established as its primary mission the maintenance of quality educational programs designed to prepare teachers and other educational leaders for service in public and private schools and other educational institutions.

Emphasis is directed toward preparing highly competent educators and human development specialists, providing professional support and leadership to the area community, promoting applied research, and providing experiences and opportunities that will enable employed professionals to remain current in their fields.

The 1993-94 academic year will find students attending classes, studying, and working in a state-of-the-art Education Building. The five-story facility, scheduled for occupancy in Fall 1993, will offer clinical areas and computer and microteaching laboratories. One of the special features is a Learning Development area that is organized for observation and teaching young children, from infants through age six.

SOEHD directs its full attention to the enhancement of human potential so that those who work in the field of education and human development function more effectively and productively in an ever-changing and increasingly diverse society.

Education majors complete two student teaching experiences, and one of them must be in a school with high levels of student diversity and "at risk" learners. CSU Fresno graduates from the School of Education and Human Development are prepared with the knowledge, skills, and values to work effectively with students of diverse backgrounds.

The School of Education and Human Development

Ed/Psych Building, Room 133
(209) 278-2623
Dean: **Barbara G. Burch**

The School of Education and Human Development includes the departments of Counseling and Special Education; Curriculum, Teaching, and Educational Technology; Educational Research, Administration, and Foundations; and Literacy and Early Education. The Doctoral Program, the Liberal Studies Program, the Center for Educational Research and Service, and the Instructional Technology and Resource Center are integral parts of the school.

The Mission of the School

The School of Engineering is the only publicly supported engineering school in the San Joaquin Valley. The mission of the school is to develop each student's potential to the greatest extent possible, provide a quality engineering education to all students, and to serve students from groups that historically have not participated in a university engineering education.

To reach these goals, the school provides excellent scholarship support for students, has installed a new computer system with more than 100 student workstations, and continues the development of new degree programs. Meanwhile, the completion of the new building, addition of the Computer Science Department and the Construction Management Program to the school, and continued strengthening of relations with industry have enhanced the school's ability to deliver quality education.

The Civil, Electrical, Industrial, Mechanical, and Surveying Engineering programs are accredited by the Accreditation Board for Engineering and Technology (ABET). The Construction Management Program is accredited by the American Council for Construction Education (ACCE).

The school fosters programs and activities that support and enhance instruction and that encourage the development of the faculty.

The School of Engineering

Engineering East, Room 122
(209) 278-2500
Dean: **Elden K. Shaw**

The School of Engineering includes the departments of Civil and Surveying Engineering and Construction, Computer Science, Electrical and Computer Engineering, and Mechanical and Industrial Engineering.

The Mission of the School

The primary mission of the School of Health and Social Work is to provide professionally oriented education at the baccalaureate level and to provide graduate programs in specialized disciplines related to health and human services. As a major academic unit in a comprehensive, regional university, the school is unique and important in educating health and human services professionals for the San Joaquin Valley. The school cooperates with other units of the university to provide a comprehensive curriculum required to effectively prepare qualified professionals.

The school provides an especially important leadership role in community services through participation of its faculty in organizations, boards, and a variety of agencies; by conducting workshops, symposia, in-service education and applied research. The school is also committed to the continuing education and the professional development of health and human services providers.

The academic disciplines of communicative disorders, gerontology, health science, nursing, physical education and human performance, physical therapy, recreation administration and leisure studies, and social work education within the school seek to foster interdisciplinary-holistic education for future health and human services providers.

The School of Health and Social Work

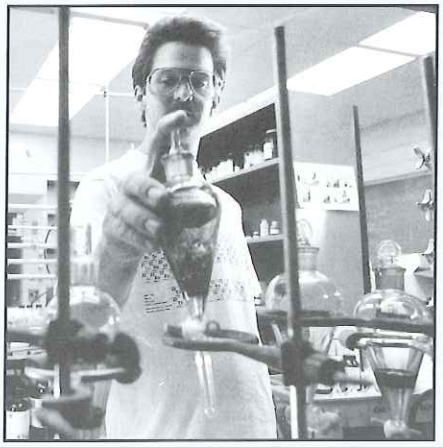
McLane Hall, Room 191
(209) 278-4004
Dean: **Richard D. Ford**

The School of Health and Social Work includes the departments of Communicative Disorders, Health Science, Nursing, Physical Education and Human Performance, Physical Therapy, and Social Work Education. Gerontology and Recreation Administration and Leisure Studies are integral programs of the school.

The School of Natural Sciences

Science Building, Room 101
(209) 278-3936
Dean: **Kin-Ping Wong**

The School of Natural Sciences includes the departments of Biology, Chemistry, Geology, Mathematics, Physics, and Psychology. Special programs of the school include the Science Careers Opportunity Program (SCOP), the Certificate in Biotechnology, the Man/Woman and the Natural Environment thematic cluster, and the South Pacific Semester.



The Mission of the School

The School of Natural Sciences provides study for students in the areas of biology, chemistry, geology, mathematics, physics, and psychology by offering courses in the majors. Support courses for nonscience majors such as agriculture, engineering, and the health professions and courses for the general education of all university students are also offered through the school. In doing so, our goal is to provide professional training at the undergraduate and graduate levels, to serve as a foundation for a career in science/mathematics, to provide pre-professional training in preparation for careers in medicine, dentistry, pharmacy, veterinary medicine, and other professions or for continued study at the graduate level.

Furthermore, students and faculty members in the school conduct research and scholastic activities in their academic areas and in solving applied scientific problems of the region. This research activity is carried out among campus scientists along with investigators at other regional research centers.

The School of Natural Sciences also is involved with the school systems in science and mathematics teacher education. The recruitment, retention, and education of underrepresented minorities and females in science and mathematics are also major emphases.

The Mission of the School

The School of Social Sciences is committed to the view that a well-rounded education is a necessary preparation for effective participation in today's complex society. The school 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, including participation in international programs.

The school participates in many interdisciplinary programs both in and beyond the social sciences.

As students acquire a greater body of knowledge, they also attain 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 social sciences help students reach out beyond their professional careers.

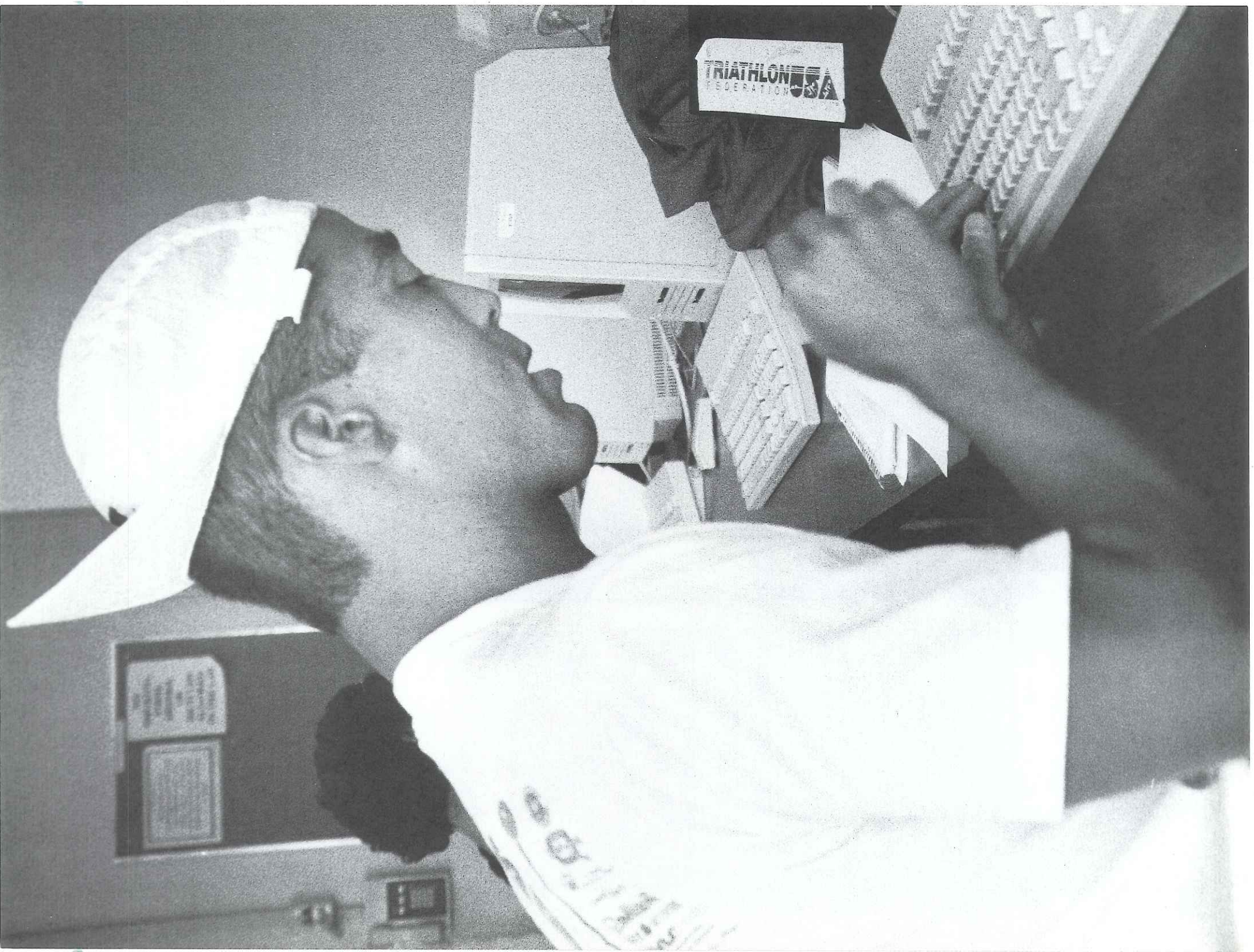
The school is sensitive to the view that studies in the liberal arts provide the best preparation for careers of leadership in the public and private sectors. The school stresses the broad character of its curriculum, assuring today's graduate a place in a society where the narrow specialist is often soon obsolete, but where the adaptable generalist is highly welcome.

The school is thus committed to providing its majors with a concern for human values and with the ability to think clearly, critically, and analytically. Our graduates understand the value of practical and professional skills, and realize that no career can be successfully pursued without the benefit of humanistic values and insights. In consequence, the school provides a broad curriculum designed to combine thorough preparation with creative adaptability to the opportunities and challenges in an ever-changing world.

The School of Social Sciences

Social Science Building, Room 108
(209) 278-3013
Dean: **Peter J. Klassen**

The School of Social Sciences includes the departments of Anthropology, Chicano and Latin American Studies, Criminology, Economics, Geography, History, Political Science, and Sociology. Ethnic Studies and Women's Studies are integral programs of the school.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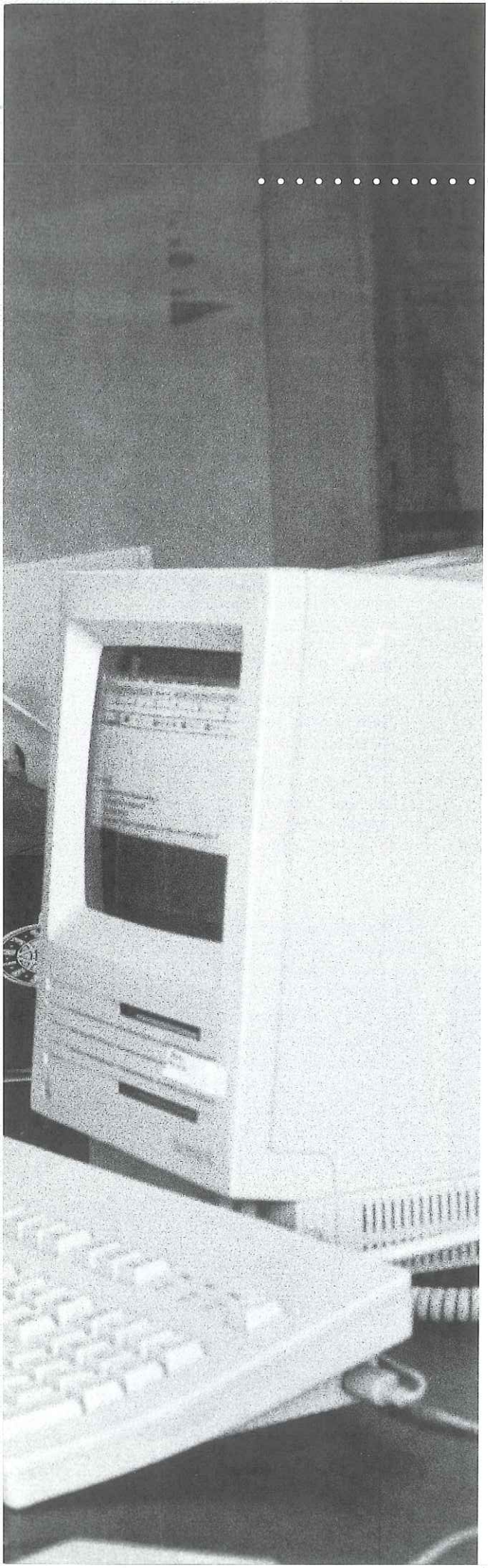


Sources/Resources

"Never give up,

never,

never,

never."

Winston Churchill

to school children
during World War II

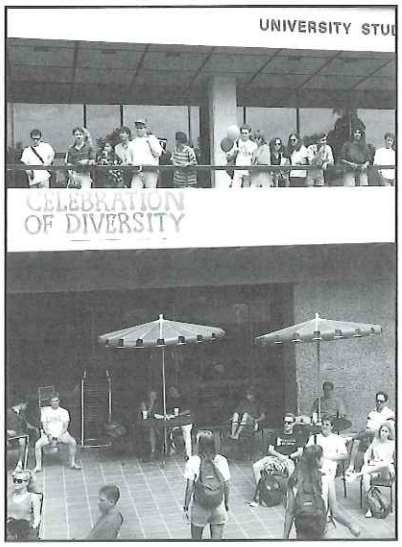
Activities and Student Life

Office of Student Life and Development
Student Affairs/CSUF Association
University Student Union, Room 306
(209) 278-2741

Director, Thomas P. Boyle

Students at the university are growing and changing in new ways each semester and the staff of the Student Life and Development Office recognizes the importance of positive experiences outside the classroom. We strongly support the academic experience at the university and recognize there is more than just intellectual growth while at college. We encourage cultural, social, emotional, educational, and physical development in a variety of ways. Developing leadership skills in students is one of our primary goals.

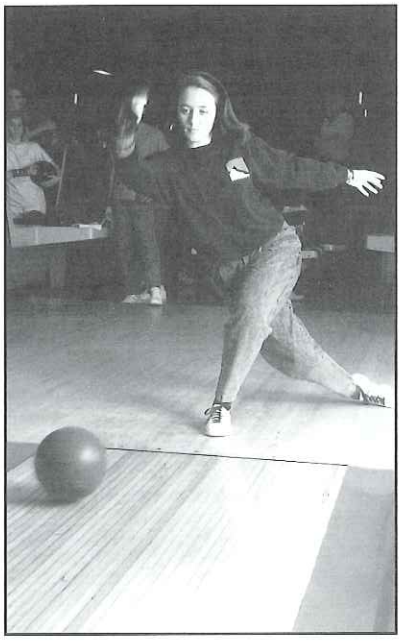
The Office of Student Life and Development is the administrative home for a variety of student program offices in the Division of Student Affairs. These programs include student development, Greek affairs, student clubs and organizations, intramurals and recreation, child care, student activities, and Southeast Asian student services. The office also includes the major administrative offices of Housing Services, the University Student Union, and the Judicial Affairs (student discipline) function for the university.



Student development is not a single program but rather an ethic that flows through all of the activities and programs in the office. It is an orientation that constantly seeks to know and understand student needs and looks for ways to empower students to accomplish their goals.

We seek to provide students an opportunity to form a sense of ownership of the university, and we recognize the importance of students' repeated contact with the administrative side of the campus. We actively strive to enhance the quality of the student's experience on the campus.

Special programs include Vintage Days, a four-day campus celebration that occurs each spring. Totally planned and executed by students, Vintage Days offers fun and entertainment for CSUF students and the community. There are a variety of competitions, performances, a carnival, and a large crafts fair. Student Life also supports African People's History Month, AmerAsia Week, the Cinco de Mayo Celebration, and Women's Herstory Month, Diversity Awareness Grants, Leadership Retreats and Conferences, and the Office of the Associated Students Inc.



Bowling, billiards, and video games are just a few entertainment options students have in the Recreation Center in the University Student Union. Other services and eateries in the USU include a yogurt shop, the Coffee Shop in the lower level, fraternity and sorority advising, an on-campus facility reservation center, information about student clubs and organizations, and Southeast Asian Student services.

At the USU's Information Center, students may purchase concert tickets, money orders, discount movie tickets, lecture series tickets. The Union also operates the Satellite Student Union, a major programming facility on the campus.

At left, your Student Union — the building and all of its amenities — are a result of you and your student fees. Inside the Union, you have several entertainment options, such as bowling with friends. Other student activities include the annual tricycle race, just one of many crazy competitions that occur during Vintage Days.

Office of Advising Services
Academic Affairs
Joyal Administration, Room 106
(209) 278-2924

Coordinator, J. Richard Arndt

Advising Services

Barbara Benedict (left) and Darlene Hall review General Education revisions for inclusion in the Academic Planning Guide.

The Office of Advising Services provides a variety of services designed to help you achieve your educational goals and effectively use the resources of the university.

Our office staff assist you in undergraduate academic advising, undeclared major advising, 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.

Major Advising. 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. Therefore, you would be wise to check each semester's grade report and your evaluation for correctness. (See *Baccalaureate Degree Requirements*.)

Undeclared Major Advising. Undeclared majors are advised in our office. Our advisers can suggest faculty contacts in the academic departments who will help you determine which resources on campus to pursue. Also, experienced vocational counselors are available in the Career Development and Employment Services Office where you will be assisted on an individual basis with the appropriate use of vocational testing when necessary.

Freshmen and undeclared majors are encouraged to enroll in the following course:

Univ 1. Introduction to the University (1-3)
Helps the entering student make a smooth transition into the university culture and deals with the purposes of higher education and with strategies for achieving one's educational goals.

Special Major Advising. An undergraduate student interested in designing a special major initiates the process with an appointment to obtain an application form in our office. 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* and *Special Graduate Programs — Special Major*.)

Academic Petitions. Students must file academic petitions in our office. For further information, see *Student Academic Petitions*. Grade Correction Request forms are also submitted to our office for processing. Petition forms for repeating a class and substituting the new grade are obtained in the Joyal North Lobby. (See *Repeating Courses*.)

Change of Major. To change your major, initiate the procedure in the Admissions Office, Joyal Administration, Room 106. Graduate (including all postbaccalaureate students) and international students **should** process major changes in their respective offices.

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

CSU Fresno Alumni Association Inc.
Joyal Administration, Room 148
(209) 278-ALUM
Executive Director, Linda Van Kirk

Alumni Association

The CSU Fresno Alumni Association serves as a vital link between the university, its alumni, and the greater Fresno community. Its primary purpose is 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.

In addition to sponsoring student scholarships and the annual reception for alumni scholarship recipients, the association hosts a Golden Grad Reception each year to honor graduates of 50 or more years. Alumni and friends also enjoy a special evening at the theater and celebrate at an annual homecoming tailgate party.

The Alumni Association network links together more than 2,800 members. CSU Fresno alumni represent 56 academic areas of study and have migrated to every state in the nation.

In an ongoing effort to serve members, the Alumni Association offers many member-only discounts and privileges. These include group health, dental, vision, and life insurance rates, travel programs, Costco membership privileges, Security Pacific line of credit, special alumni merchandise, discounted admission for various university events, and library privileges at most CSU campuses.

Membership is open to graduates and friends of the university. Annual dues are $15 for new graduates, $25 for single membership and $35 for joint membership (husband and wife). Life memberships are $500. Business memberships are also available.

Publications. *Contact* is a news magazine mailed to all alumni and friends with whom the association is in touch. Each issue features an *Alumnac* section, which highlights the accomplishments of CSU Fresno alumni. *Contact/Alumnac* also details events and activities.

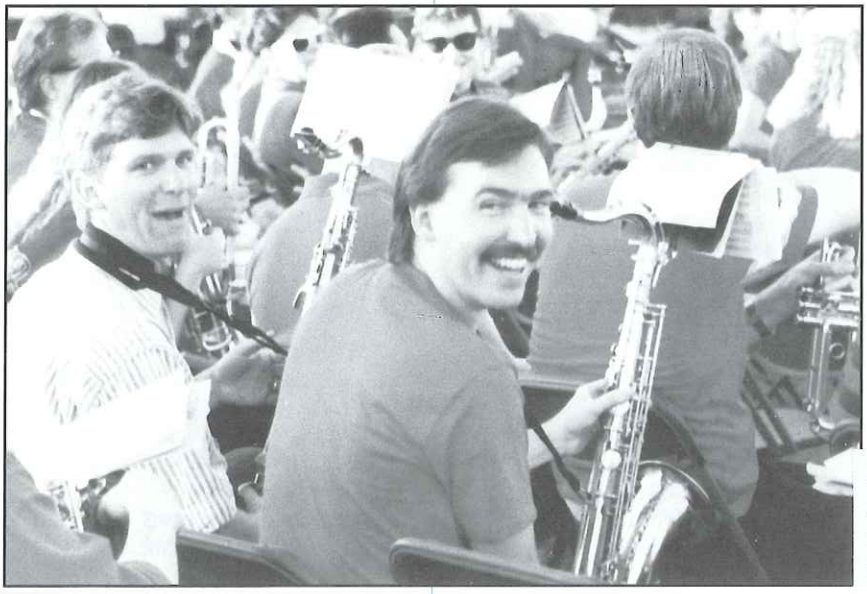
Dues-paying members also receive *The Blue Wave*, an informative bimonthly newsletter published by the Alumni Association.

Academic and Regional Chapters. The association will keep you in touch with the CSUF school/department from which you graduated. There are 10 official academic chapters of the Alumni Association. Satellite extensions are now being formed throughout the state to further involve out-of-town alumni in all of the fun. Active regional chapters are located in Sacramento and the South Valley areas. Additional chapters also include the Chicano Alumni Association and the African Peoples Chapter.

Student Alumni. The Student Alumni Association offers full benefits of alumni membership. Additionally, the Student Alumni Association will host seminars, workshops, and social events throughout the year. Monies raised through this joint student/alumni venture benefit Student Alumni projects and scholarship programs.

Graduation Pictures. The Alumni office sponsors the photographs taken at each CSUF commencement. Graduates are individually photographed, free of charge, before the ceremony processional each May.

Scholarships. Students at CSU Fresno may apply for Alumni Scholarships through the Financial Aid Office. Awards are made to undergraduate and graduate students based on need, scholarship, leadership, and involvement. The Alumni Trust Council oversees the investment of the Alumni Association's contributions and the distribution of its scholarship funds.



Members of the Bulldog Alumni Band enjoy the homecoming tailgate festivities.

Associated Students Inc.
of CSU Fresno
Student Affairs
University Student Union, Room 316
(209) 278-2657

Associated Students

Associated Students Inc. (ASI) of CSU Fresno opened its doors in 1975. Today, ASI provides a means for responsible and effective participation in the governance of the campus. It serves as an official voice through which students may express their opinions and assists in the protection of the rights and interests of the individual student and the student body.

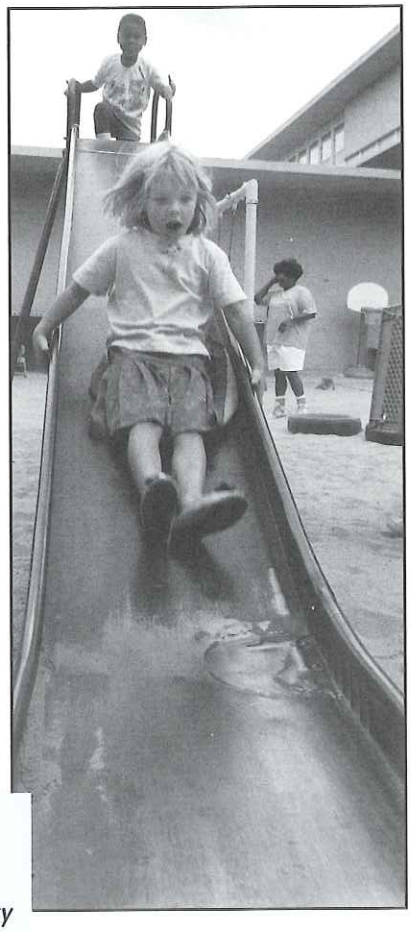
The current administration has ignited a strong interest in providing a more representative, diverse, and well-rounded campus and recognizes a special commitment to addressing students' concerns.

The Associated Students Senate consists of the three executive officers — student body president, legislative vice president, and administrative vice president — and 15 senators. There is one senator for each of the eight schools, one for undeclared majors, one for the Division of Graduate Studies, and five at-larges. ASI is a nonprofit corporation chartered by the trustees of The California State University.

As a student, you are automatically a member of ASI and are required to pay a membership fee of $16 per semester. This fee supports many programs such as the campus newspapers, University Lecture Series, a child care center, CSUF Overview, recreation and intramural sports activities, and a variety of multicultural festivals and programs.

Campus Newspapers. *The Daily Collegian, La Voz de Aztlan, Uhuru Na Umoja,* and *Hye Sharzhoom* are perhaps the most important sources of campus news for the university. They publish a variety of information ranging from news to club announcements to cultural awareness. These campus newspapers can also give students the journalism experience needed to be competitive in the job market. Their offices are in the Keats Campus Building.

The Campus Children's Center. The center's philosophy is to serve those students with the greatest need, i.e., students who must have this service to continue their education. Consequently, enrollments are established on the basis of priorities. The center accepts children from ages six months to six years. For information, call **278-2652.**



The Campus Children's Center is a vital service that makes the difference whether or not a college education can be a reality for students who are parents.

Faculty/Student Committees. Involvement in a faculty/student committee can give you practical experience and enhance your writing, speaking, reasoning, persuasion, and group interaction skills. Committees provide input into the university budget, academic policies, public affairs, bookstore or food services operations, and interaction with faculty members on an equal level when making these important decisions. Committees are a means of empowering students by giving them the direct responsibility of making decisions and implementing ideas that affect the entire campus community. Pick up a committee application in the ASI Office.

Annual Budget Process. All recognized clubs and organizations are entitled to participate in the annual budget process held in the spring semester. ASI's budget of more than $300,000 is distributed to clubs, organizations, and programs.

Instructionally Related Activities. Organizations sponsoring projects directly related to classroom activities or laboratory experiments can apply for funding from Instructionally Related Activities. These activities or experiments should be an essential element to a quality educational program or an important aspect of an instructional experiment for any student enrolled in the respective program. Funding applications are available in the ASI Office.

Educational Research Program. This program provides financial support to both graduate and undergraduate research projects and other scholarly endeavors — under faculty supervision — in all academic disciplines. Funding supports proposed and in-progress endeavors only. If eligible, you can apply for this funding during the fall or spring semester.

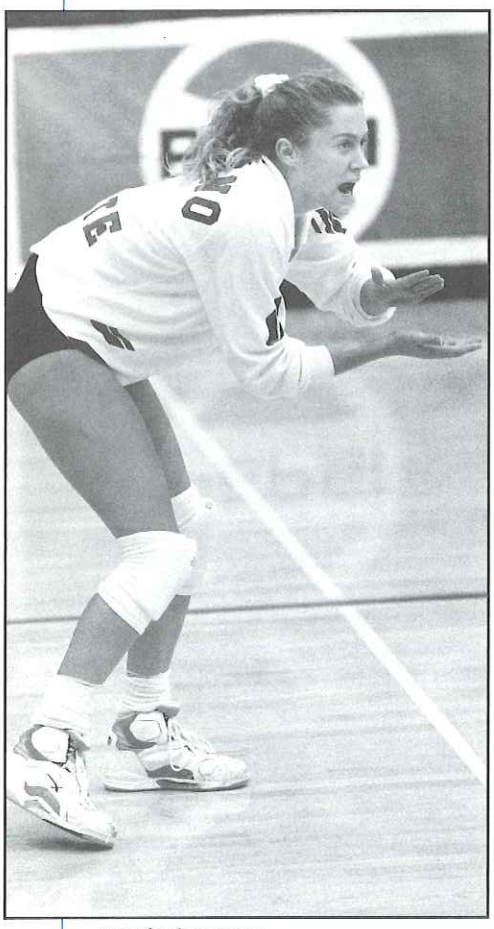
Athletic Department
Office of the President
North Gym, Room 146
(209) 278-2643

Director, Gary A. Cunningham

Athletics

Academic excellence and athletic accomplishment go hand in hand at California State University, Fresno — a member of the prestigious Western Athletic Conference. The broad-based intercollegiate athletics program provides athletes with opportunities for high-level competition while pursuing a quality education.

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.



Brenda Gregersen

Facilities. Community support and donations have enabled Fresno State to establish one of the finest athletic complexes in the country. Bulldog Stadium features a 41,031-seat capacity. Beiden Field, a 4,575-seat baseball stadium, is considered one of the finest collegiate complexes in the country. FSU has softball and track and field facilities, two gymnasiums, an indoor/outdoor swimming complex, two weight training rooms, 12 tennis courts, six indoor handball/racquetball courts, and two putting greens and driving areas complete with sand traps for golf.

Men's Intercollegiate Athletics

Baseball. Fresno State, with 21 NCAA playoff appearances and three College World Series showings, has earned a national reputation for having one of the finest baseball programs in the country.

Basketball. The Bulldogs' basketball program has made five postseason playoff appearances in the past 11 years. In 1983, FSU captured the National Invitation Tournament title.

Cross Country/Track and Field. FSU's cross country team captured conference titles in 1981, 1984, and 1988. The track and field team won 10 straight league crowns from 1983-92.

Football. The Bulldogs compete for the Western Athletic Conference title and a trip to the Holiday Bowl, hosted annually in San Diego. They continually provide students and the community with action-packed football in a winning tradition, selling more than 27,000 season tickets in 1987, 1988, and 1989.

Golf. The Bulldogs finished fifth at the 1990 NCAA Championships and have earned a Top 20 finish at the national tournament nine of the past 13 years.

Soccer. FSU boasts an outstanding soccer program. Highlights since 1982 include nine NCAA regional appearances, a 1986 Final Four showing, and a No. 1 ranking in 1987.

Swimming and Diving. The swimming and diving program has made steady progress recently, recording its best finish ever at the 1992 conference meet.

Tennis. The Bulldogs' growing tennis program has produced 282 wins over the past 21 years.

Wrestling. The Bulldogs have had eight wrestlers achieve All-America status the past 11 seasons, and the 1992 team finished the season ranked 11th nationally.

Women's Intercollegiate Athletics

Basketball. FSU's competitive basketball program put together nine winning seasons during a recent 10-year stretch.

Cross Country/Track and Field. The Bulldogs have built powerful track and cross country programs. FSU won consecutive conference track crowns in 1991 and 1992.

Softball. Fresno State has one of the premier programs in the nation, finishing runner-up at the College World Series four times since 1982. FSU made 15 straight playoff appearances from 1978-92.

Swimming and Diving. Dedication and hard work are characteristics of a solid swimming and diving program.

Tennis. The women's tennis program put together its best season ever in 1992, posting a 21-8 season record.

Volleyball. The Bulldogs have made two appearances in the NCAA Championship since 1984, when they tied for fifth in the nation.

Auxiliaries
2771 East Shaw
(209) 278-2574
Director, Gaylord O. Graham

Auxiliaries

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 nonstate sources. The following auxiliary organizations provide direct and indirect services for CSUF students.

The Agricultural Foundation of California State University, Fresno operates the university farm and student project program for the School of Agricultural Sciences and Technology. The Foundation leases the 1,083-acre farm from the university. In addition, it 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 directors.

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.

By maintaining herds of cattle, both dairy and beef, horses, sheep, swine, and by growing all types of crops on the university farm, the Agricultural Foundation provides the laboratory experiences needed by students in the School of Agricultural Sciences and Technology. This must be done on a self-supporting basis with the income from the farm meeting the costs of its operation.

The CSU Fresno Association Inc. is a nonprofit corporation, which functions to enhance the educational goals of the university. Through the operation of the Kennel Bookstore, the University Student Union (USU), 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. The board must hold a public meeting at least once each quarter. The paid staff operate the facilities in accordance with the rules and regulations established by the board of directors.

In addition, a USU board, a bookstore advisory committee, and a food service committee assist those areas in their operations. Surplus funds 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 USU and Satellite Student Union, 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 amphitheatre
- Campus lighting and beautification projects
- Signs and landscaping on Maple Avenue

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. It is governed by a board of directors.

The California State University, Fresno Foundation was organized as a nonprofit corporation to promote and assist the educational interests and services of the university. It is governed by a 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 include the administration of grants and contracts, endowments, scholarships, grants, and loan funds.

Career Development and Employment Services

Career Development and Employment Services
Student Affairs
Joyal Administration, Room 256
(209) 278-2381
Director, Raymond I. Castillo

The Career Development and Employment Services Center assists you in formulating a career development plan that will permit you to put your education to work in a satisfying and rewarding career field.

The center provides services that help you initiate, develop, evaluate, and implement your career plan. Services include career counseling, part-time employment, cooperative education, job search training, campus career interviews, and career information provided through ongoing workshops, coursework, and other structured experiences. This service is free to enrolled students and is available to alumni for a nominal fee. To receive assistance, telephone **278-2381** for an appointment or see an intake counselor for consultation on a walk-in basis.

Career Exploration. Ideally, the career decision-making process should begin as soon as you enter the university. Consider talking with a career counselor, joining in self-exploration and career exploration classes and workshops, and using the career information resource facility. Career testing, the Career Information Network, and Career Day are other important resources available to help you evaluate and select career goals compatible with your academic choice and career interest.

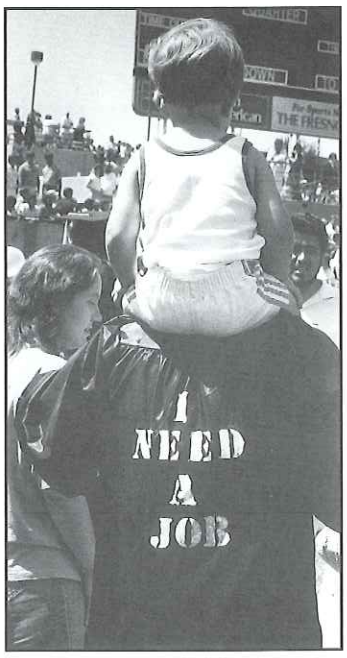
The Career Resource Center provides information about career exploration and decision making, requirements for careers, specific employers, and job search and employee selection through books, periodicals, and videotapes. Two computer-assisted guidance systems are also available to aid you in making career decisions.

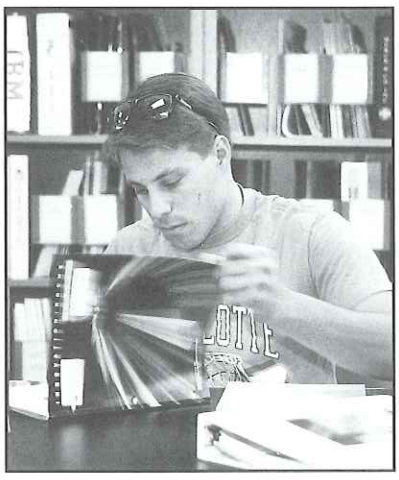
Cooperative Education. Beginning with your sophomore year, you should take advantage of the center's facilities to further reinforce your career decision through cooperative education classes and work environment experiences. In addition to giving you the opportunity to gain marketable work experience, you are able to test your career decision. To prepare you for the co-op experience — and 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.

Career employment can be obtained from current employment listings, from national, regional, and local organizations that actively recruit graduates through campus interviews, and from job fairs. The center also maintains an active program designed to effectively assist teachers and other education professionals in obtaining positions throughout all levels of education.

If you are interested in part-time, temporary, summer, or cooperative education 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*.)

Alumni Assistance. The 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.

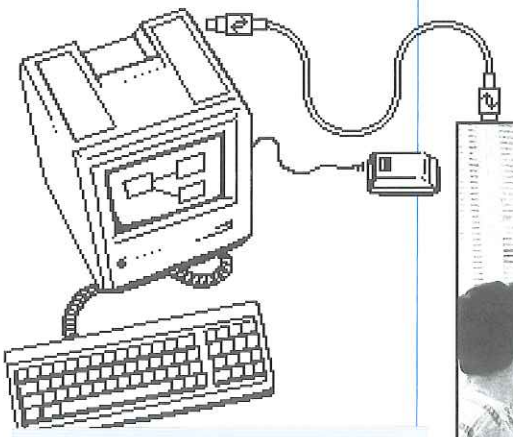


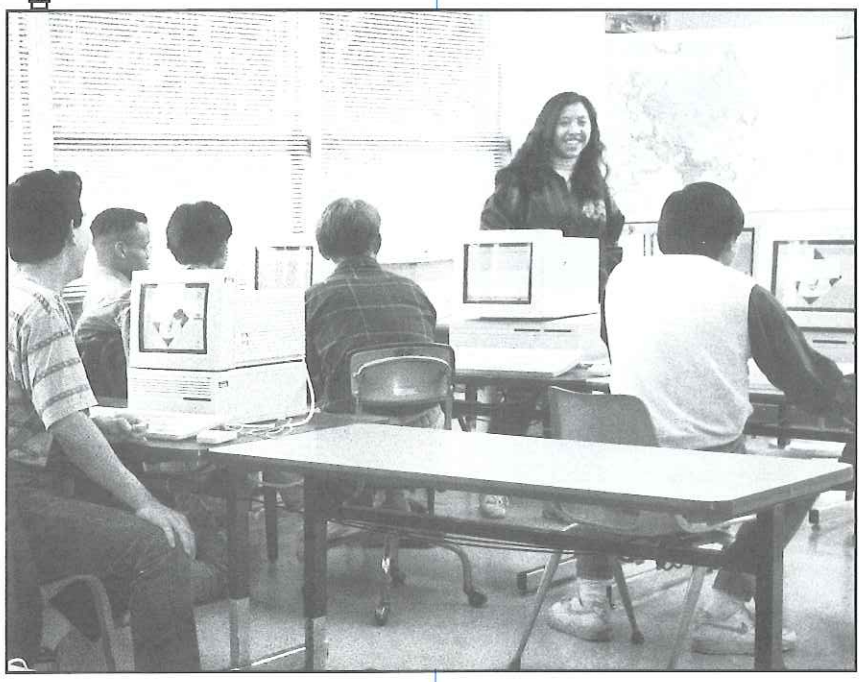


Computing, Communications, and Media Services
McKee Fisk, Room 137
(209) 278-3923

Director, James Morris

Computer Services





The Student Open Use Laboratory in McKee Fisk, Room 110, houses both Apple Macintosh and PC compatible microcomputers. The lab is staffed by trained student consultants and is open seven days a week.

Computing, Communications, and Media Services provides computing and communications support for the instructional, administrative, office, and data communications needs of CSU Fresno with a wide range of resources and services.

Instructional Computing Resources. CCMS provides and maintains centralized UNIX hosts for campus instructional use. Currently, on-campus, general-use resources consist of several SUN super-minicomputers. Access to off-campus social science and business databases is also available.

Computing Laboratories. For students, CCMS manages several general purpose computing laboratories and provides trained student consultants to staff the most-used laboratories for extended hours each week. Most of the IBM PC compatibles and Macintosh microcomputers are networked to file servers and also provide access to the student UNIX host.

The primary microcomputer laboratory available for general student use is housed in McKee Fisk 110. This lab contains both IBM PC-compatible computers and Apple Macintosh computers.

In addition, several academic departments support their own computing laboratories which house both general purpose and specialty computing resources. Contact the schools and departments for more information about these facilities.

In all, more than 600 workstations are available in student labs throughout the campus.

Administrative Computing. The campus administrative systems — such as student records, scheduling, business, and accounting — run on an IBM 3090 mainframe located in the McKee Fisk computer room. CCMS provides programming and operating support for all administrative computing at CSU Fresno.

Networking. CSU Fresno utilizes a data communications network which supports high-speed access to the major university computing resources, as well as a wide variety of off-campus resources available through the Internet, from every office and laboratory on campus.

Developmental Learning Resource Center

Developmental Learning Resource Center
Academic Affairs
Keats Campus Building
(209) 278-3052

Director, *To be appointed*

Student tutor Karen Martinez (standing) explains a math problem to Nancy Berry (left) and Dawn Levi. Below, students take advantage of the free tutorial assistance in the DLRC.

The Developmental Learning Resource Center (DLRC) provides services to all university students who would like to become more independent and efficient learners. The DLRC houses the Tutorial Center and provides the following programs: Intensive Learning Experience (ILE), Refresher Workshops, and Retention Support Services.

The following courses are offered by various departments in coordination with the DLRC for institutional credit only (***CR/NC***).

Reading Skills: (LEE AR) Emphasis given to vocabulary development, comprehension, and reading rate. Particularly recommended for students who score 135 or below on the reading portion of the English Placement Test (EPT).

College Planning Skills: (CTET 1R/S Wrk 1R) A seminar designed to address the educational needs of those students who may be experiencing difficulty in their academic and personal adjustment to university life.

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

Tutorial Services. Currently enrolled CSUF students are eligible for tutorial assistance in the LRC Tutorial Center. Study groups are matched for 1½-hour weekly sessions with CSUF faculty-recommended student tutors. Additionally, drop-in labs in accountancy, chemistry, decision science, finance, management, math, physics, and other content subjects.

The Intensive Learning Experience Program provides additional assistance to freshmen who scored at or below the lower quartile on the EPT and the ELM. This program features a teacher-student ratio of 1-to-12 per class and special counseling and advisement.

In addition to enrolling in English A, freshmen who score at or below T141 or E7 on the EPT are encouraged to enroll in the English A Writing Lab (Engl ARL) and the 1-unit Reading Skills improvement course (LEE AR). Those who score 370 or below on the ELM should enroll in Math ILR, which covers the same material as Math AR, but at a slower pace.

The Retention Support Services Program is designed to assist students from nontraditional backgrounds in achieving their educational objectives. The staff provides direct services to students, including academic counseling, advising, and study skills assistance.

Disabled Student Services

Disabled Student Services
Student Affairs
Main Cafeteria West, Room 125
(209) 278-2811

Director of Special Programs, Arlene L. Bireline
Coordinator, Weldon W. Percy

Robin Libbee uses a closed-circuit TV magnifier to compensate for her vision loss while studying in the Resource Center for Students with Disabilities.

Disabled Student Services provides specialized assistance and resources that enable students with physical, perceptual, and learning disabilities to achieve maximum independence while they pursue their educational goals. Staff specialists constantly interact 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 functioning, you may be 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. Elevators are provided to reach all instructional areas above the ground floor.

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 Individualized Adaptive Physical Education Program. Other services include special parking permits, access maps, and wheelchair loans for those with temporary needs.

Resource Center for Students with Disabilities. The resource center, situated in the Henry Madden Library, is the most efficient and extensive of its kind in California. It contains study rooms and a large main room with special tables.

The resource center offers academic support services to students with physical, perceptual, and learning disabilities. These support services may include readers, notetakers, scribes, taped textbooks, braille materials, and testing accommodations.

Adaptive equipment includes print enlargers, speech input and voice output computers, a braille printer, and other equipment appropriate to the disability and academic activity.

Deaf and Hearing Impaired Services. Our staff acts as a liaison between student and faculty and provides interpreter and notetaker services for academic activities.

Priority Registration and Assistance. Disabled Student Services can arrange priority status through early registration that will facilitate your requested class schedules.

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 university, 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
Joyal Administration, Room 238
(209) 278-3021

Director, Robert P. Hernandez

Educational Opportunity Program

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

Eligibility. To qualify for EOP, you must be a California resident and an undergraduate student with a family history of low income and educational attainment. 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 does not meet criteria normally required for entrance to the university, special admission may be offered. EOP also admits regularly eligible students with specific economic and educational support needs.

Services for EOP Students. Special services designed to support and assist EOP students in developing their academic potential include the following:

- Preadmission counseling
- Orientation programs
- Special summer program — a four-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.

EOP Grant. An EOP Grant may be offered to eligible students each academic year. You may apply for the grant by using the standard financial aid application forms and procedures required by the Financial Aid Office.

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

Pick up a copy of the CSU systemwide application booklet and the EOP application from the Admissions or EOP offices of any CSU campus or from your high school counselor.

Submit the following admissions materials to the Office of Admissions and Records:

- Part A — the Application for Admission/Readmission
- $55 application fee or Fee Waiver Application form
- SAT or ACT test score — the EOP Office recommends the ACT for applicants in high school.

Submit the following application materials to the EOP Office:

- Applicant Information form
- Nomination form
- Autobiographical statement
- Recommendation form
- High school and/or college transcripts, or GED score.

Happy to be at CSUF, John Wilson seeks assistance from Michelle Nunez. As an academic peer counselor, Nunez offers students a wide range of information — from assessment of class schedules to financial aid status to housing arrangements.

Extended Education
San Ramon 3, Room 141
(209) 278-2524

Dean, Audrey S. Anderson

Extended Education

CSU Fresno is sensitive to the ever-changing demands of adult life.

The Division of Extended Education is responsible for providing adult learners with educational opportunities designed to meet their needs for career advancement, professional growth, or life enrichment. CSU Fresno is sensitive to the ever-changing demands of adult life and attempts to meet these diverse educational needs through its many offerings and formats.

Extension Programs. Various academic departments offer conferences, 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 includes 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.

Open University provides an opportunity for those individuals who are not matriculated at the university to enroll in regular courses as an extension student. These courses are open to anyone in the community.

Travel Study Programs feature a most pleasant and rewarding way to learn about another culture. Our instructors design cultural programming to include a variety of interactive and experiential learning activities.

Noncredit Programs. Offerings in this area include specially designed programs developed to satisfy the needs of the specific participants or organizations involved. Short courses, conferences, seminars, workshops, institutes, and test preparation classes are offered regularly throughout the year.

Certificate Programs are designed for adults seeking in-depth knowledge or competency in a specialized area but who do not need a degree. With segments building upon one another, these programs help increase participants' advancement and/or career options.

Summer and Winter Programs. The university offers short-term summer session and winter session classes. A wide variety of courses are made available to regular college students and other individuals who wish to expand their general, cultural, or avocational interests and knowledge. University residence credit may be earned toward a degree or credential.

For a catalog of current course offerings, call the Division of Extended Education, **278-2524.**

Health and Counseling Services

Student Health and Counseling Services
Student Affairs
Health Center
Barton and Shaw Avenues
(209) 278-2734
Director, Robert M. Paull, M.D., M.P.H.

University Health and Counseling provides outpatient clinical medical care and, separately, psychological counseling services to students enrolled in the university in accordance with policies set by the board of trustees of The California State University.

Services are provided at no charge subject to state funding. Costs for services not supported by state funds are the responsibility of the student either by payment of a one-time fee per semester or by a fee-for-service basis. The Health Center has prepared a brochure which gives greater detail regarding services available and charges, if any, for such services. The brochure is available at the Health Center and at various other locations on campus.

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 is here to help you reach your educational objectives and to assist you in maintaining optimum health, both physically and mentally. The staff includes full-time physicians (including specialists in family practice, internal medicine, and gynecology), pharmacists, a physical therapist, nurse practitioners, nurses, a nutritionist, clinical laboratory technologists, and an X-ray technologist. Part-time physicians (consultants) in orthopedics, radiology, and psychiatry are also available.

Counselors are professionals training in counseling, social work, psychology, and rehabilitation who assist students in acquiring a wide range of skills in life management, career and life planning, and personnel development and growth. Through counseling, students are provided the opportunity to discover more about themselves, where they want to go, and better ways of getting there. The above services are *not* related to academic or class counseling; academic counseling is not offered at the Health Center.

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, counseling, and consultation.

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

Nurse practitioners, such as Diane Simonson, R.N., N.P., have special training and licensure. They provide independent medical care, in consultation with our staff physicians.

Physical Therapy. This popular service generally is available by referral from a Health Center physician only. There may be some charges for such services. Address specific questions to the Health Center staff.

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 may be eligible for services in the specific summer session for which you are enrolled. There is a mandatory one-time fee for such services paid at the time of registration.

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, this 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, you are encouraged to consult with the Health Center staff. They will either answer your questions or direct you to someone who can. A full-time health educator develops and coordinates the health education programs offered by Student Health Services. Health education literature is available in the Health Center and in the University Student Union.

University Housing
Student Affairs
The Lodge
(209) 278-2345
Director, John Wetzel

Housing

Living on campus can be an important part of your educational experience. Whether you are a freshman or a transfer student, you should consider living on campus if you want to take the opportunity to develop friendships and participate in the academic atmosphere of the university.

Residence Hall Living. You will find that the convenience of being on campus makes going to and from class easy. It encourages the use of campus facilities, such as the library and computer/science laboratories, along with attendance at such activities as dances, plays, lectures, and concerts occurring during evenings and weekends.

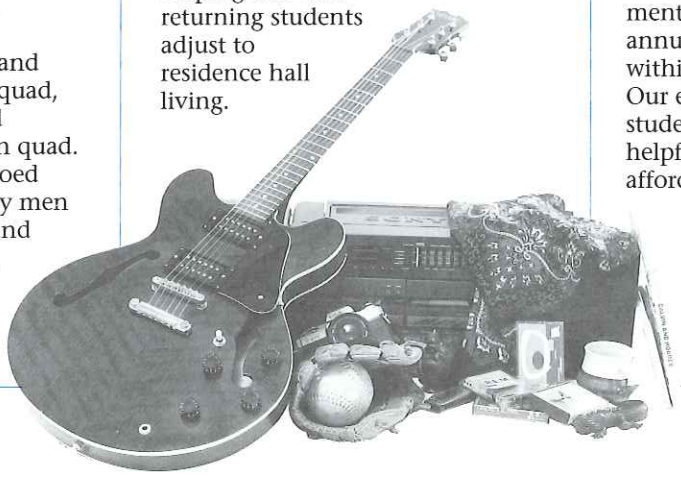
The halls have a variety of interesting and enjoyable programs designed to add an exciting dimension to residence hall living. Social activities include dances, special hall and floor dinners, picnics, and movies. A swimming pool and computer lab are available for exclusive use by residence hall students.

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. Most of the halls are coed. Coed buildings are characterized by men living on one floor or wing and women living on another. A total of 1,200 students live on campus.

Almost all of the rooms are shared by two students, although approximately 100 single rooms are available if you want greater privacy.

Staff. Trained professionals are available to help make your stay in the residence halls enjoyable. Specialists in programming assist you in developing social, cultural, educational, and recreational programs and activities. Other professionals offer guidance in resolving personal problems.

Augmenting this staff are the senior resident adviser and resident adviser staffs. Students who have 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 residence hall living.



Resident advisers receive training in such areas as counseling and first aid and understand the workings of the university so 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 university admissions process.

Applications are available starting in March for the fall semester and in October for the spring semester. You are urged to apply early as on-campus space is limited. All students must agree to live in the halls for the entire academic year.

All individuals applying to the university for the first time automatically receive housing information. You need not wait until you are officially accepted by the university, and if you are denied admission, your deposit will be refunded to you once you notify us.

To receive a housing application, contact the University Housing Office by calling **(209) 278-2345.**

Off-Campus Housing. An apartment brochure, published annually, identifies apartments within the vicinity of the campus. Our experience indicates that most students find this publication helpful in locating good, affordable housing. Listings of houses, rooms, and students looking for roommates are also available at the University Housing Office.

Instructional Media Services

Instructional Media Services
A Division of Computing, Communications, and Media Services
West Annex: Library North, First Floor and Basement
East Annex: Speech Arts, Room 156-89
(209) 278-2674
Associate Director of CCMS, Russ A. Hart

Instructional Media Services (IMS) provides complete graphic, photographic, sound, television, and imaging services for the enhancement of the university's academic program. IMS is a Division of Computing, Communications, and Media Services.

The division's goal focuses on the desire to create a complementary arrangement for the implementation of media-based curriculum materials, while providing support for the institution in the pursuit of its educational duties.

In conjunction with the Art, Industrial Technology, and Mass Communication and Journalism departments, students may develop practical production skills thanks to the hands-on laboratory experiences offered within IMS's facilities.

Under the supervision of faculty and professional staff, students produce a variety of materials for extra-departmental classroom instruction and the university's community service activities. Depending upon their interest and aptitude, students may participate in any of the following services typically provided by educational, corporate, and governmental media or telecommunication centers.

Photo • Graphics

Materials that cannot be acquired from existing sources are designed and developed internally within the division.

Graphics. Whether a project requires a simple single-color layout or a complex multi-color design to communicate a message, the IMS graphic artists are capable of producing them. The graphic arts facility includes computers and the latest graphics software to provide design, illustration, and production services.

Typesetting. In the desktop publishing facility, specialists produce computer-created finished and camera-ready materials for brochures, forms, journals, newsletters, business cards, books, slides, tables, displays, and signs.

Photography. In the photography studio and darkrooms, the photographers produce black-and-white and color slides and prints, studio portraits, and still-life photos. In addition, they may duplicate slides, make black-and-white halftones, title slides, line-copy duplications, and copystand photos.

Sound Recording. In the sound recording studios, audiotaped programs may be produced independently or in conjunction with other media. High-speed duplication equipment provides quality audio cassettes in a fast and efficient manner.

Video Production

Original television programs are produced utilizing advanced location, studio and postproduction techniques for viewing in classes, on local cable channels, and on broadcast television stations across the country. Additional production facilities are available for faculty and students to record lectures, presentations and other instructional experiences. Other services include off-air and off-satellite recording, interactive two-way videoconferencing, and satellite teleconferencing.

Classroom Services. Audiovisual equipment, color TV monitors and VCR's, featuring a variety of standard formats, are available for delivery to classrooms throughout the university. A closed-circuit television system also provides for program delivery to selected campus facilities.

Distance Education. Selected classes originating on this campus are broadcast live on an Instructional Television Fixed Services (ITFS) channel to various sites throughout the San Joaquin Valley. Students at the 18 receiving locations watch ITFS broadcasts and interact with the campus class via telephone hookup.

Technical Support. IMS provides an in-house repair service for most television and audiovisual equipment located on campus. The engineering staff also offers consultation to academic departments on system design for specialized instructional and research purposes. Other support areas include microwave teleclasses, broadband and fiber-optic distribution, and satellite teleconferencing.

Bryan Chan

ITFS operator Huifen Shang transmits a lesson via satellite to classrooms at other schools, including CSU Bakersfield and Sacramento State.

Office of International Programs
Academic Affairs
Joyal Administration, Room 211
(209) 278-6452 FAX (209) 278-7879
Director, Peter J. Klassen

International Programs

London Semester: For the experience of a lifetime, contact the School of Arts and Humanities, 278-3056.

The Office of International Programs is responsible for leadership and coordination of international programs at California State University, Fresno. The office is designed to assist faculty and administrators in developing and strengthening international education efforts. An advisory board works with the director to assist in this task. A resource center, maintained in the Office of International Programs, provides international education materials for faculty, staff, and students, while a newsletter, *Horizons International*, facilitates communication.

In its determination to enhance global understanding, CSU Fresno encourages international academic exchange and cooperation. Students and professors are assisted in participating in programs that facilitate academic enrichment abroad. Several "semester abroad" programs, exchanges with sister universities, and a variety of projects conducted jointly with international universities allow students and professors at CSU Fresno to participate in numerous culturally enriching experiences. At the present time, the university maintains academic cooperative programs, including, in most instances, student exchanges, with the following institutions.

- University of Münster, Germany
- Copernicus University, Poland
- St. Petersburg State Agricultural University, Russia
- Dzhambul Technological Institute, Kazakhstan
- Byelorussian State University, Belarus
- Yerevan State University, Armenia
- Udonthani College, Thailand
- Hangzhou University, China
- Shenzhen University, China
- Hong Kong Baptist College, Hong Kong
- National Chung Hsing University, Taiwan
- National Chengchi University, Taiwan
- Baiko Jo Gakuin College, Japan
- National Kochi University, Japan
- Dong-A University, Korea
- Kon Kuk University, Korea
- University of the Philippines
- University of Guanajuato, Mexico
- University of Torreon, Mexico
- Instituto Tecnologico y de Estudios Superiores de Monterey, Mexico

In some instances, instruction is available in English. Usually, fluency in the language of the country is required. University cooperative arrangements allow waiver of tuition in most instances. In addition, various other benefits are available because of cooperative agreements.

CSU Fresno also conducts the following "semester abroad" programs:

- The London Semester
- The China Semester
- The South Pacific Semester

Other similar programs are being developed. In addition, students have a wide range of study-abroad opportunities through the CSU International Programs. (See *International Programs — Special Programs* section.)

International Student Services and Programs

International Admissions
International Programs — Study Abroad
National Student Exchange
Academic Affairs
Joyal Administration, Room 211
(209) 278-2782 FAX (209) 278-7879
Director, Carol B. Munshower

International students enjoy meeting new friends at student orientation.

California State University, Fresno, welcomes you as an international student. We provide a comfortable environment that allows you to make the most of your educational experience.

CSU Fresno attracts international students from more than 80 countries and has one of the largest international student populations in the CSU system, numbering nearly 1,000.

The university employs international and multi-ethnic faculty and staff. Many of these people 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, and home country and family expectations.

We process your application for admission and evaluate your courses for transfer credit. Upon admission, international students receive information regarding arrival in the United States, visa and immigration, housing in the Fresno area, and registration. After arrival, the staff guides you through several mandatory preregistration workshops, postadmission English testing, and registration. You may be enrolled in English as a Foreign Language courses your first semester. (See *International Programs — Special Programs* section.) 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 Friendship 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 the CSU Fresno campus by speaking to small groups through our International Speaker's Program.

Join the many international clubs or any of the 200 other organizations available on campus. Participate in and enjoy the varied cultural programs during the year, such as International Week, International Night, Mooncake Festival, Malaysia Night, and other national day celebrations.

Learn about travel and study in another culture by using our Resource Center and talking to the coordinators in the following programs: International, Study Abroad, and National Student Exchange. (See *International Programs: Overseas* and *National Student Exchange — Special Programs* section.)

The foreign student advisers take a personal interest in helping you adjust to the university's academic requirements, as well as resolve your own personal concerns, such as financial problems, immigration matters, and personal problems. Agency and foreign government sponsored students participate in our Sponsored Student Program.

We offer 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.

Henry Madden Library
Hours of Opening: 278-2596
Circulation Dept.: 278-2551
Reference Questions: 278-2174

Dean, Michael Gorman

Library Services

The Henry Madden Library is a center for study, learning, and scholarship at CSU Fresno. Its collections and services are central to undergraduate and graduate instructional programs and to research of all kinds.

Online System. The library has a state-of-the-art Automated Library Integrated System (ALIS) which includes an online catalogue that will enable you to locate books, journals, and other library holdings far more quickly and easily than the card catalogue. ALIS terminals are found throughout the library. ALIS also provides speedy and easy check-out of library materials.

Collections

Books and Bound Periodicals. The Madden Library contains more than 850,000 volumes on all subjects and in many languages, as well as a large number of periodicals in microform. This diverse collection will meet your research needs throughout your university career.

Periodical Subscriptions. The library subscribes to more than 2,900 periodicals from all over the world. The Kardex, a complete and up-to-date listing, will tell you which issues are available.

Government Publications. The Government Documents Department houses more than 200,000 publications of the federal government and the state of California and selected publications of other states, other countries, and international organizations.

Specialized Collections. The library contains a Curriculum/ Juvenile collection, the largest Music Library in the CSU system, and a Special Collections library housing rare books, materials on local and state history, and other specialized collections.

Services

Assistance. Professional librarians are ready and willing to help you with your library research at the Reference Desk and in other departments of the library.

Learning About the Library. Handouts describing the library and its services can be found near the entrance and at all service desks. Tours and library instruction workshops are offered; see information at the Reference Desk. Many professors schedule library instruction classes for their students.

Computerized Research. Many periodical indexes and some full-text databases are available on workstations near the Reference Desk. In addition, for a fee — cost-recovery only — you may work with a librarian to gain access to a wider range of databases.

Borrowing from Other Libraries. The Interlibrary Borrowing Service enables you to borrow research materials from libraries throughout the country.

Multicultural Program. The Multicultural Program uses the library's collections and services to support cultural diversity. Its activities include collecting materials in ethnic/multicultural studies, assistance and instruction in the use of those materials, outreach to culturally diverse students to encourage knowledge and use of the library, a speaker series, and library displays on cultural topics.

Library Media Center. Videos and video sets of educational value are available for individual study and classroom use in the Media Center located on the third floor in the Music Library.

Copiers. Photocopy machines are available throughout the library. A card system allows you to use the machines and to make paper copies of microfilms and microfiches. Cards may be purchased from vending machines in the library.

Resource Center for Students with Disabilities. The Resource Center, housed on the first floor, provides a variety of services, including listening and recording booths, braille reference books, and reading machines for the visually impaired.

ALIS terminals are found throughout the library.

University Migrant Services
Student Affairs
Joyal Administration Building, Room 204
(209) 278-4768
FAX (209) 278-7044
Coordinator, Raul Z. Moreno

Migrant Services

UMS is for you if you are entering CSUF and have a migrant or seasonal farm-worker background.

The Office of University Migrant Services (UMS) at CSU Fresno provides retention services to university students from migrant and seasonal farmworker families. UMS works with campus student services, faculty, and community-based agencies to improve educational opportunities for UMS students.

UMS is for you if you are entering CSUF (freshman through graduate level) and have a migrant or seasonal farmworker background. As a retention service, we are concerned with helping you stay in school. We will help you explore your academic and career choices and make sure that you have the information you need to make the decisions which will shape your future.

The UMS staff are trained professionals in various areas including academic advising, counseling, career development, and language skill development. They will take a personal interest in helping you with your adjustment to the university environment.

Special services designed to assist UMS students in developing their academic potential include the following:

Academic Assistance
- Academic skills assessment
- Assistance with selection of classes
- Study skills training
- Peer tutoring
- English as a Second Language (ESL) assistance
- Oral Language Development

Counseling
- Orientation to university life
- Personal counseling
- Peer counseling

Career Planning
- Interest testing for major selection
- Career development workshops
- Referrals to part-time and summer employment
- Exposure to graduate and professional schools

Cultural Enrichment
- Migrant Student Alliance
- Recreational field trips
- Student leadership development
- Student awards banquet
- Teatro TORTILLA

Support Services
- Financial aid advisement
- Scholarship application assistance
- Referrals to university resources
- Referrals to community resources

College Assistance Migrant Program (CAMP) is a federal program designed for freshmen migrant and seasonal farmworker students. UMS students eligible for CAMP may be offered a CAMP stipend, vision and dental insurance, and other supplemental services.

To apply to UMS or CAMP, write, call, or better yet, come by in person to our office. Our staff will gladly provide you with the necessary applications and materials.

Orientation and Transition Services

Orientation and Transition Services
Academic Affairs
Ponderosa, Suite 12
(209) 278-7533
Coordinator, Peggy F. Hayward

Orientation at CSU Fresno offers you the keys to success. The excitement that comes with starting university life can be tempered by the fears that come with starting a new experience. After all, CSU Fresno is a pretty big place.

Becoming familiar with the ins and outs of the university can be a major advantage to new students — freshmen and transfers alike.

CSU Fresno's orientation programs offer you the opportunity to learn all you can about your new environment before you begin your life as a member of the university community. Orientation experiences are designed to provide new students with transition to the university from high school or another college. Special parent orientation programs are also offered.

Orientation and Transition Services sponsors orientation programs for new undergraduates: *Discovery* for students entering in the fall semester and *Advising Days* for students entering in the spring semester. Sessions include one-day and two-day overnight programs that are primarily scheduled prior to early registration deadlines. There is a fee for participation. All sessions are led by specially trained orientation student staff, faculty, professional staff, and administrators who assist new students in a comprehensive introduction to the academic and social life of the campus.

Discovery and Advising Day orientation program experiences include:

- Academic advising with faculty/staff
- Registration assistance
- Sessions on degree requirements including General Education
- Tours of the campus, library, and Health Center
- Information on financial aid and admission status, transfer courses, and special academic programs
- Small group sessions on academic and social campus resources/services
- Presentation/discussion with administrators, faculty, staff, and student leaders
- Study skills workshop
- Visit to residence halls
- Lunch with staff and students
- Overnight residence hall stay
- Social "get acquainted" activities

Participating in orientation will help you feel more at home at CSU Fresno.

For eligible new students, special orientation sessions are offered by EOP Summer Bridge.

Welcome Week offers new and returning students, faculty, and staff the opportunity to get to know and enjoy their university community. Featured programs on health, safety, and academic success; open houses, tours, and receptions; and special events like the "Celebration of Diversity" encourage participation and involvement in the life of the university.

New Student Convocation opens the academic year with an official welcome by the university president and others. This formal ceremony introduces academic traditions and expectations important to an enriched and successful university experience.

For more information, contact the Office of Orientation and Transition Services at (209) 278-7533.

Participating in orientation will help you feel more at home at CSU Fresno.

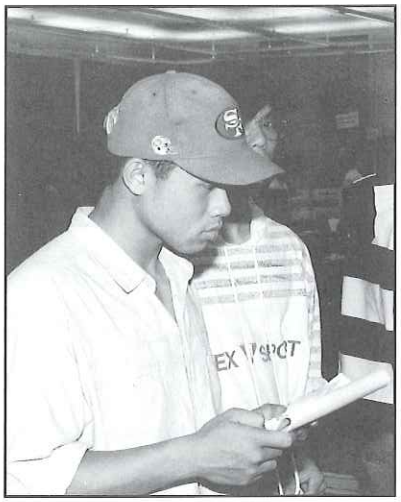
Office of University Outreach Services
Student Affairs
Joyal Administration, Room 251
(209) 278-2048

Director, Frances A. Peña

Outreach Services

The Office of University Outreach Services (UOS) coordinates all of CSU Fresno's ongoing outreach programs and recruitment.

As a regional university, CSU Fresno concentrates its major outreach activities in high schools and community colleges in the CSUF service area which consists of a four-county region: Fresno, Madera, Tulare, and Kings. UOS also provides outreach services to extended areas adjacent to our service region.



The primary focus of UOS is to assist students with preadmission procedures necessary to attend CSU Fresno and to develop and maintain a viable relationship with all segments of the community for a better understanding of the university and its services. Another important Outreach service is to improve access for students from underrepresented populations. The following are some of the services provided by UOS:

High School Outreach. Schools serviced by University Outreach are visited once during the fall semester with a follow-up visit in the spring. Information on admissions, financial aid, scholarships, housing, and academic majors is provided in small or large group settings.

Community Colleges/Transfer Services. Community colleges in our service area receive regular visits by outreach staff, and most students are seen by appointment. Students are assisted with admissions, financial aid, and advising. Information on campus support programs is also provided. Most colleges in the central valley and central coast receive regular visits. Consult with your Transfer Center

or Counseling Center. University Outreach Services also participates in the Fresno City College Transfer Center Project. The Transfer Center sponsors several activities to promote and increase the number of transfer students.

Campus tours are conducted by student tour guides for prospective students and their families. Group tours may also be accommodated with advance notice. Contact the office for the scheduled hours.

Student Affirmative Action. High schools with high minority enrollments are selected as placement sites and are visited weekly or biweekly by peer outreach representatives to assist prospective seniors with the application process.

The Early Outreach component encourages, motivates, and exposes underrepresented students to higher education as early as the seventh grade. Services provided to students include school site visits, enrichment workshops, university classroom experience, campus tours, advising, career days, and parent orientations.

Student Intern-Outreach to High School and Community College Underrepresented Students. University student interns encourage and motivate primarily ninth and tenth graders to enroll in college preparatory courses that will lead to CSU admission. Community college students studying in vocational and career-oriented programs are provided information on preparation for and benefits of a baccalaureate degree by interns. Two community colleges and 23 high schools are in the program.

Students interested in the CSU System or attending CSU Fresno may obtain information from UOS through either its many site visits, classroom presentations, college fair booths, campus tours, or by calling the office and requesting materials about the university.

Elementary Outreach. Elementary age students are encouraged and motivated to attain academic achievement and to begin setting goals. Outreach programs are targeted at elementary schools in the Fresno Unified, Clovis Unified, and West Fresno School districts.

Reentry Programs

Reentry Programs
Student Affairs
Main Cafeteria West
(209) 278-3046

Director of Special Programs, Arlene L. Bireline
Coordinator, Angela Cisneros

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

Education is the key to a better life and a more secure future. The Reentry Program assists potential students, 25 years of age and older, who wish to begin or resume a college education. Transitions are difficult for people of all ages because they usually entail changes in routines and adjustments to new relationships and surroundings.

The reentry staff has 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.

Adults possess certain assets that come only with age and experience. Older students tend to have strong motivations, coupled with a special eagerness to learn. Broader life experiences usually mean more effective coping skills. Staff and peer advisers help reentry students to make the best use of these advantages.

At the same time, returning individuals often face complicated circumstances which, while making further education desirable, also make it difficult to achieve. Our reentry staff can help when complex issues need attention. And, as for the services offered by the Reentry Program, check them out:

Pre-entry advising helps you with your initial questions about college. We can advise you regarding eligibility, courses, costs, deadlines, and other services.

Academic advising gives you the information you need to make informed decisions about your academic career.

Crisis and personal counseling assist you with the transition to student life.

The Evening Program provides support services for reentry students with evening classes.

Peer support promotes a feeling of belonging to the campus community. A student lounge in the Reentry Center provides a place for you to meet friends or relax between classes.

Weekly support groups, including a brown-bag lunch meeting, provide emotional support and an opportunity for you to share concerns with other reentry students.

Coffee hours scheduled weekly provide you with informal information sessions. Excellent speakers from the campus and community address a variety of interesting topics, such as time management, stress control, and overcoming academic anxiety.

Career exploration and counseling referrals available to assist you in making well-informed, appropriate decisions when change is needed.

Workshops, offered in the evenings and on weekends, further assist you with self-awareness, personal growth, relationship and family enrichment, and academic success.

Referrals can be made on your behalf to campus services, such as Career Development and Employment Services, Health and Counseling Services, Child Care Center, and Financial Aid.

If you would like more information about the many opportunities for reentry students, visit the Reentry Office or call (209) 278-3046.

Reentry students Carlton Duncan and Nellie Ballesteros (center) chat with Phyllis Redfield, counselor, in front of the Reentry Programs Office.

Dean of Student Affairs Office
Joyal Administration, Room 224
(209) 278-2541

Dean, William H. Corcoran
Associate Dean, Manuel Perez

Student Affairs

The Dean of Student Affairs Office provides leadership, support, and resources to the many offices and programs in the Division of Student Affairs.

Division offices deal with outreach, reentry, housing, student activities, intramurals, disabled student services, international student matters, counseling, health services, and career development and employment.

The Dean of Student Affairs Office is also responsible for administering student grievances, 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) is designed to ensure 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 Grievances. 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 process 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 resolve 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 affected through the informal procedures, students should contact the Dean of Student Affairs Office for assistance.

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 cheating and plagiarism are found in the *University Administration and Policies* section.

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 Dean of Student Affairs Office, **278-2541**, which will notify the faculty concerned. When any absence occurs, however, the student should contact the instructors involved concerning the possibility of making up the work missed.

Student Affairs division offices deal with outreach, reentry, housing, student activities, intramurals, disabled student services ... and much more.

Students for Community Service
Academic Affairs
Thomas Administration, Room 114
(209) 278-4775

Coordinator, J. Leonard Salazar

Students for Community Service

Give a little. You'll get back so much more.

Give *just* a little. Give a smile to someone who doesn't have one. Give a young boy or girl a big brother or big sister. Give food to the homeless. Give the meaning of words to someone who can't read.

Before you leave CSU Fresno, make a connection with Students for Community Service and make a positive difference in someone's life.

Students for Community Service, a.k.a. Human Corps, was established to:

- Foster a sense of social responsibility and "community" among students
- Provide university students with real-world learning opportunities
- Stimulate cooperation and coordination between institutions of higher learning and traditional agencies responsible for the delivery of volunteer efforts and community services
- Substantially increase the community service participation of university students so all full-time university students will provide an average of 30 hours of community service each academic year

Who Volunteers? Hopefully, you will volunteer. If you enjoy the rewards of helping someone in need, if you are concerned with social issues, Students for Community Service can find a place for you to share your talents with others. In return, you will experience real-life situations that could help you decide what career path to pursue after college, and you will sharpen your people skills by working with others.

In addition to finding ongoing work for volunteers, Students for Community Service also refers students to work at one-time events, such as blood drives, Passport Fresno, or preparing and serving meals to the homeless.

Who Thinks Volunteer Work is Important? Here's what two of our nation's corporate leaders say about individuals who volunteer to perform community service:

You can receive academic credit toward degree electives, if you successfully complete the following course:

Com S 101. Students for Community Service (1-3; max total 6)
Volunteer opportunities designed to develop skills and knowledge that promote responsible leadership in major fields of study and to integrate academic experiences in non-academic settings to benefit local community service organizations. Meeting with the Students for Community Service coordinator is required at the beginning of the semester.

"To develop future leaders, we must complement higher education with a commitment to the welfare of others."

— Riley P. Bechtel
President, Bechtel Group

"A record of community service in an applicant's resume demonstrates conscientiousness, an ability to work well with others, and a sense of social responsibility. It is important to know that prospective employees have the interest of others in mind as well as their own."

— Russell R. Mack Jr.
Vice President, United Airlines

Who Benefits? Everyone! The staff and programs of nonprofit agencies have suffered budgetary cutbacks, yet client needs have continued to expand. As a volunteer you receive positive reinforcement and experience. Knowledge gained as a volunteer does not end upon graduation. Your employer will note that you are a doer. Your community will recognize a socially concerned citizen. In these ways, both you and the community gain.

Testing Services

Office of Testing Services
Academic Affairs
1700 E. Bullard, Suite 101
(Northwest corner of Cedar and Bullard,
third building west of Cedar on Bullard)
(209) 278-2457
Test Officer, William P. Stock

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.

The overall goal of the Office of Testing Services is 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 has expertise in measurement of student growth and experience, program assessment and evaluation, educational research, and microcomputer-based analysis of student and faculty surveys.

Personal and Career Assessment. We administer, on a referral basis, several tests designed to measure vocational career interests, aptitude and achievement, and personality characteristics. If you believe that this type of testing would facilitate your educational and career development, the Office of Testing Services will attempt to refer you to qualified professionals either on or off campus.

Undergraduate Entrance Examinations. Your application for admission to CSU Fresno may require scores from the SAT or ACT. While most students take the SAT or ACT on regular national testing dates, we will provide assistance to students who need to make alternative arrangements. For international students seeking university admittance, special dates for the Test of English as a Foreign Language (TOEFL) are offered.

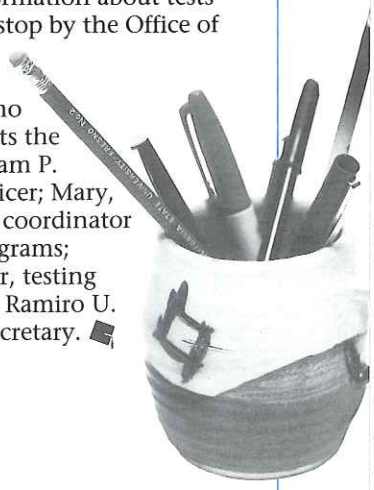
Required Tests. Testing Services has information about tests you may be *required* to take, such as the CSU English Placement Test (EPT), the Entry-Level Mathematics Test (ELM), and the Upper-Division Writing Examination (UDWE).

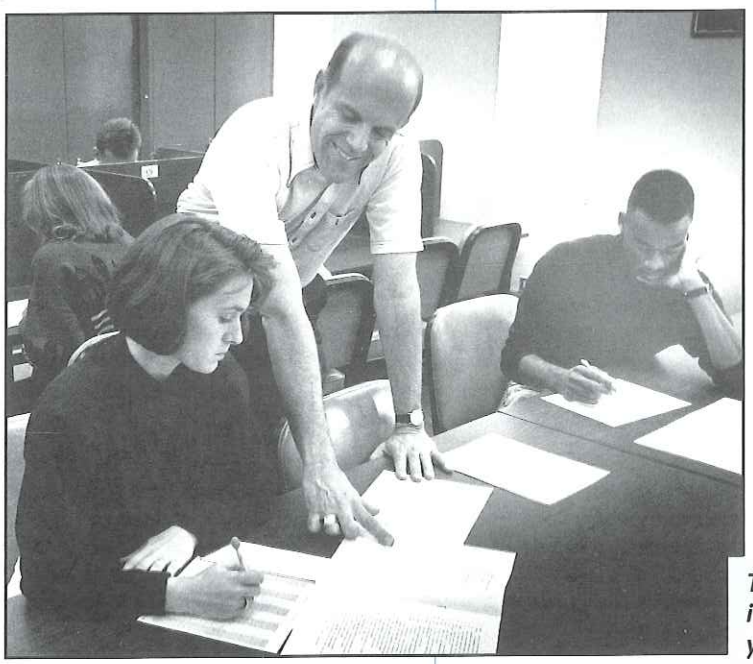
Graduate School Testing. This office also handles the administration of many tests given nationwide, such as the Graduate Record Examination (GRE), Law School Admission Test (LSAT), the Test of English as a Foreign Language (TOEFL), the Graduate Management Admission Test (GMAT), the National Teacher's Examination (NTE), and others. The California Basic Educational Skills Test (CBEST) is also administered on this campus.

Test Scoring. An instructional test scoring service aids faculty in the development, scoring, analysis, and electronic grade management for 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 — William P. Stock, test officer; Mary, Kay Statham, coordinator of testing programs; Belinda Barker, testing assistant; and Ramiro U. Estalilla Jr., secretary.

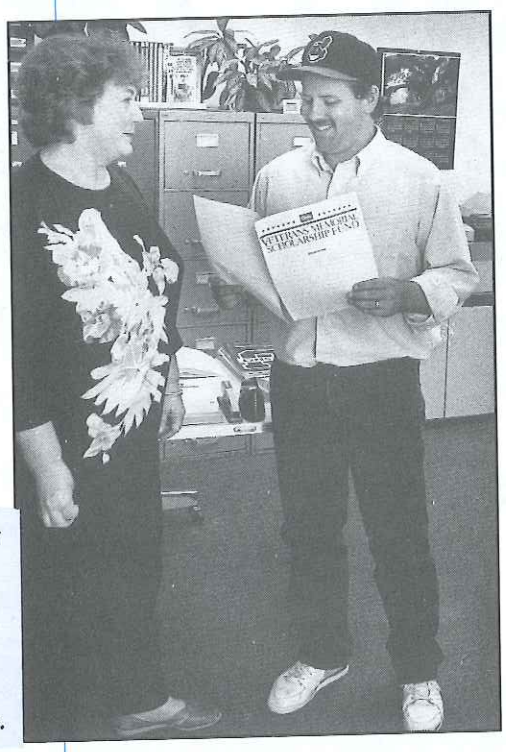




Testing Services has information about tests you may be required to take.

Veterans Affairs
Academic Affairs
Joyal Administration, Room 121
(209) 278-2562
Coordinator, Claudia Morrison

Veterans Affairs



The OVA is your liaison with the Veterans Administration and the State Department of Veterans Affairs.

The Office of Veterans Affairs (OVA) at CSU Fresno is a federally funded program that provides a variety of services to veterans. The OVA is your liaison with the Veterans Administration and the State Department of Veterans Affairs, and other related agencies for the veteran population of the campus.

Veterans transferring to CSU Fresno from other institutions are strongly urged to contact the OVA 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 OVA 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 students 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 OVA for detailed information and assistance in establishing your claims.

To apply for benefits contact the OVA 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:

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.

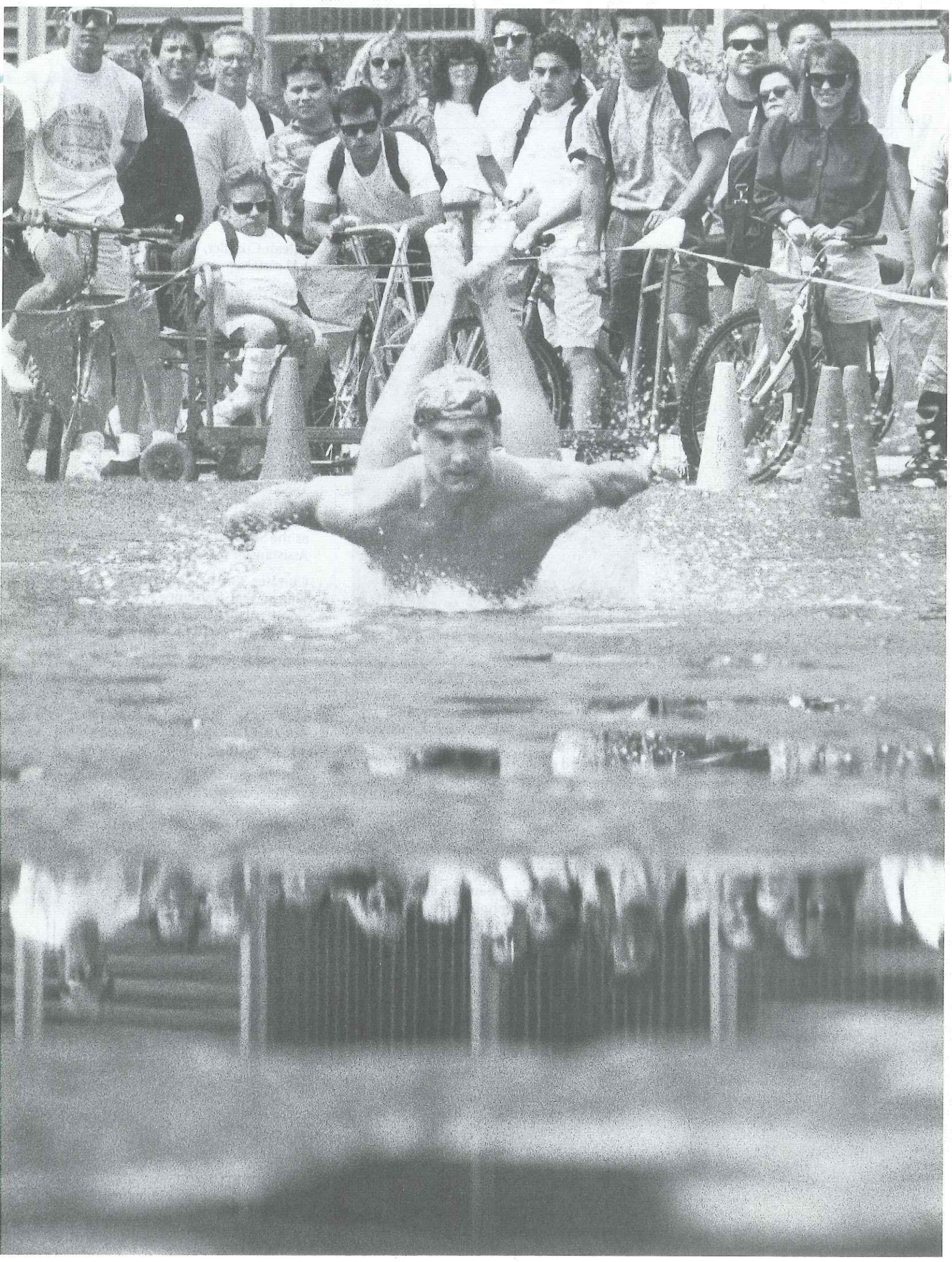
Survivors and Dependents Education for children, spouses, and survivors of veterans whose deaths or permanent total disabilities were service-connected, and for spouses and children of service persons missing in action or prisoners of war.

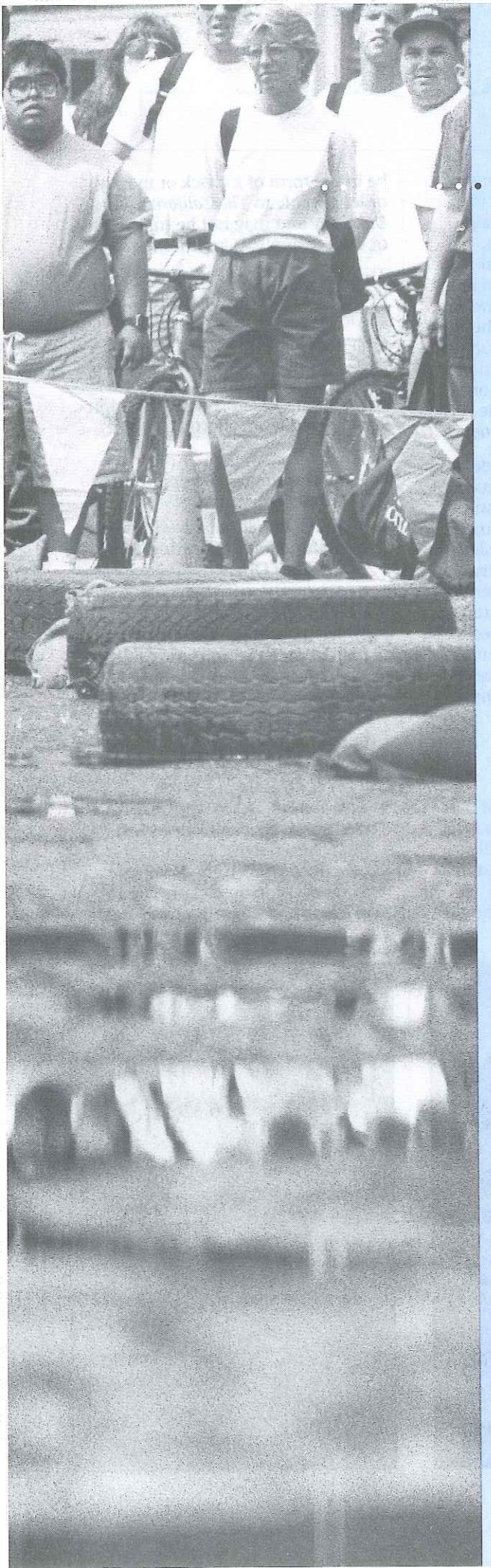
Chapter 106. Educational Assistance for members of the Selected Reserve, effective July 1, 1985; Chapter 106, Educational Assistance for members of the Selected Reserve is also referred to as the Selected Reserve Educational Assistance Program.

Chapter 30. The Veteran's Educational Assistance Act of 1984 (Montgomery G.I. Bill) is geared toward new recruits, who enlisted after June 30, 1985, and members of the military who enlisted prior to January 1, 1977, and who have continuous service. Additional information on either Chapters 106 or 30 is available in the Veterans Office.

Services provided by the Office of Veterans Affairs include the following:

- 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 of fee waivers
- Inquiries
- Academic advising
- Personal counseling
- Work-Study Program.





Admissions, Fees, and Financial Assistance

"All our dreams
come true —
if we have
the courage
to pursue them."

Walt Disney

Admission Requirements and Registration Process

Admissions Office
Joyal Administration Lobby
(209) 278-2261
Director, Richard L. Backer

Requirements for admission to California State University, Fresno are in accordance with Title 5, Chapter 1, Subchapter 3, of the *California Code of Regulations*. 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 offices at any of the campuses of The CSU 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 Code of Regulations)*.

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

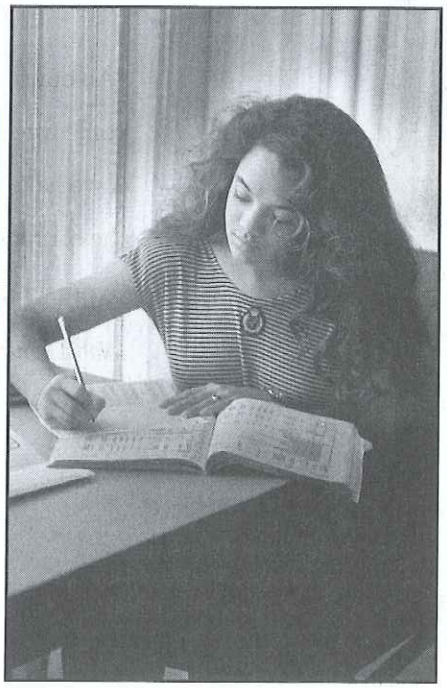
Undergraduate Application Procedures

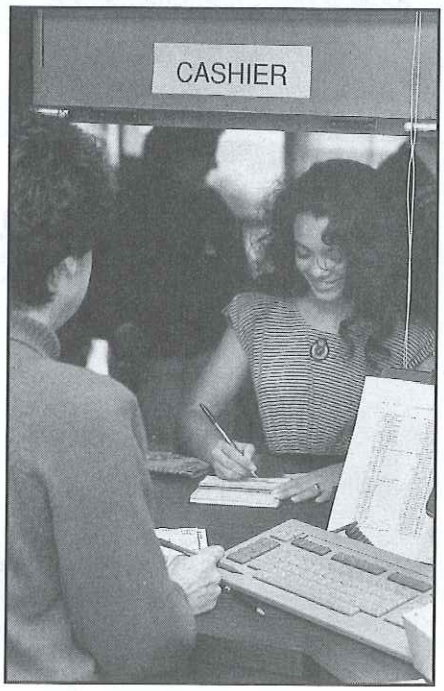
Prospective students applying for part-time or full-time programs of study, in day or evening classes, must file a complete application as described in the admissions booklet. The $55 nonrefundable application fee should be in the form of a check or money order payable to *The California State University* and may not be transferred or used to apply to another term.

An alternate campus and major may be indicated on the application, but *applicants should list as an alternate campus only a CSU campus that also offers the major*. Generally, an alternate major will be considered at the first choice campus before an application is redirected to an alternate choice campus.

For undergraduate admission to CSU Fresno you must:

1. Submit a current application with a nonrefundable 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 your registration. All transcripts submitted by students are retained by CSU Fresno.
3. Take the Scholastic Aptitude Test (SAT) or American College Test (ACT) and request official scores be sent to CSU Fresno if you are a lower-division applicant. The Test of English as a Foreign Language





(TOEFL) is 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 the 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 collegiate institution, 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. However, community college credit in excess of 70 units may be used to satisfy subject requirements. No upper-division credit will be given.

A maximum of 12 semester units will be allowed for agricultural projects, work experience, and/or internship courses. No more than 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.

Impacted Programs

The CSU designates programs as impacted when more applications are received in the first month of the filing period than can be accommodated. Some programs are impacted at every campus where they are offered; others are impacted at some campuses. 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 is published in the *CSU Review,* distributed to high school and college counselors. Information about the supplementary criteria is also sent 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 SAT or the ACT, 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 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 alternate major either at the first choice campus or another campus.

Graduate and Postbaccalaureate Application Procedures

All graduate and postbaccalaureate 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. CSU students who completed undergraduate degree requirements and graduated the preceding term are also required to complete and submit an application and a nonrefundable application fee. Since applicants for postbaccalaureate 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.

For additional information, see the *Division of Graduate Studies*.

Application Filing Periods

Each campus accepts applications until capacities are reached. Many campuses limit undergraduate admission in an enrollment category because of overall enrollment limits. If applying after the initial filing period, consult the campus admissions office for current information.

- Applications for the fall semester are accepted beginning November 2. Student notification begins in December.
- Applications for the spring semester are accepted beginning August 2. Student notification begins in September.

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

ELIGIBILITY INDEX TABLE

for California High School Graduates or Residents of California

GPA	ACT Score	SAT Score	GPA	ACT Score	SAT Score	GPA	ACT Score	SAT Score
3.00 and above qualifies with any score			**2.66**	17	680	**2.31**	24	960
			2.65	17	680	**2.30**	24	960
2.99	10	410	2.64	17	690	**2.29**	24	970
2.98	10	420	**2.63**	17	700	**2.28**	24	980
2.97	10	430	**2.62**	17	710	**2.27**	24	990
2.96	11	440	**2.61**	18	720	**2.26**	25	1000
2.95	11	440	**2.60**	18	720	**2.25**	25	1000
2.94	11	450	**2.59**	18	730	**2.24**	25	1010
2.93	11	460	**2.58**	18	740	**2.23**	25	1020
2.92	11	470	**2.57**	18	750	**2.22**	25	1030
2.91	12	480	**2.56**	19	760	**2.21**	26	1040
2.90	12	480	**2.55**	19	760	**2.20**	26	1040
2.89	12	490	**2.54**	19	770	**2.19**	26	1050
2.88	12	500	**2.53**	19	780	**2.18**	26	1060
2.87	12	510	**2.52**	19	790	**2.17**	26	1070
2.86	13	520	**2.51**	20	800	**2.16**	27	1080
2.85	13	520	**2.50**	20	800	**2.15**	27	1080
2.84	13	530	**2.49**	20	810	**2.14**	27	1090
2.83	13	540	**2.48**	20	820	**2.13**	27	1100
2.82	13	550	**2.47**	20	830	**2.12**	27	1110
2.81	14	560	**2.46**	21	840	**2.11**	28	1120
2.80	14	560	**2.45**	21	840	**2.10**	28	1120
2.79	14	570	**2.44**	21	850	**2.09**	28	1130
2.78	14	580	**2.43**	21	860	**2.08**	28	1140
2.77	14	590	**2.42**	21	870	**2.07**	28	1150
2.76	15	600	**2.41**	22	880	**2.06**	29	1160
2.75	15	600	**2.40**	22	880	**2.05**	29	1160
2.74	15	610	**2.39**	22	890	**2.04**	29	1170
2.73	15	620	**2.38**	22	900	**2.03**	29	1180
2.72	15	630	**2.37**	22	910	**2.02**	29	1190
2.71	16	640	**2.36**	23	920	**2.01**	30	1200
2.70	16	640	**2.35**	23	920	**2.00**	30	1200
2.69	16	650	**2.34**	23	930			
2.68	16	660	**2.33**	23	940			
2.67	16	670	**2.32**	23	950			

Below **2.00** does not qualify for regular admission

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 qualified applicants who would be faced with extreme hardship if not admitted. Petitioners should write to the Admissions Office regarding specific policies governing hardship admission.

Undergraduate Admission Requirements

Freshman Requirements. You qualify for regular admission as a first-time freshman if you are a high school graduate, have a qualifiable eligibility index (see table) and have completed with grades of *C* or better each of the courses in the comprehensive pattern of college preparatory subject requirements. (See *Subject Requirements.*) Courses must be completed prior to the first enrollment in The California State University.

Eligibility Index. The eligibility index is the combination of your high school grade point average and your score on either the Scholastic Aptitude Test (SAT) or the American College Test (ACT). 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 approved honors courses. (See *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 SAT. Or, if you took the ACT, multiply your grade point average by 200 and add 10 times the composite score from the ACT. If you are a California high school graduate or a legal resident of California for tuition purposes, you need a minimum index of 2800 using the SAT or 694 using the ACT. The Eligibility Index Table illustrates several combinations of required 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 (SAT) or 842 (ACT).

If your grade point average is 3.0 or above (3.61 for nonresidents), you are exempt from submitting test scores. However, you are urged to take the SAT or ACT since all campuses use test results for advising and placement purposes.

You will qualify for regular admission when the university verifies that you have a qualifiable eligibility index and will have completed the comprehensive pattern of college preparatory subjects and, if applying to an impacted program, meet supplementary criteria.

Graduates of secondary schools in foreign countries must be judged to have academic preparation and abilities equivalent to applicants eligible under this section.

Subject Requirements. The California State University requires that first-time freshman applicants complete, with grades of *C* or better, a comprehensive pattern of college preparatory study totaling 15 units. A "unit" is one year of study in high school.

- 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)
- 3 years of electives selected from English, advanced mathematics, social science, history, laboratory science, agriculture, foreign language, and the visual and performing arts

If you have completed at least 15 college preparatory units, you may offset a 1-unit shortage in one subject area by completing an extra unit in another subject area. This option is available from fall 1992 through summer 1995. Although you will be granted regular admission under this option, you are strongly advised to complete all courses in the college preparatory pattern, especially mathematics and English, so that you will be adequately prepared to begin your university studies. See your high school counselor for further information.

Waiver of Foreign Language Subject Requirement. The foreign language subject requirement may be waived for applicants who demonstrate competence in a language other than English equivalent to or higher than expected of students who complete two years of foreign language study. Consult with your school counselor or any CSU campus Admissions or Relations with Schools offices for further information.

Subject Requirement Substitution for Students with Disabilities. Disabled student applicants are strongly encouraged to complete college preparatory course requirements if at all possible. If applicants are judged unable to fulfill a specific course requirement because of their disability, alternative college preparatory courses may be substituted for specific subject requirements.

Students who are deaf and hearing impaired, have learning disabilities, or are blind and visually impaired may in certain circumstances qualify for substitutions for the foreign language, mathematics, and laboratory science subject requirements. Substitutions may be authorized on an individual basis after review and recommendation by the applicant's academic adviser or guidance counselor in consultation with the director of a CSU disabled student services program.

Although the distribution may be slightly different from the course pattern required of other students, students qualifying for substitutions will still be held for 15 units of college preparatory study. Students should be aware that course substitutions may limit later enrollment in certain majors, particularly those involving mathematics. For further information and substitution forms, contact the director of disabled student services at your nearest CSU campus.

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. Students should have at least a 3.0 GPA in college preparatory subjects or exhibit unusual academic abilities. Such admission is only for a given program and does not constitute the right to continued enrollment. Contact the CSU Fresno Admissions Office.

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 monitors the senior year of study of those provisionally admitted to ensure that they maintain a satisfactory grade point average — including the required college preparatory subjects — and graduate from high school.

Transfer Requirements. You 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 any of the following standards:

1. You meet the freshman admission requirements in effect for the term to which you are applying. (See *Freshman Requirements*.)
2. You were eligible as a freshman at the time of high school graduation and have been in continuous attendance in an accredited college since high school graduation.
3. You were eligible as a freshman at the time of high school graduation except for the subject requirements, have made up the missing subjects, and have been in continuous attendance in an accredited college since high school graduation.
4. You have completed at least 56 transferable semester (84 quarter) units and have made up any missing subject requirements. (See *Making Up Missing College Preparatory Subjects*.) Nonresidents must have a 2.4 grade point average or better. A maximum of 70 transferable semester (105 quarter) units is allowed from two-year institutions (community/junior colleges).

For this requirement, transferable courses are those designated for baccalaureate credit by the college or university offering the courses.

Making Up Missing College Preparatory Subject Requirements. Undergraduate applicants who did not complete subject requirements while in high school may make up missing subjects in any of the following ways:

1. Complete appropriate courses with a *C* or better in adult school or high school summer sessions.
2. Complete appropriate college courses with a *C* or better. One college course of at least three semester (four quarter) units is considered equivalent to one year of high school study.

3. Earn acceptable scores on specified examinations.
4. If you have 56 or more semester (84 quarter) units, you may complete one of the following alternatives:
   a. **1987 or earlier high school graduates:** Complete the CSU General Education requirement in communication in the English language (at least 9 semester units) and mathematics (usually 3 semester units) with a *C* or better in each course.
   b. **1988 or later high school graduates:** Complete a minimum of 30 semester (45 quarter) units, with a *C* or better in each course, chosen from courses in English, arts and humanities, social science, science, and mathematics of a level at least equivalent to courses that meet General Education requirements.

Each student must complete all CSU General Education requirements in communication in the English language (at least 9 semester units) and in mathematics (usually 3 semester units) as part of the 30-unit requirement.

Consult with any CSU Admissions Office for further information about alternative ways to satisfy the subject requirements.

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

Test Requirements. Freshman and transfer applicants who have fewer than 56 semester (84 quarter) units of transferable college credit must submit scores — unless exempt (see *Eligibility Index* on page 70) — from either the Scholastic Aptitude Test (SAT) or the American College Test (ACT). Test scores are also used for advising and placement purposes. Registration forms and dates for either test may be obtained from high school or college counselors or from a CSU campus testing office. Or, you may write to or call:

The College Board (SAT)
Registration Unit, Box 592
Princeton, New Jersey 08541
(609) 771-7588

American College Testing Program (ACT)
Registration Unit, P.O. Box 168
Iowa City, Iowa 52240
(319) 337-1270

TOEFL Requirement. All undergraduate applicants whose native language is not English, regardless of citizenship, must demonstrate English language proficiency through an official TOEFL report showing a minimum score of 500. All graduate applicants must submit a minimum TOEFL score of 550, unless they have a baccalaureate degree from an institution of higher education in which English is the language of instruction. Individual campuses may require higher scores for specific majors.

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 whether 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 (EPT). The CSU English Placement Test must be completed by all new undergraduates unless exempt. (See *Academic Placement.*)

Entry-Level Mathematics (ELM) Exam. Unless exempt according to CSU policy, all students enrolling at CSU Fresno must take the ELM by the end of their first semester of attendance. (See *Academic Placement.*)

Adult Students. As an alternative to regular admission criteria, applicants who are 25 years of age or older may be considered for admission as adult students if they meet the following conditions:

1. Possess a high school diploma (or have established equivalence through either the Tests of General Educational Development or the California High School Proficiency Examination).
2. Have not been enrolled in a California community college as a full-time student for more than one term during the past five years. (*Part-time enrollment is permissible.*)
3. Earned a *C* average or better in college coursework during the last five years.

Consideration is based on the applicant's probability of academic success and includes an assessment of basic skills in the English language and mathematical computation. For information, call the CSU Fresno Reentry Office, **278-3040.**

Graduation Requirements in Writing Proficiency. All students must demonstrate competency in writing skills as a requirement for graduation. Information on currently available ways to meet this graduation requirement may be obtained from the Admissions Office or the Testing Office.

Graduate and Postbaccalaureate Admission Requirements

See *Division of Graduate Studies.*

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 $55 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 application fee. (See *Planned Educational Leave.*)

International (Foreign) Students

The California State University must assess the academic preparation of foreign students. For this purpose, "foreign students" include those who hold U.S. visas as students, exchange visitors, or in other nonimmigrant classifications.

The CSU uses separate requirements and application filing dates in the admission of foreign students. Verifica-

tion of English proficiency (see *TOEFL Requirement*), financial resources, and academic performance are all considered in an admission decision. All academic documents must be submitted in native language, accompanied by a certified English translation. No final admission decision will be made until required materials have been submitted to International Admissions.

Priority in admission is given to residents of California. There is little likelihood of nonresident applicants, including international students, being admitted to either impacted majors or to those programs with limited openings.

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.

Obtain information on TOEFL testing dates and centers by writing TOEFL, Educational Testing Service, Princeton, New Jersey 08540 or contacting the CSU Fresno Testing Office.

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

To qualify for undergraduate admission, an international student must present a score of 500 or better on the TOEFL. A postbaccalaureate 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 postbaccalaureate 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 postadmission 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 postadmission testing, a student may be required to enroll in certain English as a Foreign Language (EFL) courses 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 (ESL) Program. In order to transfer from a language school to CSU Fresno a conditionally admitted student must present an acceptable score on the TOEFL.

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, and 89705-89707.5, and in Title 5 of the *California Code of Regulations,* Sections 41900-41912. A copy of the statutes and regulations is available for inspection at the campus Admissions Office.

"My undergraduate years at Fresno State made a real change in my life and profession. The friendly, professional, and informal interaction with the professors made learning a more pleasurable experience."

Aleardo Zaccheo
Alumnus from Switzerland, Teacher

Legal residence may be established by adults who are physically present in the state and who, at the same time, intend to make California their 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.

Students who are within the state for educational purposes only do not gain the status of resident regardless of the length of their stay in California.

In general, an 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:

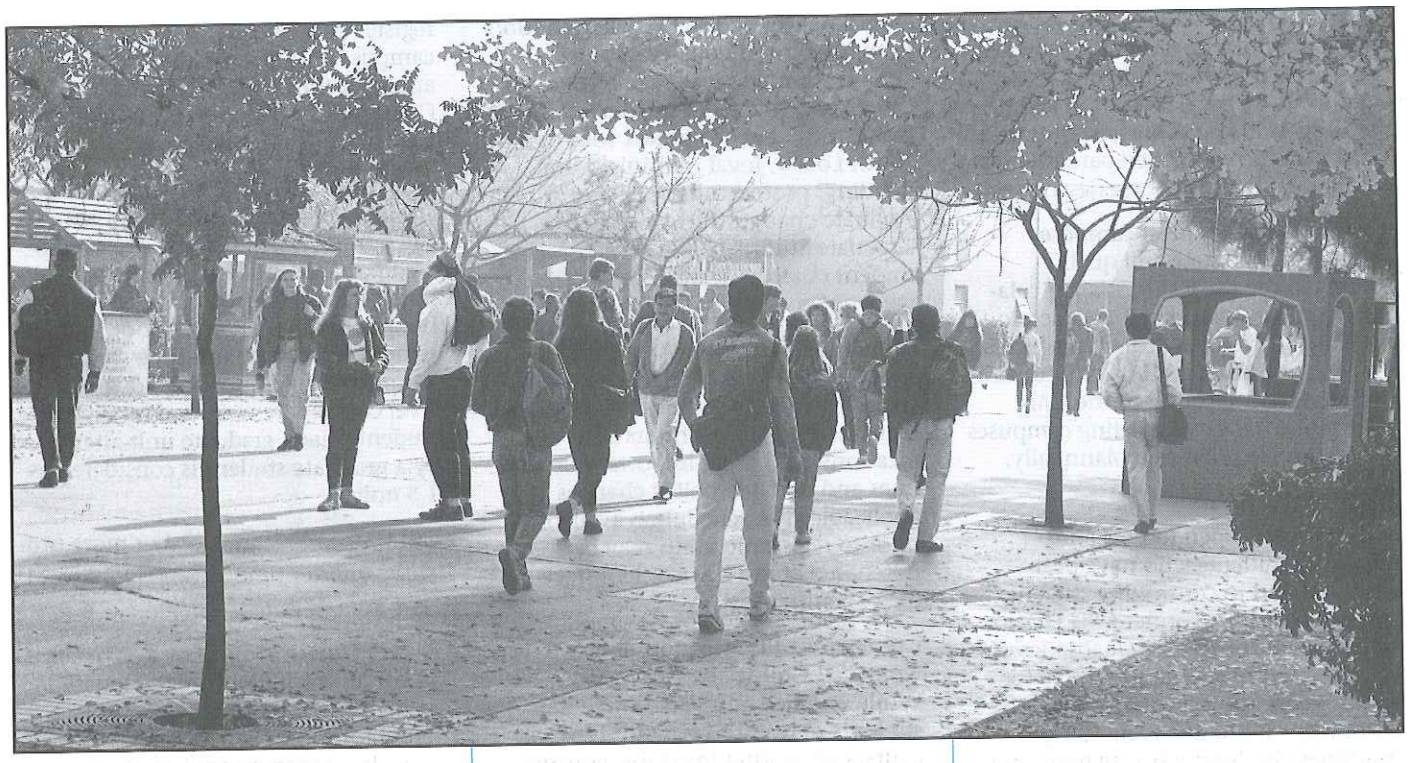
1. Persons below the age of 19 whose parents were residents of California but who left the state while the student, who remained, was still a minor. When the minor reaches age 18, the exception continues for one year to enable the student to qualify as a resident student.
2. Minors who have been present 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 regardless of their length of physical presence in California. 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 regardless of their length of physical presence in California.
6. Dependent children of a California resident who has been a California resident for the most recent year. This exception continues until the student has resided in the state the minimum time necessary to become a resident, so long as continuous attendance is maintained at an institution.
7. Graduates of any school located in California that is operated by the United States Bureau of Indian Affairs, including, but not limited to, the Sherman Indian High School. The exception continues so long as continuous attendance is maintained by the student at an institution.
8. Certain credentialed, full-time employees of California school districts.
9. 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.
10. Certain exchange students.
11. 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.

Students, following a final campus decision on their 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 Code of Regulations*. 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 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. Major information sheets are available for most CSU Fresno majors. 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*.

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 Services.

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. Overall excellence of performance in high school subjects and evidence of academic potential provide the basis for admission at CSU Fresno.

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 preparatory subjects.

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 while keeping in mind that a maximum of 70 transferable units is allowed from two-year institutions (community/junior colleges). **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 a declared major, entering with 40 or more units will receive a copy of their advanced standing evaluation indicating how previous college units have been applied toward degree requirements at CSU Fresno. Questions about one's evaluation should be directed to the student's adviser or the Evaluations Office. It is recommended that transfer students bring with them an unofficial copy of all previous college transcripts and their CSU General Education Certification when attending New Student Orientation and Advising Day to ensure accurate advising.

The California Articulation Number (CAN) identifies some of the transferable, lower-division, introductory (preparatory) courses commonly taught on California college campuses.

The system assures students that CAN courses on one participating campus will be accepted "in lieu of" the comparable CAN course on another participating campus. For example: CAN ECON 2 on one campus will be

accepted for CAN ECON 2 on every other participating campus. Each campus retains its own numbering system, but adds the CAN designation parenthetically in its publications. In this catalog, the CAN is listed parenthetically at the end of the course description.

It is expected that most campuses throughout the state will qualify courses to use the California Articulation Numbers. Check with academic advising offices or articulation officers for current listings of CAN courses and campuses participating in the CAN system. A *CAN Catalog* listing campuses and courses is published biannually.

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 are required to pay the $55 application fee when applying. The *Academic Calendar* lists dates of registration. Students who register during the Late Registration period (first 5 days of instruction) are assessed a $25 late fee. No registrations are 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* for all deadline dates.

Registration priority for all students is determined by the number of academic units completed with limited exceptions. After a priority group is processed, then 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 public contact windows, North Lobby, Joyal Administration Building; postbaccalaureate 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 a Non-CSU College or University. While enrolled at CSU Fresno, students may enroll for additional courses at another institution outside the CSU system with the written approval of the student's academic adviser. Such approval must be granted prior to the beginning of classes at the other institution. The courseload in the combined enrollment program may not exceed the maximum unit load restrictions for CSU Fresno. The completed form must be filed by the end of Late Registration at the public contact windows, North Lobby, Joyal Administration Building.

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 (2.0 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 of 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 8 ½

Excess Unit/Enrollment Restrictions — Undergraduate. Undergraduate students are cautioned against registering for more than 18 units without consulting with 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 2.5; for 20 to 22 units, a student must have an overall grade point average of 3.0. 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 *C* average 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*.

Excess Units/Enrollment Restrictions — Postbaccalaureate/Graduate. To enroll in 17 or more units, master's degree students must demonstrate a GPA of 3.0 or better; credential students must demonstrate a minimum GPA equivalent to the admission standards of their individual credential program. However, if the credential program requires enrollment in graduate-level (200-series) coursework, the students must demonstrate a 3.0 GPA or better. Second baccalaureate/second undergraduate major/nonobjective students may enroll in 19 units if they possess a GPA of 2.5; 3.0 for 20-22 units. Graduate-level (200-series) courses are unavailable to second baccalaureate/major and nonobjective students.

Change of Major. Each undergraduate student who wishes to change his or her major must report to the public contact windows, North Lobby, Joyal Administration Building to initiate the procedure. International students report to the International Student Services and Programs Office. Graduate and postbaccalaureate students should report to the Graduate Office.

Adding and Dropping Courses. A student is held responsible for the program of courses in which he or she is officially registered. After registration no changes are 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 is not recorded on the permanent record. The end of the fourth week is defined as the end of the 20th instructional day of the semester. Consult the current *Schedule of Courses* for specific add/drop instructions, procedures, and deadlines.

Adding Courses. Once registered, a student may add courses through the end of the second week of instruction.

Dropping Courses. Through the second week of instruction, a student may drop courses without a serious and compelling reason.

After the second 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.

During the final four weeks of instruction, dropping one or more courses is not permitted. A student must completely withdraw unless special approval is given by the registrar in cases such as accident or illness where the cause of the drop is due to circumstances beyond the student's control. If the student has completed a significant portion of the required coursework, incomplete grades are often assigned.

Complete Withdrawal. A student may totally (completely) withdraw from all courses through the last day of instruction. Complete withdrawal is not permitted during the final examination period. If a student withdraws through the first four weeks of instruction, only the date of withdrawal is posted on the permanent record. If the student withdraws after the first four weeks, a *W* is posted for each class as well as the official date of withdrawal. For purposes of subsequent registration and catalog determination, students are considered as having been enrolled for that semester.

A student who withdraws from the university in good academic standing (not disqualified) is eligible to enroll the following semester without reapplying for admission. A student remaining unenrolled at the university for only one semester and not enrolling at another accredited institution during the interim must apply for readmission, may use the short application form available from the Admissions Office, and is not required to pay the application fee. However, a student attending another accredited institution or not enrolled for two or more consecutive semesters must reapply and pay the application fee. Contact the Office of Advising Services or the Evaluations Office regarding possible consequences if you remain away from CSU Fresno more than one calendar year.

Consult the current *Schedule of Courses* for specific withdrawal instructions, procedures and deadlines.

Nonattendance. 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 classes should contact instructors immediately. However, students must not assume that instructors will exercise their option to submit the Administrative Withdrawal Form. In short, it still is the responsibility of students to withdraw properly from any classes they do 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 students on waiting lists to enroll in a class, instructors may drop from their classes students who are absent from any class session during the first week of classes and do not personally notify the instructors by the next class meeting of their 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, architecture, theology, librarianship, chiropractic therapy, osteopathic medicine, and podiatric medicine. Some 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, incorporate into their college programs courses required for entry into professional school.

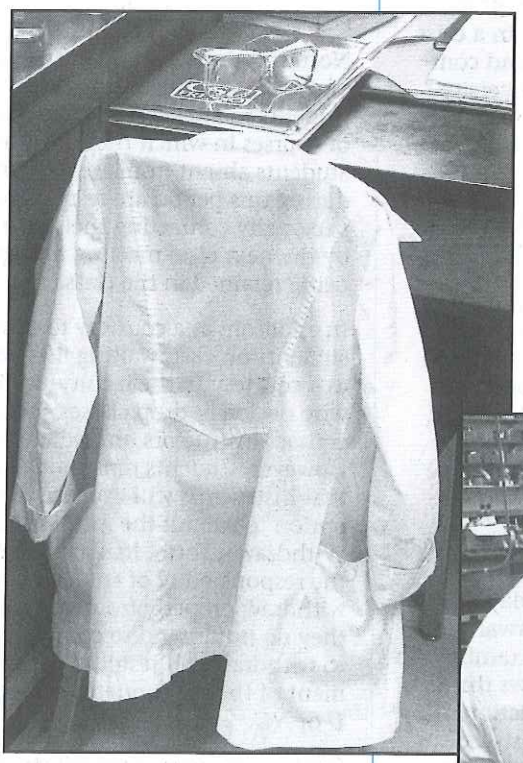
Careful program planning is important in order to select proper classes and complete requirements in a timely way. Regular advising is essential since professional schools change their requirements occasionally. Preprofessional students should contact their respective major and preprofessional advisers before enrolling in classes each semester to stay abreast of current developments.

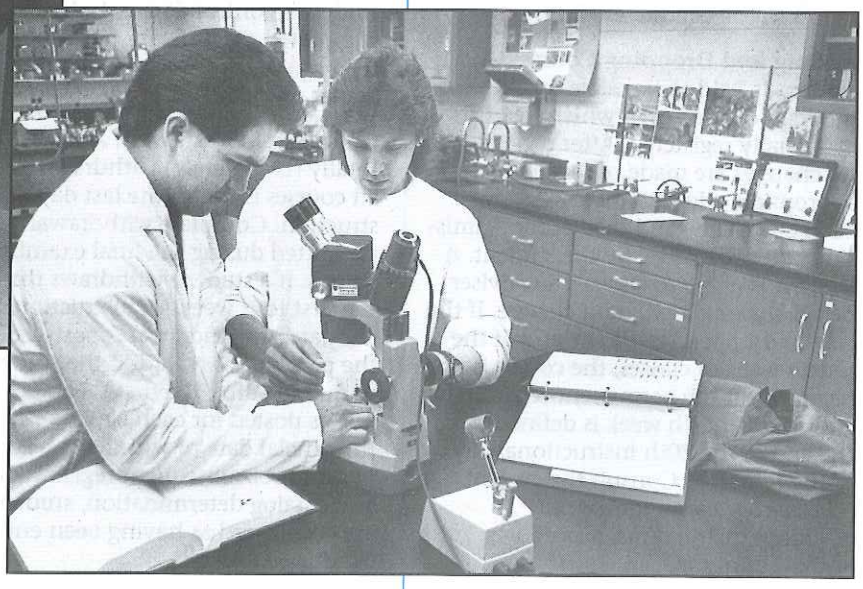
A current list of CSU Fresno preprofessional advisers is available in the Office of Advising Services, Joyal Administration Building, Room 106.

Premedical. Students interested in preparing for medical school should declare their intent at the time they apply for admission to CSU Fresno. To do this, it is necessary that students 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 *Degree Requirements* section in this catalog.

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 point average above 3.5 is highly desirable. The Medical College Aptitude Test (MCAT) is required before students 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.

Freshmen, transfer, and all other students who are entering the program are advised to contact a premedical adviser prior to registration. (See *Advising Services.*) Each student is assigned to a member of the premedical advisory committee who assists him or her in planning a program of courses and advises 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
2555 E. San Ramon
Fresno, CA 93740-0070.

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.*) 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 preprofessional requirements of an optometry program. Most professional schools require junior standing and coursework 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. For further information, see optometry school catalogs and consult the preoptometry adviser in the Department of Physics.

The Optometry Admission Testing Program (OAT) exam is required before application can be made to optometry school. Application should be made one year in advance of anticipated 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 further 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 Animal Sciences 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 Sciences and Agricultural Education for its majors preparing for veterinary school include Animal Science 65A, 125, 135, 165, and 166; Chemistry 1A, 1B, 8, and 109; PhyAn 135; Physics 2A; and Zoology 141. The School of Agricultural Sciences and Technology is equipped to provide valuable experience with large animals through the student project program. Admission to veterinary school in California requires about 4.5 week-equivalents (180 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 sciences department, campus veterinarian and/or the adviser in the Biology Department.

Fees and Expenses

Business Office
Joyal Administration, Room 152
(209) 278-2764
Accounting Officer, Robert P. Vega

The following fees and expenses are scheduled for the 1993-94 academic year. Fees are subject to change without notice because of Trustee or legislative action. Updated fee information is provided each semester in *The Schedule of Courses.*

Schedule of Fees. Legal residents of California are not charged tuition. The following reflects applicable fees and nonresident tuition per semester.

Credit Cards. VISA and MasterCard may be used for payment of Student Fees; however, payment must be made at the Joyal Administration Building, Cashier Windows.

Application fee
Nonrefundable, payable by check or money order at time of applying $55.00

State university fee
0 to 6.0 units 378.00
6.1 and more units 654.00

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 246.00
Foreign visa student tuition fee — same as nonresident.
Programming fee (not a state fee) assessed to corporate and governmental sponsors of international students for required additional services 250.00

Extension, per unit
Lecture or discussion course 80.00

Summer session courses, per unit 106.00

Other fees
Identification card fee 2.00
Graduation application fee (bachelor's or master's) 30.00
Diploma reissue fee 20.00
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 cents sales tax) 6.50

Credential fee *(collected for Commission on Teacher Credentialing)*
Varies. Check with Credential Office, School of Education and Human Development 65.00

Health Service fee (not a state fee) 35.00

Student Body Association fee, all students** (not a state fee), per semester 16.00

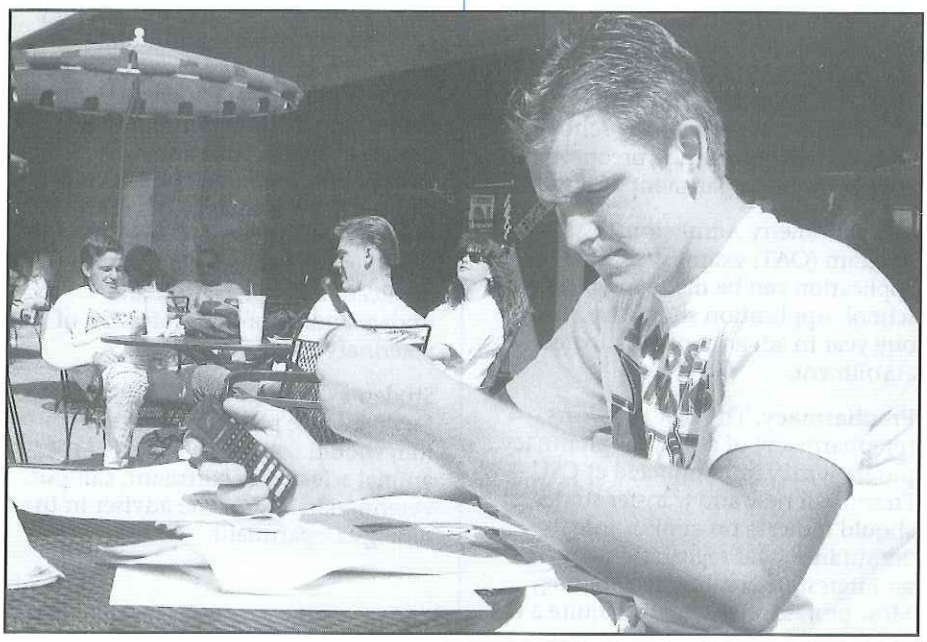
Student Body Center fee, all students (not a state fee), per semester 38.00

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
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 cents up to replacement cost, plus $10.00 service charge**

Residence Hall rates
Room and board, per semester each student ... 1,975-2,030

Parking fees
Decal (subject to change)
Fall and spring, per semester 54.00
Summer session 36.00
Lost or stolen decals*** ..... **Full Cost**



* 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.

** The law governing The CSU provides that a student body fee may be established by student referendum with the approval of two-thirds of those students voting. The Student Body Fee was established at CSUF by student referendum on May 12, 1959. The same fee can be abolished by a similar two-thirds 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.

*** The university is not responsible for lost or stolen decals. Replacements may be purchased at full cost only.

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 Admissions/ Registrar's Office, which determines eligibility.

Refund of Fees

Fees may be refunded only as authorized by Sections 42201 (parking fees), 41913 (nonresident tuition), 42019 (housing charges), and 41802 (all other fees) of Title 5, *California Code of Regulations*. 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 a 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 Accounting Office, Joyal 181, (209) 278-2772.

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 Title 5, *California Code of Regulations*, Section 41802.)

The amount of the refund will be determined by the Business Office by deducting $5 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 $5. 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 the 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, and 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, and no refund 91 days to the end of the 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, *California Code of Regulations,* 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 are approximately $6,548. This figure is exclusive of the nonresident tuition fee but includes 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 **$3,820-6,548**
Registration Fees **$1,516**
Books and Supplies **$612**

Average Annual Cost of Education and Sources of Funds per Full-Time Equivalent Student. The 20 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 1992-93, including capital outlay and employee compensation increases, is $1,741,478,000. The total cost of education for CSU, however, is $2,112,024,000 which provides support for a projected 247,194 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 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 FTE student is $8,544. Of this amount, the average student fee support per FTE is $1,989. The calculation for this latter amount includes the amount paid by nonresident students.

SOURCE OF FUNDS AND AVERAGE COSTS FOR 1992-93 CSU BUDGET
(Projected Enrollment: 247,194 FTEs)

	Amount	(FTE)[a]	Percent
Total Cost of Education	$2,112,024,000[b]	$8,544	100.0
State Appropriation	1,516,908,000[c]	6,137	71.8
Student Fee Support	491,678,000	1,989[d]	23.3
Support from Other Sources	103,438,000	418	4.9

[a] Average Cost Per Student. For budgetary purposes, full-time equivalent (FTE) 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 on the 20 campuses is currently valued at $6.5 billion, excluding the cost of land.

[c] This figure does not include the capital outlay appropriation of $224,570,000.

[d] The average costs paid by a student include the State University Fee, Application Fee, and Nonresident Tuition. Individual students may pay less or more than $1,989 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 Code of Regulations*, 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, reviews the pertinent information, including information the student may wish to present, and advises the student of its conclusions with respect to the debt.

VIP Bike Registration. The Volunteer Identification Program is available free of charge on the CSU Fresno campus. With this service your bike is engraved with your driver's license number or a serial number and is listed on a statewide computer system if stolen. Forms for VIP registration are available at the University Student Union information desk, the residence halls and the Commons #4 Office, and the Campus Security Office.

Financial Aid

Financial aid is any resource available to students to offset the costs associated with attending California State University, Fresno. Aside from student and family resources, there are four basic programs of financial aid: grants, loans, work-study, and scholarships. About 95 percent of these programs are administered by the Financial Aid Office.

The majority are funded by the federal and state governments and are need-based. Eligibility for financial aid from need-based programs is determined through a formula mandated by Congress. Several programs administered by the Financial Aid Office are not need-based. There are also additional administrative units on campus that offer financial aid.

Need-Based Financial Aid Programs

For the following need-based aid programs, you are required to submit the Free Application for Federal Student Aid (FAFSA). This application is available in high school and college financial aid offices in December and should be filed in January or February for the next academic year.

The official priority filing date is March 1 for the next academic year.

Federal Perkins Loan (formerly National Direct Student Loan)
Federal Supplemental Educational Opportunity Grant
Federal Work-Study
Nursing Student Loan
Bureau of Indian Affairs Grant
**California Graduate Equity Fellowship Program for Underrepresented Students
California State Educational Opportunity Grant (EOP)
California State University Grant
*Federal Pell Grant
Cal Grants A and B
State Graduate Fellowship
*Federal Stafford Student Loan

Workshops on completing the FAFSA are offered by the financial aid staff in January and February. For details, contact the Financial Aid Office.

Details about these programs are listed on pages 84-86 under the heading **Program Specifications.**

Financial Aid Office
Joyal Administration, Room 296
(209) 278-2182
Director, Joseph W. Heuston

Non-Need-Based Financial Aid Programs

The Financial Aid Office also administers non-need-based aid programs. These programs are available to students and families regardless of income and assets. Applications for these programs are available in Rooms 219 and 296, Joyal Administration Building. The non-need-based programs include:

1. California State University, Fresno Institutional Scholarships
   - All students must file a scholarship application between **November 1 through February 1** for the next academic year.
2. Federal Parent Loans for Undergraduate Students (PLUS)/Federal Supplemental Loan for Students (SLS)/Federal Unsubsidized Stafford Loan
   - No set deadline. However, applicants who submit their application after **May 30** cannot be assured of receiving funds before the beginning of the fall semester.

Additional information about these programs can be found on page 86.

* Even though the March 1 deadline does not apply to the Pell or Stafford Student Loan Programs, you should be aware that Pell and Stafford applications submitted after May 30 cannot be assured of receiving funds at the beginning of the fall semester.

** Graduate Equity Fellowship application deadlines may vary.

Additional Financial Aid Sources

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 Admissions/Registrar's Office, which determines eligibility.

Air Force Reserve Officer Training Corps Scholarships. Scholarships are available to cover the costs of fees and tuition, books, lab fees, and a monthly stipend of $100. All juniors and seniors in the AFROTC program who have at least a 2.5 GPA and will graduate before turning age 25 qualify for a $1,000 scholarship each semester. Applications should be submitted to the Department of Aerospace Studies. For additional information, see *Aerospace Studies*.

Army Reserve Officers Training Corps. The U.S. Army offers scholarships, which cover tuition, fees, books, and a monthly stipend of $100. All students formally enrolled in the ROTC Program receive at least $1,000 a year and can earn as much as $10,000 during their college careers. For additional information, see *Military Science*.

Graduate Assistantships. A number of graduate assistantships and teaching assistantships are available to students who are enrolled in a master's degree program. For additional information, see the *Division of Graduate Studies*.

Division of Graduate Studies Student Research Awards and Travel Grants. For additional information, see the *Division of Graduate Studies*.

Resident Advisers. The university employs 25 students to work as Resident Advisers (RAs) in its residence halls. The role of an RA is to act as an effective role model, develop a cohesive community of students, organize and conduct programs, and serve as a resource person to the students. Compensation for the RA position for the academic year is a single room and full meal plan. Applications are available from the University Housing Office at the beginning of the spring semester.

University Association and Foundation Loan Funds. The university operates an Emergency Loan Fund to assist students who need up to $400 for educationally related emergency expenses. These loans have to be repaid within 90 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 limited funds available for loans up to $500. 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 *Student Aid Accounting, Joyal Administration Building, Room 275*.

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. Also, with verification by the dean of the School of Education and Human Development, 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)*.

"The trick to college is to get the most out of it as you can. You will take from this university the things you put in it. Test your limits, explore potentials. The only limits you have are those you put on yourself."

Martina Acevedo
1992 President's Medalist

Program Specifications

Need-based financial aid programs. Students in receipt of funding through the following federal and state programs must be making satisfactory progress as defined by statute. Failure to comply with these regulations may jeopardize receipt of student aid funds.

Federal Perkins Loan (formerly National Direct Student Loan). Authorized by the Higher Education Act, this program provides a limited amount of low-interest loans to students who demonstrate an exceptional financial need. Currently students may borrow $15,000 during the course of their undergraduate degree. Graduate students may borrow up to $30,000 (including any amount borrowed as an undergraduate). New borrowers begin repayment nine months after they graduate, leave school, or cease attending at least half-time. (Students who received funding under the National Direct Student Loan Program have a six-month grace period.) A repayment period of up to 10 years has been established by the federal government. The Higher Education Act also authorized certain conditions under which part or all of the loan may be canceled. Details are available in the federal government publication, *The Student Guide*, which is available in the Financial Aid Office.

Federal Supplemental Educational Opportunity Grant (FSEOG). FSEOG is a grant program and, thus, does not require repayment. Awards are restricted to those undergraduates who demonstrate the greatest need according to the formula mandated by the federal government. Funding for the program is limited to the allocation received from the federal government. Priority is given to students who demonstrate eligibility for Federal Pell.

Federal Work-Study (FWS). FWS is a federally funded, campus-based employment program. The same eligibility requirements that govern the Federal Perkins Loan and the FSEOG apply to Federal Work-Study. Both undergraduate and graduate students are eligible to participate. At CSU Fresno, students receiving FWS awards are placed in jobs on campus and with selected off-campus agencies. FWS recipients may work up to 20 hours per week on a job.

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 for the first two years; $4,000 for the final two academic years, up to a $13,000 maximum. No interest is charged while the borrower pursues at least a half-time course of study, or for a period of nine months after leaving school. Interest then starts at 5 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.

Bureau of Indian Affairs (BIA) 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 BIA 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 Aid Office, then see the BIA adviser in the Financial Aid Office to complete the BIA application. Deadlines may vary, but in most cases, BIA applications need to be in the agency office prior to June 1.

California Graduate Equity Fellowship Program for Underrepresented Students. For additional information, see the *Division of Graduate Studies*.

California State Educational Opportunity Grant Program (State EOP). Educational Opportunity Program Grants are provided by the state of California for students admitted to any one of the 20 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 EOP does not automatically mean that the student is awarded a State EOP 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 range from $200 to $1,000 for the academic year.

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

Federal Pell Grant. The Federal Pell Grant Program is a program of student financial aid authorized by **Title IV, Part A, of the Education Amendments of 1972.** This program provides grants for all eligible undergraduate students to assist them in meeting educational costs. Program regulations change from year to year.

Cal Grants A and B. The California Student Aid Commission offers Cal Grants A and B to undergraduate students on the basis of demonstrated need and specific program requirements. To apply, complete the FAFSA, checking the appropriate box. The deadline for new applicants is March 1 for the next academic year. Renewal applicants may continue to apply after March 1. Recipients who complete a baccalaureate degree and who are accepted and enrolled in a teaching credential program at an institution approved by the California Commission on Teacher Credentialing will be eligible to apply for renewal of their Cal Grant award for an additional year of grant eligibility, provided financial need continues to exist. All students who are planning to enroll in an approved credential program and wish to continue receiving Cal Grant benefits will be required to submit a supplemental request. Forms are available in the Financial Aid Office.

Paul Douglas Teacher Scholarship. The Paul Douglas Teacher Scholarship is a federally funded program providing college scholarships to outstanding high school graduates and college students who demonstrate commitment to pursuing teaching careers at the preschool, elementary, or secondary levels. Participants must agree to teach two full-time years for each year of scholarship coverage. Failure to do so will require repayment of the scholarship, plus interest, and collection fees. Applications for the next academic year will be available after January 1 for college students and after March 1 for high school students.

Law Enforcement Personnel Dependents Scholarship. The Law Enforcement Personnel Dependents Scholarship will pay for books and supplies and living expenses up to $1,500 per year for needy dependent children of law enforcement officers who have been killed or totally disabled in the line of duty. Applicants should write to the California Student Aid Commission for a special application.

State Graduate Fellowship. The Student Aid Commission also administers the State Graduate Fellowship Program for tuition assistance for masters and doctoral students. To apply, complete the FAFSA, checking the appropriate box. The deadline for new applicants is March 1. You must also complete and mail the Student Aid Commission GPA Verification Form to the Commission by March 1 if you are a new fellowship applicant. Renewal applicants may continue to apply after March 1. Forms are available in the Financial Aid Office.

Federal Stafford Student Loan. The Federal Stafford Program enables students with financial need to secure loans for the payment of educational expenses. Available to undergraduates and graduates, the Federal Stafford Loan is a federally subsidized (and insured) program, offered in conjunction with the California Student Aid Commission, through banks and lending institutions (banks, credit unions, savings and loan associations, etc.). Undergraduates who qualify may borrow up to $2,625 per year as freshmen, $3,500 for second-year students, $5,500 per year as juniors, seniors, or credential students, up to a $23,000 maximum. Graduate students who qualify may borrow up to $7,500 per year ($8,500 effective October 1, 1993) to a $65,500 maximum (includes indebtedness incurred as an undergraduate). Simple interest, at the rate of 7 to 9 percent per annum, is charged on loans for students who have previous outstanding loans at 7 to 9 percent per annum, and all new borrowers are charged a variable rate, capped at 9 percent. Repayment begins six to nine months after students graduate, leave school, or cease attending at least half-time. (Since interest rates, repayment periods, etc. change frequently, students are advised to

contact the Financial Aid Office for more precise information and an application.) The federal government pays the interest until the student borrower enters the loan repayment period.

Non-Need-Based Financial Aid Programs. The following non-need-based programs are administered by the CSU Fresno Financial Aid Office.

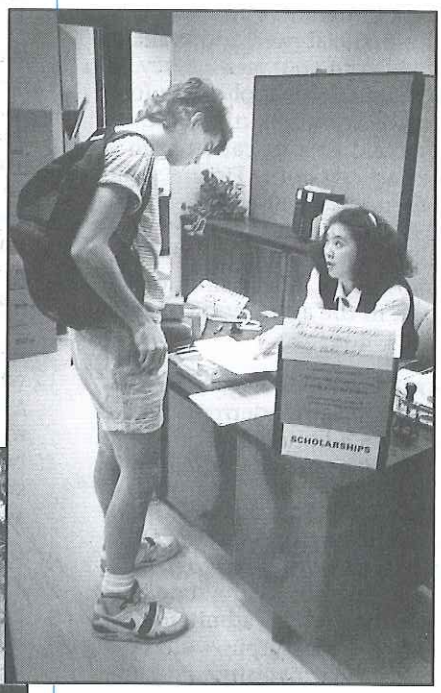
California State University, Fresno Institutional Scholarships. Each year about 900 students are awarded Institutional Scholarships totaling more than $800,000. The majority of the scholarships, ranging from $100 to $2,000, are awarded on the basis of merit to both undergraduate and graduate students. 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. Applications must be submitted by February 1 for the next academic year. The CSUF Scholarship Application is available in the Joyal Administration Building, Rooms 219 and 296.

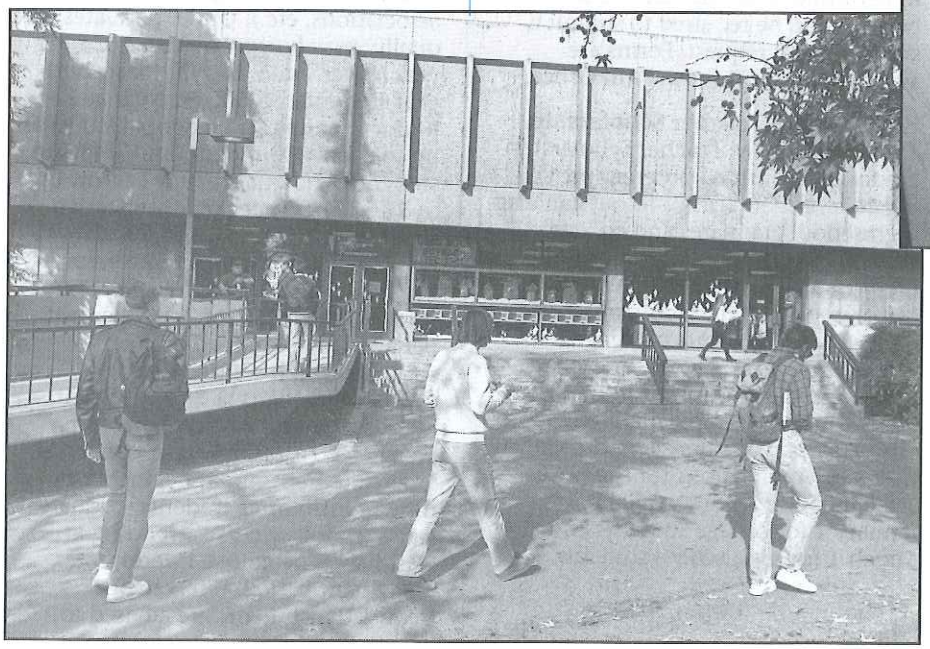
Federal Parent Loans for Undergraduate Students (PLUS)/Federal Supplemental Loan for Students (SLS). The PLUS/SLS Program was initiated to provide assistance to parents or students who do not demonstrate financial need as determined by the government formula. Parents may borrow up to the cost of attendance minus other aid (PLUS) for each dependent child enrolled at least half-time. The SLS loan limits are $4,000 for students who have not yet completed two years of education, $5,000 for all other undergraduates, and $10,000 for graduate students. Applications and information are available at the Financial Aid Office.

Federal Unsubsidized Stafford Loan. The program is open to students who may not meet need-based requirements of the Federal Stafford Loan or who may qualify for only a partial Federal Stafford Loan. Terms and conditions are similar to the subsidized Stafford, except that the borrower is responsible for interest which accrues during the in-school period.

CSU Forgivable Loan/Doctoral Incentive Program for Minorities and Women. The objective of this program is to increase the number of minority and women faculty members within the CSU system's 20 campuses in academic fields where underrepresentation exists. High priority is given to areas severely underrepresented by minorities and women, such as the physical and life sciences, mathematics, computer science, and engineering. This program provides financial support of $10,000 per year for up to three consecutive years of doctoral studies. The loan will be forgiven at the rate of 20 percent per year for each postdoctoral year of full-time teaching in the CSU (totally forgiven with five years of full-time teaching). Information and applications are available in the Department of Human Resources/ Office of Affirmative Action, Upstairs Cafeteria, Room 201.

California Predoctoral Program for Undergraduate and Graduate Students. For additional information, see the *Division of Graduate Studies*.





Institutional and Financial Assistance

The following information concerning student financial assistance may be obtained from Joseph W. Heuston, director of financial aid, Joyal Administration Building, Room 296, (209) 278-2182:

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 Joseph W. Heuston, director of financial aid, Joyal Administration Building, Room 296, (209) 278-2182:

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.

The following information concerning the refund policy of CSU Fresno is available from Robert P. Vega, accounting officer, Joyal Administration Building, Room 152, (209) 278-2764:

1. the refund policy for the return of unearned tuition and fees or other refundable portions of costs and
2. policies regarding any refund due to the federal Title IV student assistance programs as required by the regulations.

Information concerning the academic programs of CSU Fresno may be obtained from J. Leonard Salazar, associate vice president for academic affairs/dean of undergraduate studies, Thomas Administration Building, Room 114, (209) 278-4775 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 has 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 student services, Main Cafeteria West 125, (209) 278-2811.

Academic Regulations

"The frog does
not drink up
the pond
in which
he lives."

Native American Proverb

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 Physical Therapy, Master of Public Administration, Master of Public Health, and Master of Social Work degrees. See *School of Education and Human Development* 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 that are required in support of the major. Such courses are not included in the minimum 2.0 grade point average required in the major for graduation 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. 1) One of the three main parts of the current General Education Program. 2) 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 6 units in specific upper-division, interdisciplinary courses or by completing a minimum of 6 units in a single cluster of interrelated upper-division courses from two different departments. Some clusters also have additional restrictions. (See *General Education CAPSTONE.*)

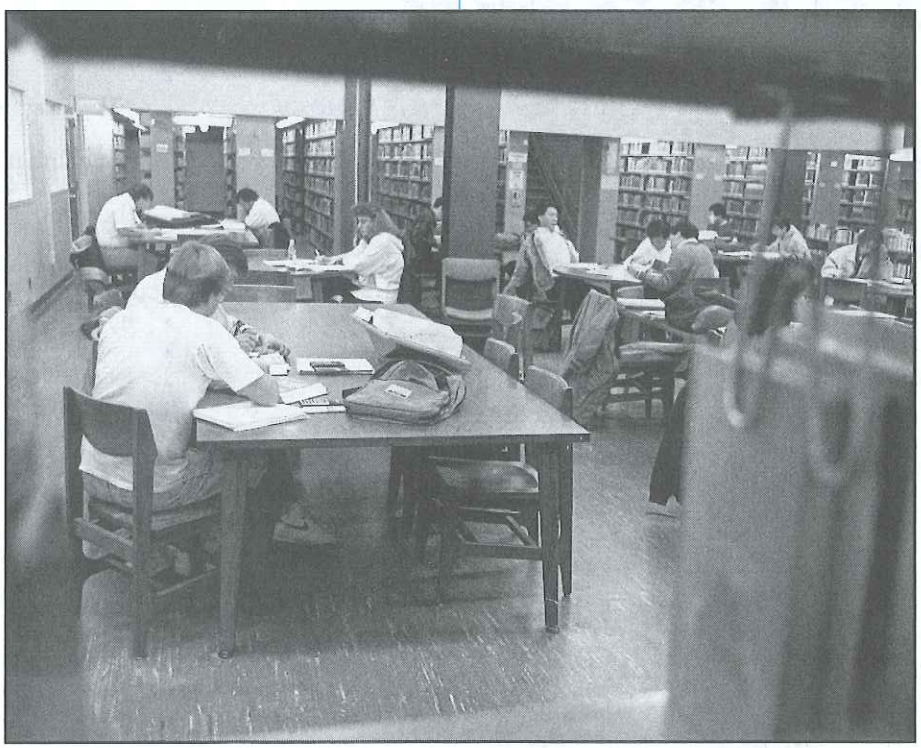
Concurrent Enrollment. The term *concurrent enrollment* is used to describe several different types of enrollment:

1. **Open University Enrollment.** Nonmatriculated students may enroll in regular CSU Fresno classes through the Division of Extended Education. (See *Extended Education.*)
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 a Non-CSU College or University.** While enrolled at CSU Fresno, students may enroll for additional courses at another institution outside the CSU system with the written approval of the student's academic adviser. Such approval must be granted prior to the beginning of classes at the other institution. The courseload in the combined enrollment program may not exceed the maximum unit load restrictions for CSU Fresno. The completed form must be filed by the end of Late Registration at the public contact windows, North Lobby, Joyal Administration Building.

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:

1. A CORE class also may be applied to a student's major requirement unless the department specifically prohibits it.
2. A maximum of two courses from one department or program also 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.



Electives. Courses/units a student selects to complete the total unit requirement for the baccalaureate degree.

Grade Point Average (GPA). The grade point average is a measure of academic scholarship and performance which is computed by dividing units registered into grade points earned. Three separate GPAs are computed on the student's grade report each semester:

1. Cumulative GPA for all baccalaureate or postbaccalaureate units, as appropriate
2. Cumulative GPA for total CSU Fresno units
3. GPA for that semester only

A minimum of a *C* average (2.0 GPA) for units in the major, all CSU Fresno units, and total units is required for a baccalaureate degree. (See *Grade Symbols and Grade Points, Degree Requirements.*) Master's degree students have a higher minimum GPA requirement. (See *Graduate Studies — Advancement to Candidacy, Grade Requirements.*)

Major. Set of required 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. Set of required 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. Set of required courses within a major in addition to the major core courses that emphasizes one important aspect of that school, department, or program.

Prerequisite Requirements. 1) Course or courses that must be completed before a higher level course may be taken, sometimes allowed by the instructor to be taken concurrently. 2) 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. One quarter unit of credit is equivalent to two-thirds of a semester unit.

Units registered and units allowed are terms that appear on the student's grade report, transcript, and evaluation. Units registered is the column used for GPA calculation. The units allowed column is used to determine units completed toward the total unit requirement for the degree.

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, one of the following:

1. The catalog in effect at the time a student begins attending a California public community college or California State University campus.
2. The catalog in effect at the time a student begins attending CSU Fresno.
3. The catalog in effect at the time the student graduates from CSU Fresno.

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. Once a student establishes catalog rights in the CSU or California Community College system, he or she may attend any accredited college or university for no more than two years and maintain catalog rights. A planned educational leave maintains a student's continuous attendance status. (See *Planned Educational Leave of Absence.*)

Any break in attendance of one calendar year or longer breaks a student's continuous attendance status which results in the loss of catalog rights to all catalog choices prior to the break in attendance. It should be noted that enrollment in Summer Session, Open University, and extension and correspondence courses does not establish catalog rights nor contribute toward continuous attendance to maintain catalog rights. A loss of catalog rights could result in one or more additional semesters to meet new catalog requirements especially in the major and/or General Education. Once a student graduates, however, all rights to the original catalog are terminated.

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 *Graduate Studies.*)

Transcript Evaluation

Undergraduate transfer students are generally evaluated under the degree requirements listed in the *General Catalog* at the time they enter CSU Fresno unless eligible for the 1980-81 or earlier catalog. Transfer students with a declared major entering with 40 or more semester units should

* A student may not begin "continuous attendance" while still enrolled in high school.

receive an advanced standing evaluation during their first semester assuming all transcripts are on file.

Upon completion of approximately 90 semester units, students *should request* a senior evaluation from the Evaluations Office. This evaluation shows all requirements completed and any remaining baccalaureate degree requirements. Only one senior evaluation is made for each student. A degree evaluation is completed during the semester a student files for graduation. (See *Graduation and Commencement.*)

Students should keep their personal copy current. All transcripts submitted in support of an application for admission become the property of the Records Office and are not returnable. 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 200-level courses. **(0 grade points per unit; units allowed for the degree.)**

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 grade 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. Grade must be cleared before a degree is awarded. **(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.

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 is not listed on the student's permanent record if the requirements for auditing the class are not met. 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 the 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

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[1] Master's degree candidates are reminded that a *B* (3.0) 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* (2.0) average is required for all college coursework completed, all courses taken at CSU Fresno, and all courses in the major in order to graduate with a baccalaureate degree. Some majors 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 the new grade may be substituted for the *U* by petition, except for master's degree students. (See *Repeating Courses.*)

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* is 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 is 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 enroll in 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 coursework 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 coursework taken *CR/NC only*, may be applied toward the degree.
3. **Graduate Students.** Credit for coursework 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 Committee. 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 coursework 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. In order to be eligible for an *I* grade, the student must have completed at least two-thirds of the required coursework with a passing grade. 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 last day of the semester/session during which it was assigned. This limitation prevails whether or not the student maintains continuous enrollment.

Failure to complete the assigned work will result in the *I* being counted as a failing grade for grade point average computation. An *I* grade not made up within one calendar year after the grade has been recorded is changed 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 granted with justification by contacting the Office of the Registrar prior to the last day of the second semester/session.

Satisfactory Progress (*SP*). The *SP* symbol is used in connection with courses that extend beyond one academic term. It indicates that work in progress has been evaluated as satisfactory to date but that assignment of a final grade must await completion of additional work. The *SP* may be used only in courses designated on the approved *SP* grade course list published by the Office of the Provost and Vice President for Academic Affairs. Cumulative enrollment in units attempted may not exceed the total number applicable to the student's educational objective. As with an *I*, the student receiving an *SP* will have one year from the date of first enrollment to complete the work and to be awarded a final grade. Any extension of time limit for an undergraduate student's *SP* must receive prior authorization by the Office of the Registrar.

While completing work on an *SP*, graduate students are required to maintain continuous enrollment at CSUF. This may be accomplished through enrollment in "0" unit GS Continuation. Exception: Graduate students enrolled in Project 298 or Thesis 299 receive an *SP* at the end of the first semester of enrollment and are advised to complete work on the culminating experience during four additional semesters, subject to the five-year overall time limit for completion of all master's degree requirements. In addition, if an *SP* in 298/299 is not replaced by a final grade within two years as recommended, the student's major department may require him or her to reregister for the course. (See *Graduate Studies*.)

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 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.

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. Undergraduate students and postbaccalaureate students who are not enrolled in a master's degree program may repeat an undergraduate course at CSUF in which a grade of ***D***, ***F***, ***U***, or ***I*** was received. More specifically, only postbaccalaureate students pursuing: **a)** a second baccalaureate degree, **b)** a second undergraduate major, **c)** a teaching credential, or **d)** who have no specific objective, are eligible to repeat courses for grade substitution.

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 grade substitution may be made only once for each course. Graduate-level (200-series) courses may not be repeated for the purpose of grade substitution.

The petition is approved if the student receives the same or higher grade than received for the previous attempt. If the petition is approved, units attempted, units passed (if any), and grade points from the previous attempt are deleted and are not used to compute grade point averages or graduation eligibility.

The petition is not approved if the student receives a grade lower than the previous grade (***U*** or ***F***). In such cases, no deletions are made and both grades are used in calculating the grade point average. In all cases, all work remains legible on the record to ensure a true and complete academic history.

A course completed at another institution may be repeated by enrolling in a regular CSUF course determined by the Evaluations Office to be essentially equivalent. A course which has been repeated successfully at another institution may not be repeated again for grade substitution at CSUF. In the case of a course 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 CSUF policy will be followed.

If a student repeats a course in which the original grade earned was a ***C*** or ***CR*** or higher, the repetition is recorded on the student's transcript but will not be substituted for the original grade. Further, the units and grade points are included in the student's total units/grade points until deleted from these totals when an official evaluation is processed.

For further information, see the *Schedule of Courses* or the Grade Substitution form which is available at the public contact windows, North Lobby, Joyal Administration Building.

Academic Renewal. Under certain circumstances, the university may disregard up to two semesters (three quarters) of previous undergraduate coursework 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 is 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 the poor level of work represented by the term(s) under consideration is not representative (see No. 3) of the student's usual academic performance and was due to extenuating circumstances.
3. The student must have completed the following in residence at CSU Fresno since the most recent work to be disregarded was completed:
   a. 15 semester units with at least a 3.0 GPA or
   b. 30 semester units with at least a 2.5 GPA or
   c. 45 semester units with a 2.0 GPA

   Work completed at another institution cannot be used to satisfy this request.
4. 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, i.e., that the student would have less than a 2.0 grade point average in one or more of the following:
   a. Cumulative collegiate coursework
   b. All CSU Fresno coursework
   c. Coursework required for the major
5. This policy may not be used in concert with any other academic forgiveness policy impacting particular academic term(s).

For further information or to apply for academic renewal, contact the Admissions Office, **(209) 278-2191.**

Planned Educational Leave of Absence — Undergraduate Degree-Seeking Students. 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 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 and later resume studies with a minimum of procedural difficulty. A student who is approved for a planned leave will be considered a continuing CSU Fresno student. A student with an undergraduate degree objective may, therefore, enroll for classes at the end of an approved leave without reapplying for admission and may continue at CSU Fresno without changing graduation requirements.

Since an approved leave does not affect time requirements for completion of a credential or master's degree, a planned leave — normally — does not apply to students seeking such objectives.

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 appropriate admissions official, contributes to his or her educational goals and objectives.
2. The request must be for a specific period of time which shall not exceed four consecutive semesters.
3. The student must plan to return to CSU Fresno at the conclusion of his or her leave.

The following regulations apply to the planned educational leave:

1. A student currently 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 student. Planned educational leaves are granted for up to four consecutive semesters.
3. International students must be recommended by the director of international student services and programs; educational opportunity program students by an EOP 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. Leaves are not approved for students in disqualified status or on contract to remove academic deficiencies.
6. It is expected that a student will devote his or her leave primarily to nonclassroom activities. A leave is not approved if the student plans to attend another institution, unless the coursework the student seeks is not available at CSU Fresno. Any academic credit earned while on a planned educational leave is accredited by CSU Fresno only if permission is granted for that credit in advance by the admissions officer.
7. 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 admissions officer 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 request form from the admissions officer, Joyal 106, (209) 278-2191.

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 Services. The Petitions Committee does *not* make decisions pertaining to substitutions for undergraduate and graduate major requirements. Such requests are 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. If a request cannot be accommodated, it is forwarded to the Graduate Committee.

The Student Academic Petitions Committee also has the responsibility of handling grade protests for all students, undergraduate and postbaccalaureate. Students who believe they have been graded prejudicially, or capriciously by an instructor, should consult first with the faculty member concerned within the first 15 working days of the following semester and make every effort to resolve the issue. (On many occasions when students contact the instructor about a grade thought to be assigned unfairly, the students learn that the instructor actually made a recording error, which is remedied when the instructor obtains a Grade Correction Request form from the departmental secretary and submits the completed form to the Petitions Committee.)

If the issue is not resolved, students should then consult with the department chair. If a 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 no later than midsemester a written statement setting forth all pertinent details to the director of advising services, 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. An associate dean of student affairs is available for clarification of grade protest procedures.

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 postbaccalaureate students without a master's degree objective. Graduate (master's degree) students must maintain at least a *B* average.

A student (undergraduate, postbaccalaureate or graduate) whose grade point average falls below the satisfactory scholarship level is placed on probation and is 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. Undergraduate students are placed on academic probation, a type of academic warning, if their:

1. Grade point average (GPA) based on total units attempted at all colleges is below a 2.0 (*C* average) or
2. GPA based on all units attempted at CSU Fresno is below a 2.0 average.

Students remain on academic probation until both overall and CSU Fresno grade point averages are 2.0 or better,

or until they are disqualified under one of the provisions of the disqualification regulations.

For example, first semester freshmen would be placed on probation if they carried 12 units (four 3-unit classes) and earned 1 ***B***, 2 ***C***s, and 1 ***F***. Students 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 postbaccalaureate students except those enrolled in master's programs. The latter are expected to maintain a cumulative GPA of at least 3.0 in all units attempted subsequent to admission to the master's program. Master's students who fall below the required GPA are 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. Students are disqualified if they are on probation and fail to meet the assigned scholarship contract or if they have a cumulative deficiency on either the overall or CSU Fresno record equal to or greater than that indicated below.

- Freshmen, sophomores (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
- Postbaccalaureate students: 6 grade point deficiency on postbaccalaureate units

For example, new transfer juniors are academically disqualified if they carried 12 units (four 3-unit classes) and earned 2 ***C***s, 1 ***D***, and 1 ***F***. Upon readmission or continuation, students 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. Disqualified students also are advised to take light unit loads in attempting to bring up their GPA.

Graduate (master's) students are disqualified if their grade point average on either the overall or the CSU Fresno postbaccalaureate record is equal to or greater than six grade points below a ***B*** (3.0) GPA.

Students placed on administrative-academic probation may be disqualified for the following reasons:

1. If they fail to meet the conditions for removal of probation,
2. Become subject to academic probation while on administrative-academic probation, or
3. Again become subject to administrative-academic probation for the same or similar reasons.

Readmission of Disqualified Students — Undergraduate and Graduate

Students placed on academic disqualification at the end of a semester are prohibited from readmission the subsequent semester. An information letter is mailed to these students at the same time each semester's grades are available.

Since all disqualified students are prohibited from participation in Student Assisted Registration (STAR), those who STAR register for any term will be disenrolled if they are disqualified at the end of the previous term.

Undergraduate. Disqualified CSU Fresno students who have been away one semester or longer must submit an application for readmission in addition to the appropriate petition approved by an academic adviser. Students readmitted under a special disqualification "probation" contract must fulfill the terms of that contract or again face disqualification. Contact (209) 278-2191 for more information.

Postbaccalaureate/Graduate. Disqualified postbaccalaureate students who seek readmission must submit an application for readmission and schedule an advisement interview in the Division of Graduate Studies, Thomas Administration Building, Room 132. Additionally, students who seek a master's, second baccalaureate, or credential are asked to obtain the recommendation of the department/program to which they seek readmission. Students who are undeclared must have the approval of the dean of graduate studies to be readmitted to the university.

Transcripts and Reports

Transcript of Record. Students may request transcripts of their academic records at CSU Fresno with payment in advance. The fee is $4 for the first copy and $2 for each additional copy (2-10) ordered at the same time. CSU Fresno Extension transcripts must be requested separately. Because of the large number of transcripts requested at the end of each semester and summer session, three weeks should be allowed for requests to be filled during those periods. Transcripts are not provided to students with admission holds, unpaid financial obligations, or other administrative holds as determined by university officials. Transcripts of records from other institutions submitted to CSU Fresno are not returned to students.

Reports to Students. An enrollment report will be mailed to students after telephone registration ends and the third week of each fall and spring semester. Students may call and get grades via the telephone at the end of each regular semester. For a nominal fee, students may request a copy of their grades at the public contact windows, North Lobby, Joyal Administration Building.

Academic Placement

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.

Postbaccalaureate/Graduates — Students who have at least one 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 Board. Students who present scores of three or better are granted from three to six semester units of college credit for each examination. In order to receive credit for these examinations from CSU Fresno, students must present an official copy of their test results from the College Board.

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 (EPT). The CSU English Placement Test must be completed by all new non-exempt undergraduates prior to placement in appropriate university English coursework. *Undergraduates admitted with 56 or more transferable semester units and who are subject to a catalog earlier than 1986-87 are not required to complete the EPT.* A passing score on the EPT is defined as earning a minimum total score of 151 or a minimum essay score of 8. Exemptions from the test are given only to those students 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 score on the CSU English Equivalency Examination that qualifies a student for exemption from the EPT
- a score of 470 or above on the verbal section of the College Board Scholastic Aptitude Test (SAT-Verbal)
- a score of 22 or above on the ACT English Usage Test (taken prior to October 1989)
- a score of 25 or above on the enhanced ACT English Test (taken October 1989 or later)
- a score of 600 or above on the College Board Achievement Test in English Composition with essay, or
- for transfer students, completion and transfer to the CSU 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 (ELM) Exam. The ELM examination tests students for entry-level mathematics skills acquired through three years of rigorous college preparatory mathematics coursework (normally Algebra I, Algebra II, and Geometry).

Unless exempt according to CSU policy, all students enrolling at CSU Fresno must take the ELM by the end of their first semester of attendance. Students who have not done so may become ineligible to enroll for a second semester.

Students may qualify to take the General Education required quantitative reasoning course by taking and passing the ELM examination, and in the event of not passing it, demonstrating competence in intermediate algebra by passing campus-approved mathematics courses *(Math 4R on our campus or another college-taught intermediate algebra course) with a grade of C or better* or by retaking and passing the ELM examination.

Students entering CSU Fresno in the Fall 1992 semester or thereafter must complete the General Education quantitative reasoning requirement by the end of their fourth semester of enrollment or the completion of 60 units, whichever comes later. Students who are making serious and consistent effort

ADVANCED PLACEMENT TESTS

The most commonly passed Advanced Placement Tests and equivalent courses are as follows:

Test	Score	Units	Subjects
American History	3,4,5	6	Hist 11, 12
Computer Science AB	3,4,5	6	C Sci 40*
English Lit/Comp	3,4,5	6**	Engl 1, 20
English Lang/Comp	3,4,5	6**	Engl 1, 2
Math Calc AB	3,4,5	6	Math 71, 72
Math Calc BC	3,4,5	6	Math 75, 76
Psychology	3,4,5	3	Psych 10

*Remaining 2 units in lower-division Computer Science electives.

** If English Lit/Comp and English Lang/Comp are passed, then a maximum of 9 units is allowed for Engl 1, 2, and 20.

Official scores may be obtained from:

Advanced Placement Examination
P.O. Box 6671
Princeton, NJ 08541-6671

For more information, contact the Evaluations Office, Joyal Administration Building, Room 115.

to comply may be given extensions. Students who do not meet this requirement or receive extensions will be ineligible to enroll after the completion of 60 units.

Students enrolled at CSU Fresno prior to the Fall 1993 semester and who are not exempt must take the ELM by the end of the Spring 1994 semester or their next semester of enrollment. Failure to do so will render them ineligible for subsequent enrollment until the examination is taken.

Specific policies regarding retesting and placement will be determined by the campus. 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 560 or above on the mathematics section of the Scholastic Aptitude Test (SAT-Math)
- a score of 24 or above on the ACT Mathematics Test (taken prior to October 1989)
- a score of 25 or above on the enhanced ACT Mathematics Test (taken October 1989 and later)
- a score of 560 or above on the College Board Mathematics Achievement Test, Level 1 or Level 2, or
- for transfer students, completion and transfer to the CSU of a college course that satisfies the General Education requirement or the Intersegmental General Education Transfer Curriculum requirement in quantitative reasoning, provided such course was completed with a grade of *C* or better.

EPT and ELM. Failure to take either of these tests, as required, may lead to administrative probation, which, according to Section 41300.1 of Title 5, *California Code of Regulations*, and CSU Executive Order 393, may lead to disqualification from future attendance.

It is the students' responsibility to confirm exemption from either the EPT or ELM exam by completing the appropriate Request for Exemption Form available at the public contact windows, North Lobby, Joyal Administration Building. Students who need assistance in preparing for the ELM exam should consider enrolling in one or more of the following classes: Math AR or Math ILR, Psych 180T (overcoming academic anxiety). In addition, students may contact the Developmental Learning Resource Center in the Keats Building for information regarding ELM workshops.

Information bulletins and registration materials for the EPT and ELM will be mailed to all students subject to the requirements. The materials may also be obtained from the Office of Admissions/Records or the Testing Office.

Credit by Examination. CSU Fresno grants credit to those undergraduate students who pass examinations that have been approved for credit systemwide. These include the Advanced Placement Examinations, CSU English Equivalency Examination, and some CLEP examinations.

Students may challenge CSUF 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 regularly enrolled students to seek college credit in courses in which they have competence but for which credit has not been earned by the usual academic processes. This permits students to accelerate their progress and provides an opportunity for wider selection of coursework. The following procedures should be followed:

1. With the concurrence of the department, students may apply for credit by examination in any course in the current *CSU Fresno General Catalog* for which they appear to be reasonably qualified by training or experience and for which college credit has not been previously allowed. Credit by examination is not awarded if credit has been granted for previous coursework more advanced than the level represented by the examination in question. Credit by examination is not allowed in courses in which students have been permitted to register as auditors during the same semester, in which students have received a failing or no credit grade, or in which they have unsuccessfully sought credit by examination.
2. Students enroll for credit by examination at any time during the first two weeks of classes. Students must be regularly enrolled in other courses before they are 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 must be completed by students and approved by the respective departments.
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 students request credit by examination is so designated on their record. If passed, students receive a credit (*CR*) grade. If they are unsuccessful, no grade is reported. Units earned count toward all appropriate requirements but are not used in computing their GPA.
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* on page 97.

Graduate Students. Credit by examination for coursework 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 students experience in planning and outlining a course of study on their 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, students should have an overall grade point average of 3.0 or higher. This requirement may be waived in exceptional cases, when approved by the department chair. Maximum credit of 6 units in independent study courses is allowed toward the bachelor's degree, and maximum credit of 6 units in independent study courses is allowed toward the master's degree. Credit is limited to a maximum of 3 units per semester. Under extraordinary circumstances more than 3 units per semester may be allowed on petition to the department chair.

Eligible students 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. Students must register for 190 and 290 courses during the regular registration period in the same manner as they register 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 from department or school offices. The entry on the permanent record shows the discipline and course number only; the title does not appear.

Certain special regulations concerning enrollment in 190 and 290 courses during a summer session can be found in the *Summer Session Catalog*.

Credit for Noncollegiate Instruction. CSU Fresno grants undergraduate degree credit for successful completion of noncollegiate instruction, either military or civilian, 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. Lower-division elective credit is given for recruit training for initial entry into the service providing the student was on active duty for at least one year and one day. Credit given varies depending on the branch of service and date of entry. An applicant for credit must submit a copy of *Notice of Separation* (DD214) to the Evaluations Office.

DANTES (Defense Activity for Non-Traditional Educational Support) maintains the educational records of the servicemen and women who have completed SST's (Subject Standardized Tests), CLEP (College Level Examination Program) examinations and GED tests. DANTES has also maintained USAFI (United States Armed Forces Institute) transcripts since that organization ceased to exist in 1974.

College credit is awarded for acceptable SST scores as recommended by DANTES. Equivalency for SST credit is 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/USAFI correspondence credit is combined with other extension or correspondence coursework to a maximum of 24 semester units.

Additional credit is granted for military courses 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 awards credit for successfully completed CLEP examinations. Such credit is applied to the total units required for the baccalaureate degree, but it is not 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.

Credits earned through CLEP are 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 Testing Office, **(209) 278-2457.**

English 1 — Challenge by Examination. Students who want to challenge English 1 CBE may do so only by taking a challenge examination offered by the CSU Fresno English Department or the Advanced Placement (AP)-Language and Composition or AP-Literature and Composition tests. AP exams are available only to enrolled high school students, but college students may take the CSUF examination. For information on the CSUF examination call the English Department, **(209) 278-2553,** or the Office of Testing Services, **(209) 278-2457.**

Students who pass AP-Language and Composition earn 3 units in English 1 and 3 units in English 2. Students who pass AP-Literature and Composition earn 3 units in English 1 and 3 units in English 20. Students passing the CSUF examination earn 3 units in English 1.

Upper-Division Writing Examination. The Upper-Division Writing Examination (UDWE) 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 undergraduate students upon request. This unit may be applied toward the 40 upper-division unit degree requirement and total units for the baccalaureate degree but cannot be applied toward the 30 residence unit degree requirement or for postbaccalaureate credit. University registration deadlines must be adhered to. English 1 is a prerequisite to taking the UDWE. For details, call the Testing Office, **(209) 278-2457.**

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 accumulate a combination of units in the major, General Education, and nondesignated 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. United States History (History 11 or 12)
   c. United States and California Constitution (Political Science 2 or 101)
   d. Upper-division writing skills
5. A minimum of 30 residence units, of which 24 must be upper division, 12 in the major, and 9 in General Education
6. A minimum of 40 upper-division units
7. Minimum of a *C* average for units in the major, all CSU Fresno units, and total units
8. File an application for graduation obtained from the Office of Evaluations and pay the graduation fee at the cashier's window in the Joyal Administration Building by one of the published deadlines

The Bachelor of Vocational Education Degree

The Bachelor of Vocational Education (B.V.E.) 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. students must complete all general requirements for the baccalaureate degree, except the 40 upper-division unit requirement. I T 199 satisfies the senior major requirement for the B.V.E. degree.

Dual (Concurrent) Major Requirements

Undergraduate students 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 students apply for graduation, they must designate which is the primary degree major. 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 and exclusive of the other major.
- Dual B.S. majors must include 36 units, 18 of which must be upper-division and exclusive of the other major.
- 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.
- Courses in General Education may be used to fulfill secondary major requirements.

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. Also, students may not earn a special major as a dual major, and postbaccalaureate students are not eligible to earn a special major at the baccalaureate level.

The special major must be approved in the Office of the Provost and Vice President for Academic Affairs, with approval based upon a case-by-case

justification. Candidates 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 General Education requirements may not be counted. Also, a maximum of 6 independent study units may be included in the special major program. Any exception to this limit must be approved in writing by the provost and vice president for academic affairs upon written recommendation by the special major adviser prior to registration for the additional units.

Students requesting a special major must obtain application forms from the Office of Advising Services. On these forms students must:

1. Prepare a statement giving their 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 their opinions, lead to the academic and professional goals stated above
3. Secure the signed approval from the Office of Advising Services, as well as from the special major adviser and department chair in the areas from which the special major courses are drawn

Students must submit the foregoing material to the Office of the Provost and Vice President for Academic Affairs for final approval. Upon graduation, *Bachelor of Arts, Special Major,* and the title of the special major will be entered upon the students' transcripts and diplomas.

Residence Requirements

The residence requirement for the baccalaureate degree specifies that 30 units shall be earned in residence at the campus granting the degree. Twenty-four of these units shall be earned in upper-division courses, 12 of the units shall be in the major, and 9 units shall be in General Education. The residence requirement for graduate students is 21 units.

Extension credit and credit by evaluation, including credit by examination, may not be used to fulfill the above described requirements.

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.) The English Placement Test does not substitute for English 1. See *English Placement Test* for test scores prerequisite to enrollment in English 1.

U.S. History and Government Requirements. Undergraduate and second baccalaureate degree candidates 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 in order to graduate. This may be done by passing examinations or by completing History 11 or 12 and Political Science 2 or 101. (In cases in which students have completed the federal government requirement, Political Science 102 [1 unit] will fulfill the California government requirement.) (See *History Department — American History Requirement* and *Political Science Department — United States Constitution Requirement* and *General Education — CORE.*)

Upper-Division Writing Skills (UDWS) 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 (UDWE) composed of both an essay and an objective component. This examination is 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. Upon successful completion of the UDWE, undergraduate students may request 1 unit of credit (Engl 100W), which may be posted to their transcripts the same semester in which the UDWE was passed. For details, call the Office of Testing Services, **(209) 278-2457.**
2. Obtaining a *C*, *CR*, or higher grade in an approved upper-division course at CSU Fresno. Approved courses can be identified in the catalog and *Schedule of Courses* by the letter *W* (e.g., Engl 160W, IS 105W). English Composition (Engl 1) is a prerequisite to any *W* course.

It is imperative that the UDWS 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. The UDWS requirement cannot be fulfilled by a class or test taken outside of The California State University system.

The UDWS requirement is not part of the General Education requirement. Passing the UDWE does not exempt students from taking a *W* course if it is required in their major, e.g., Plant 110W.

Graduate students should consult *Graduate Studies* regarding the graduate-level writing proficiency requirement.

Remedial Courses. Students admitted to a CSU campus are 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, except English A. Credits earned in remedial courses cannot be used to satisfy degree requirements. (See *Developmental Learning Resource Center.*)

Unit Limitations

The following unit limitations apply to all bachelor's degrees:

1. A maximum of 70 transferable semester units (105 quarter) is allowed from two-year institutions (community/junior colleges).
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* are graded on a credit/no credit basis. Normally, a maximum of 6 semester units of work experience/internship is allowed for credit toward a Business Administration major unless the business option specifically allows more units.
4. A maximum of 24 semester units at CSU Fresno is allowed for ***CR/NC*** grading, excluding Credit by Examination. (See *Credit/No Credit Grading* 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 coursework.
7. A maximum of 6 semester units is allowed for independent study coursework.
8. A maximum of 6 semester units is allowed for coursework in typing/keyboarding.
9. A maximum of 30 semester units is allowed for military service and/or education.

Second Baccalaureate Degree or Undergraduate Major Requirements

Postbaccalaureate students (i.e., those who already hold a bachelor's degree) may pursue a program leading to an additional baccalaureate *degree* or undergraduate *major*. Students are urged to consult with a departmental adviser and with the Division of Graduate Studies to determine whether a second baccalaureate or graduate program better meets their needs.

1. Postbaccalaureate students seeking an additional undergraduate *degree* must complete the following requirements:
   a. A minimum of 30 units in residence at CSU Fresno since completion of the most recent degree, including 24 upper-division units
   b. At least 12 units in the major in residence at CSU Fresno since the last baccalaureate degree. Departments may set higher requirements.
   c. All state and university requirements for that degree, including English 1, 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 students' undergraduate programs.
   d. 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.
   e. Completion of 40 upper-division units taken since the most recent degree was granted
   f. Filing of an undergraduate degree application and payment of graduation fee. (See *Graduation*.)
2. Postbaccalaureate students seeking an additional undergraduate major must complete items **b** and **d** above. The transcript will indicate that all coursework for the additional major has been completed. Students pursuing a second baccalaureate *degree* or additional undergraduate *major* cannot select the catalog used for the initial undergraduate degree. If students do not remain in continuous attendance, the requirements will be those in effect at the time they reenter the university or complete their programs. (See *Choice of Catalog*.)
3. Postbaccalaureate students may not earn a minor or a second minor.
4. Second baccalaureate students are not considered for university honors.

Postbaccalaureate 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 are automatically listed on the student's permanent record as postbaccalaureate credit with the following exceptions:

1. Provided the courses are not needed for the bachelor's degree
2. Provided the student is neither on academic probation nor academic disqualification at the beginning of the final term
3. Provided the units are not in excess of stated maximum limitations (e.g., 6 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 postbaccalaureate 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 — Advancement to Candidacy*.) The amount of postbaccalaureate 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 postbaccalaureate credit for other purposes is to be determined by the appropriate authority.

Graduation

Students who anticipate meeting degree requirements by the end of a term should complete the following steps at the beginning of that term:

1. Obtain and file a completed application for a degree (with appropriate fees) with the Evaluations Office. See *Academic Calendar* for filing dates and deadlines. 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 checks students' applications for bachelor's degrees and reports to them regarding eligibility for the degrees. The Graduate Office processes graduate degree applications. Degrees are not awarded to students with ***I*** or ***RD*** grades remaining on

their records. Students receiving *I* grades during the final year that have not been completed (or changed to *F* grades) by the appropriate clearance deadline will not be considered for graduation that semester and must reapply for the degree. (See *Incomplete.*)

In order to be eligible for graduation, students must:

1. Submit an application for the degree and pay the graduation fee
2. Have been approved for graduation by the faculty
3. Have completed with appropriate scholastic standing all courses required for the degree. Graduates receive their official diplomas by mail.

It is the responsibility of students 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 students' records are permitted after the degree has been recorded.

Honors at Graduation. Honors at the time of graduation from CSU Fresno are awarded to undergraduate students based on the following criteria:

1. Students must have an overall minimum grade point average of 3.5 on all work attempted.
2. Students must have a minimum grade point average of 3.5 on all work taken at CSU Fresno.
3. Students must have completed 45 units in residence at CSU Fresno.

The grade point average earned at CSU Fresno determines which honors the student receives:

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.

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. For additional information, see Kennel Bookstore and/or Dean of Student Affairs Office.

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:

1. *The Certificate of Completion* is 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* is 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.
3. *The Certificate of Advanced Study* is awarded for successfully completing an established, approved program of at least 12 semester units of graduate (200-299) courses, upper-division (100-199) courses, and professional (300-399) courses, as recommended by a department and approved by the Division of Graduate Studies.

Public School Teacher and Services Credentials

CSU Fresno offers basic — Multiple and Single Subject — teaching credentials as well as Advanced — Specialist and Services — credentials required for employment in K-12 public schools. The School of Education and Human Development is the primary unit responsible for professional preparation and credential authorization. However, subject matter preparation required for basic credential programs and professional preparation required in some advanced credentials — school nursing, psychology, school social work, agriculture, and communicative handicapped — are provided by various academic departments. For information about credential programs, refer to the Education section of this catalog or to appropriate academic department.

Basic Teaching Credentials, Elementary
Multiple Subject:
- Multiple Subject — General
- Multiple Subject, with emphasis in Early Childhood Education
- Multiple Subject, CLAD/BCLAD

Multiple Subject — Internship

Basic Teaching Credentials, Secondary
Single Subject:
- Agriculture
- Art
- Business
- English; English-Drama; English-ESL; English-Speech
- Foreign Languages
- Health Science
- Home Economics
- Industrial Arts
- Life Science (Biology)
- Mathematics
- Music
- Physical Education
- Physical Science (Chemistry)
- Physical Science (Physics)
- Social Science

Single Subject — Internship

Specialist Teaching Credentials
Agricultural
Early Childhood
Language Development
- Specialist Certificate

Reading
Special Education in:
- Communication Handicapped
- Learning Handicapped
- Severely Handicapped

Services Credentials
Administrative in:
- Preliminary
- Professional

Clinical-Rehabilitative
Health (School Nurse)
Pupil Personnel in:
- School Counseling
- School Psychology
- School Social Work, Child Welfare and Attendance

Degree Programs, Majors, and Minors

California State University, Fresno offers majors for the baccalaureate degrees, minors, and graduate degree programs as indicated below. Undergraduate options are indented under the programs. Requirements for approved undergraduate majors and minors, as well as graduate degrees, are listed in the appropriate school and department sections of this catalog. Graduate degree options are listed in the ***Division of Graduate Studies*** section.

	Baccalaureate Degrees				*Graduate Degrees*		
	B.A.	*B.S.*	*Other*	*Minor*	*M.A.*	*M.S.*	*Other*
Accountancy						•	
Aerospace Studies				•			
African American Studies				•			
Agricultural Business		•		•		•	
Agricultural Education (B.S.) Agricultural Communications, Teacher Preparation		•					
Agricultural Science (B.S.) Option 1		•					
Agriculture				•		•	
Animal Sciences (B.S.) Basic Animal Science, Dairy Science, Meat Technology, Preveterinary Medicine, Production Management		•		•			
Anthropology	•			•			
Armenian Studies				•			
Art	•			•	•		
Asian American Studies				•			
Asian Studies				•			
Biology (B.S.) Ecology; General and Organismic Biology; Molecular and Cellular Biology; Physiology		•		•	•		
Business (General)				•			
Business Administration (B.S.) Accountancy, Agribusiness, Decision Systems, Finance, Financial Services, Human Resource Management, Information Systems, International Business, Legal Environment of Business, Production and Logistics Management, Management, Marketing, Real Estate and Urban Land Economics		•					M.B.A.
Chemistry	•	•		•		•	
Chicano/Latino Studies				•			
Chicano Studies	•						
Child Development		•					
Classical Studies Areas of interest: Classics, Greek, Latin				•			
Communicative Disorders	•			•	•		
Computer Science		•		•		•	
Construction Management		•					
Counseling						•	
Criminology (B.S.) Corrections, Law Enforcement, Victimology		•		•		•	
Economics	•			•			
Education					•		
Educational Leadership							Ed.D.
Engineering, Civil		•				•	
Engineering, Computer		•					
Engineering, Electrical		•					
Engineering, Industrial		•					
Engineering, Mechanical		•					
Engineering, Surveying		•					
English	•			•	•		
Ethnic Studies				•			
Food and Nutritional Sciences (B.S.) Dietetics and Food Administration, Enology, Food Science, Food Systems Management		•		•			
French	•			•			
Geography	•			•	•		
Geology		•		•		•	
German	•			•			
Gerontology				•			

	Baccalaureate Degrees			Minor	Graduate Degrees		
	B.A.	B.S.	Other		M.A.	M.S.	Other
Health Science		•		•		•	M.P.H.
(B.S.) Health Science — Community Health, Environmental Health Science/ Industrial Hygiene, Health Services, Occupational Safety and Health							
History	•			•	•		
Home Economics	•			•		•	
Humanities, Interdisciplinary Minor				•			
Industrial Arts	•			•			
(B.A.) Graphic Design							
Industrial Technology		•				•	
(B.S.) Manufacturing Industries							
Interior Design	•						
International Relations					•		
Japanese				•			
Latin American Studies				•			
Liberal Studies	•						
Linguistics	•			•	•		
(B.A.) English as a Second Language, Spanish-English Bilingualism							
Marine Sciences						•	
Mass Communication					•		
Mass Communication and Journalism							
(B.A.) Advertising, Broadcast Journalism, Broadcast Management Broadcast Production, Media Studies, News-Editorial, Photocommunications, Public Relations, (see *Mass Communication M.A. degree*)	•			•			
Mathematics	•			•	•		
Military Science				•			
Music	•			•	•		
(B.A.) Options I, II							
Nursing		•				•	
Peace and Conflict Studies				•			
Philosophy	•			•			
(B.A.) Prelaw, Religious Studies							
Physical Education		•		•	•		
(B.S.) Adapted, Allied Career, Athletic Training, Exercise Science, Teaching							
Physical Science	•			•			
Physical Therapy		•					M.P.T.
Physics		•		•		•	
Plant Science		•		•		•	
(B.S.) Crop Science, Ornamental Horticulture, Plant Protection, Soils/Irrigation, Viticulture/Tree Fruits							
Political Science	•			•			
Psychology	•			•	•	•	
Public Administration	•			•			M.P.A.
Recreation Administration		•		•			
(B.S.) Commercial Recreation, Public and Nonprofit Recreation, Therapeutic Recreation							
Rehabilitation Counseling						•	
Russian	•			•			
Russian Area Studies				•			
Social Science	•						
Social Work	•						M.S.W.
Sociology	•			•			
Spanish	•			•	•		
Special Education					•		
Special Major	•				•		
Speech					•		
Speech Communication	•			•			
Theatre Arts	•			•			
(B.A.) Dance							
Vocational Arts			B.V.E.				
Urban Studies				•			
Women's Studies				•			

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 skills representative of all areas of human endeavor.

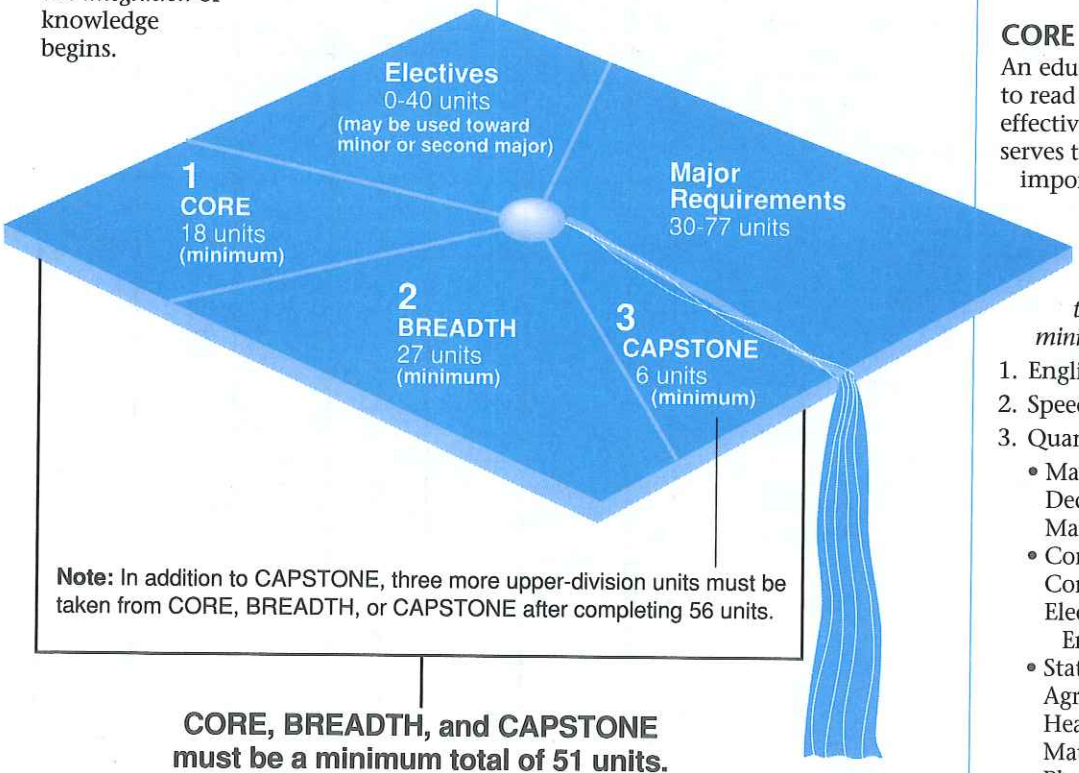
CAPSTONE concludes the General Education Program by providing an interdisciplinary experience at the upper-division level in which the skills and knowledge developed in CORE and BREADTH are integrated, bringing their interrelationships into focus.

Requirements

The General Education Program requires students to complete a minimum of 51 semester units. This includes 18 units minimum in CORE, 27 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. A CORE course also may be applied to a student's major requirement unless the department specifically prohibits it.
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.

Select one course from each of the following six categories for a minimum of 18 units.

1. English 1
2. Speech 3, 7, or 8
3. Quantitative Reasoning
   - Mathematics:
     Decision Sciences 71
     Mathematics 45, 70, 72, 75
   - Computer Language:
     Computer Science 20, 40
     Electrical and Computer Engineering 70, 71
   - Statistics:
     Agricultural Economics 71
     Health Science 92
     Mathematics 11
     Plant Science 99
     Psychology 42

4. Critical Thinking: A course meeting the Critical Thinking requirement shall deal with the following topics: a) analysis, criticism, and advocacy of ideas; b) reaching factual or judgmental conclusions; c) learning elementary inductive and deductive processes; d) recognition of formal and informal fallacies of language and thought.

   The following courses presently satisfy this requirement: Anthropology 30; Computer Science 1; English 21, 30, 44; Foreign Language 10; Greek 10; Natural Science 4; Philosophy 25, 26, 27, 45; Sociology 3; Speech 5; Surveying Engineering 5; Women's Studies 12
5. History 11 or 12
6. 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 1-9.

Select at least one course from each of Divisions 1-9 for a minimum of 27 units. Courses from Divisions 1 and 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 1, 1A, 1B, 3A, 3B
Geology 1, 2, 15 (MNE only)*
Physical Science 21
Physics 2A, 2B, 4A, 4B, 4C, 10

Note: *Math 4R or second-year high school algebra is a prerequisite for all courses in Division 1.*

Writing Requirement

Every course in BREADTH Divisions 2-9 requires 2,000 words of writing. The writing must be student composition which may include essays, essay examinations, and journals or lab books. At least one-half of the written material is to be in the form of a multiparagraph, i.e., a sustained argument.

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 (MNE only)*
BioSc 1A
Botany 10
Zoology 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, 7
Plant Science 105
Psychology 10, 36

Division 4 — 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
Child and Family Studies 38
Dance 116
Drama 22, 32, 34
English 41, 43
Geron 10, 111
Health Science 90, 124
Industrial Engineering 125
Music 2 and 102, 3 and 103, 18 and 118, 21 and 121
Nutrition 53
Physical Education 31
Psychology 61, 132, 171
Recreation and Leisure Studies 80, 101
Speech 4

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.

African American Studies 24
Art 1
Art History 10, 11
Chicano and Latin American Studies 7, 9
Dance 171
Drama 62, 163
Music 9, 74

Division 6 — Humanities and Literature
Purpose: To understand, appreciate, and analyze the meaning of our civilization, its cultural and historical background, and to study the realm of literature from a variety of historical perspectives and cultures by analyzing individual works.

Applied Ethics 100
Armenian 148
English 20, 101, 102, 103
French 109, 148
German 148
Greek 148
History 1, 2
Humanities 10, 11, 12, 14
Philosophy 1, 10, 120, 131
Russian 148
Spanish 140, 142, 146

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
Communicative Disorders 133
French 1A, 1B, 2A, 2B
German 1A, 1B, 2A, 2B
Greek 1A, 1B
Hebrew 1A, 1B
Hmong 1A, 1B
Italian 1A, 1B, 2A, 2B
Japanese 1A, 1B, 2A, 2B
Latin 1A, 1B
Linguistics 10
Portuguese 1A, 1B
Russian 1A, 1B, 2A, 2B
Sanskrit 10A, 10B
Spanish 1A, 1B, 2A, 2B, 4A, 4B

Division 8 — Social, Economic, and Political Systems
Purpose: To understand and analyze the basic principles underlying human social behavior.

Agricultural Economics 1
Anthropology 2
Economics 25, 40, 50
Geography 2, 4
Political Science 1, 8, 120
Social Science 15 (MNE only)*
Sociology 1, 2

*Man/Woman and the Natural Environment (MNE) is an 18-unit interdisciplinary thematic cluster offered through the School of Natural Sciences. For more information about this program, see *Natural Science, Interdisciplinary Courses.*

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.

African American Studies 25, 27, 38, 144, 178
American Indian Studies 50, 103
Armenian Studies 10
Asian American Studies 15, 30, 56
Chicano and Latin American Studies 3, 5, 160
Ethnic Studies 1
History 101, 178
Sociology 131
Women's Studies 10, 101, 131, 135

CAPSTONE

Interdisciplinary Courses (IntD)

102Nex. 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. (Former Nexus 102)

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. (Former CapS 104)

108. Humanities in Classical Athens (3)
An examination of the unique cultural environment of the ancient city, its art, architecture, literature, social and political structures, and their interrelationships as manifest in fifth century Athens. (Former CapS 108)

110. Humanities in Republican and Imperial Rome (3)
An examination of the unique cultural environment of the ancient city, its art, architecture, literature, social and political structures, and their interrelationships as manifest during Republican and Imperial Rome.

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. (Former CapS 116)

118. Folklore in Modern Life (3)
An examination of the role of folklore in modern life, its power to communicate critical issues through expressive culture, e.g., jokes, legends, folksongs, graphic arts, and festival; focus on the intellectual currents influencing the study of folklore provide interdisciplinary perspective.

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. (Former CapS 123)

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. (Former CapS 124)

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. (Former CapS 130)

152. Ethnic Minorities in American Schools (3)
Exploration of the sociohistorical and cultural development of education in the United States, with special emphasis on the Asian American, American Indian, African American, and Chicano experience. (Former CapS 152)

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. (Former CapS 156)

160. Gerontology: A Multidisciplinary Approach (3)
Exploration of concepts and principles related to aging using a multidisciplinary approach. Curriculum designed to provide a theoretical base from biological, psychological, sociological and cultural theories. Coordinated visits with elders provide additional learning experiences. (Former CapS 160)

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. (Former CapS 168)

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. IntD 172A is a prerequisite to IntD 172B

CAPSTONE (Upper Division)

CAPSTONE provides an interdisciplinary experience at the upper-division level in which the skills and knowledge developed in CORE and BREADTH are integrated.

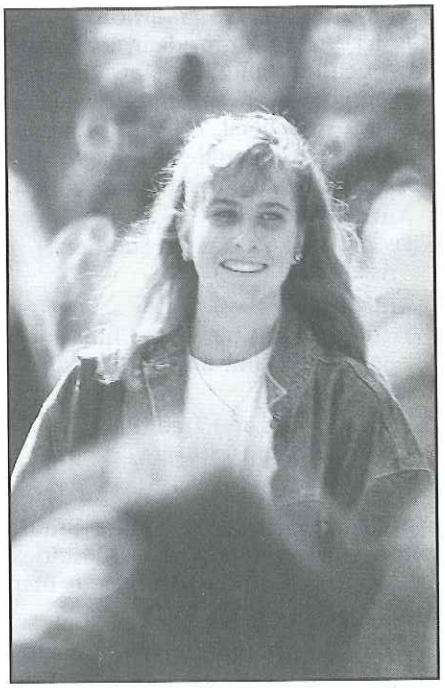
Policies for CAPSTONE

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 — *IntD* and/or *IntD (course number) Nex* — **or** by completing a minimum of 6 units (two courses) in a single *Cluster* from two different departments or programs, after 56 units have been completed.

No CAPSTONE course may be used to fulfill a requirement toward an undergraduate major or a master's degree.

All CAPSTONE courses require a written paper, research project, or performance equivalent exploring the course or *Cluster* theme.

In the case of *Cluster* courses, students must select from at least two different participating departments.



and both A and B must be completed to receive CAPSTONE credit. (2 lecture, 2 lab hours) (Former CapS 172A-B)

180. 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. (Former CapS 180)

184. Family Communication (3)
The analysis and exploration of personal experience, family systems theory, and the mass media to describe, evaluate, and improve family communication patterns. Special topics include family conflict, sex roles, family types, sexual communication, parenting, and intimacy.

188. Principles of Self-Esteem in Education, Social Work, and Mental Health (3)
Involves an empirical exploration of the development, enhancement, and diminishment of self-esteem through social experience and the relationship of self-esteem to a variety of social problems and concerns. Focuses on the personal development of self-esteem and on specific applications of this theory domain to policy and practice in the fields of education, social work, and mental health.

193A-B. Evaluating Complex Organizations (3-3)
Designed to provide students with an in-depth look at the inner workings of the university community as it undergoes its 10-year accreditation. Exposes students to different types of evaluation as they apply in the development of the comprehensive institutional self-study, as well as provide the university with an important student voice.

CAPSTONE
Cluster Courses

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)

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 and Food Policy (3)
and either
Phil 125:
Issues in Political Philosophy (3)
or
Pl Si 150:
Public Policy Making (3)

An Emerging Third World Region: Subsaharan Africa
Cluster Theme: 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.

Fren 149:
Voices of Africa (3)
Geog 182:
Subsaharan Africa (3)
Hist 157:
Modern Africa (3)

Ancient Peru
Cluster Theme: To acquaint students with the pre-Hispanic peoples and cultures of the Andean area through the study of art, archaeology, and geography.

Art H 175:
Pre-Columbian Andes (3)
Geog 172:
Ancient Peru (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 123:
Peoples and Cultures of Southeast Asia (3) **or**
Anth 186:
Tradition and Change in China and Japan (3) (Same as Hum 140) **and**
Ling 110:
Indic Cultures and Traditions (3) (Same as Hum 150)

Britain
Cluster Theme: To examine Britain through selected cultural and historical perspectives, including its theatre, literature, society and government.

The London Semester CAPSTONE courses change each spring depending upon the instructors teaching in the program. For current information on the schedule of courses, contact the London Semester program office in the Office of the Dean, School of Arts and Humanities, Music 186A; (209) 278-3056.

Only students participating in the London Semester Program will be eligible for CAPSTONE credit by enrolling in its Cluster courses.

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.

B A 120:
Business and Society (3)
Soc 149:
Sociology of Business (3)

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, students must include Geog 168 as part of the required 6-unit Cluster.*

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 103:
History of Early Christianity (3)
Pl Si 112:
Politics and Christianity (3) (Same as A Eth 104)

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)
C R P 100:
Introduction to Community Planning (3)
Geog 160:
Urban Geography (3)
Soc 163:
Urban Sociology (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)
and either
Soc 143:
Deviance and Control (3) **or**
Soc 159:
Social History of Crime (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.

Econ 117:
Economics of Ecology (3)
Geog 134:
Geography of Energy (3)
I T 106:
Energy Conversion and Utilization (3)
P Sci 168:
Environmental Impact of Energy Demands by Society (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 110:
Human Ecology (3)
C R P 135:
Environmental Law (3)
Geog 128:
Environmental Pollution (3)

Note: *To receive CAPSTONE credit, students must complete Biol 110 or Geog 128 before C R P 135 is taken as the required course of this Cluster.*

Ethnicity and Culture: Theories and Applications
Cluster Theme: To sharpen the focus on ethnic behavior by applying theories of interethnic 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 United States today.

Anth 172:
Ethnic Relations and Cultures (3)
CLS 103:
Chicano Folklore (3)

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.

Engl 114:
World Literature: Modern (4)
Hist 135A:
European Cultural History (3)
Music 161B:
Survey of Music History II (3)
Phil 103:
Bacon to Kant (3)

Note: *To receive CAPSTONE credit, students must complete Hist 135A before Engl 114, Phil 103, or Music 161B is taken.*

Juveniles and Adolescence
Cluster Theme: To study adolescents during intense periods of biological, social, and psychological development.

CFS 136:
Middle Childhood and Adolescence (3) **or**

Psych 102:
Adolescent Psychology (3) **and**

Crim 120:
Juvenile Delinquency (3)

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 (3)

Phil 127:
Philosophy of Law (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 sociocultural interaction among Mexicanos/Chicanos and Anglos.

CLS 114:
Mexico and the Southwest 1810-1910 (3) **or**

CLS 115:
Mexico-U.S. Relations Since 1910 (3) **and either**

Hist 165:
Modern Mexico (3) **or**

Hist 183:
The Hispanic Southwest (3)

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)

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.

C E 170:
Pollution and Society (3)

H S 170:
Health Effects of Indoor Pollution (3)

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.

Engl 174:
Popular Fiction (3) **or**

Music 187:
Pop Music: Jazz and Rock (3) **and either**

Soc 142:
Sociology of Popular Culture (3) **or**

MCJ 163:
Radio/TV as Popular Culture (3)

Race and Ethnicity in the United States
Cluster Theme: This *Cluster* focuses 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.

Af Am 135:
African American Community (3)

A I S 100:
American Indian Religion (3)

AsAm 110:
Asian American Communities (3)

CLS 116:
Cultural Change and the Chicano (3)

"My achievements are not mine alone, but rather an example of how a family can rise above adversity, fly in the face of despair and soar using faith, hope, and determination as the winds beneath their wings."

Sheila White
1989 President's Medalist

Hist 186:
American Ethnic History (3)

Soc 111:
Sociology of Minority Relations (3)

Note: *To receive CAPSTONE credit, students must select one course (3 units) from Hist 186 or Soc 111 and select one to two courses (3-6 units) from A I S 100, Af Am 135, AsAm 110, or CLS 116.*

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.

Art H 122:
Northern Renaissance (3)

Engl 113:
World Literature: Medieval and Renaissance (4)

The Greek World
Cluster Theme: To deal with the ancient, primarily Greek, world from its earliest beginnings to the classical period and beyond.

Engl 112:
World Literature: Ancient (4) **and either**

Hist 111:
Ancient Greece (3) **or**

Phil 101:
Ancient Philosophy (3)

The Renaissance
Cluster Theme: The emergence of the "modern world" from its medieval beginnings to the 17th century.

Art H 120:
Italian Renaissance (3)

Engl 147:
Renaissance (4)

Hist 125:
Renaissance (3)

Music 161A:
Survey of Music History I (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)

Phil 108:
Roman 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 Commonwealth of Independent States — Formerly USSR (3)
Hist 143A:
The Soviet Union (3)
Pl Si 141:
Russian Politics (3)

The Spiritual Quest
Cluster Theme: To explore in cross-cultural, theoretical, and philosophical perspectives the answers humans have discovered to ultimate questions.

Anth 150W:
Anthropology of Religion (3)
Phil 130:
Philosophy of Religion (3)
Phil 135:
Asian Religious Traditions (3)

The World of the Old Testament
Cluster Theme: An analysis of the Hebraic world, including its history, geography, literature, and its basic religious beliefs.

Geog 180:
Biblical Lands (3)
Hist 115:
Ancient Israel (3)
Phil 134:
Literature of the Old Testament (4)
(Same as Engl 116)

Women: Themes and Variations; Potential and Problems; 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, African American and Chicana, working and at leisure — have faced, coped with, and surmounted to achieve selfhood.

Af Am 137:
African American Women (3)
(Same as W S 137)
Anth 170:
Women: Culture and Biology (3)
(Same as W S 170)
CLS 152:
The Chicano Family (3)
(Same as W S 152)

Note: *To receive CAPSTONE credit, students must complete Anth 170 before Af Am 137 or CLS 152 is taken.*

Transfer Students

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 40 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 Evaluations Office. *It is recommended that transfer students bring with them an unofficial copy of all previous college transcripts and their CSU General Education Certification 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 freshman admission (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 (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. Nonresidents must have a 2.4 grade point average or better. A maximum of 70 transferable semester (105 quarter) units is allowed from two-year institutions (community/junior colleges).

California State Code of Regulations 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 is 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

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 — 9 units minimum

Written Communication
Required: English 1
Oral Communication
Select one: Speech 3, 7, or 8
Critical Thinking
Select one: Anthropology 30; Computer Science 1; English 21, 30, 44; Foreign Language 10; Greek 10; Natural Science 4; Philosophy 25, 26, 27, 45; Sociology 3; Speech 5; Surveying Engineering 5; Women's Studies 12

Area B — 12 units minimum

Quantitative Reasoning
Select one:
Mathematics: Decision Sciences 71; Mathematics 45, 70, 72, 75
Computer Language: Computer Science 20, 40; Electrical and Computer Engineering 70, 71
Statistics: Agricultural Economics 71; Health Science 92; Mathematics 11; Plant Science 99; Psychology 42

Select at least one course from each of Divisions 1-3. Courses from Divisions 1 and 2 must have a laboratory component.

Division 1 — Physical Processes
Chemistry 1, 1A, 1B, 3A, 3B
Geology 1, 2, 15 (MNE only)*
Physical Science 21
Physics 2A, 2B, 4A, 4B, 4C, 10

Note: *Math 4R or second-year high school algebra is a prerequisite for all courses in Division 1.*

Writing Requirement
Every course in BREADTH Divisions 2-9 requires 2,000 words of writing. The writing must be student composition which may include essays, essay examinations, and journals or lab books. At least one-half of the written material is to be in the form of a multiparagraph, i.e., a sustained argument.

Division 2 — Biological Processes
Biology 10, 15 (MNE only)*
BioSc 1A
Botany 10
Zoology 10

Division 3 — Behavioral/ Environmental Systems
Anthropology 1, 3
Geography 5, 7
Plant Science 105
Psychology 10, 36

Area C — 9 units minimum

Select at least one course from each of Divisions 5-7.

Division 5 — Fine Arts
African American Studies 24
Art 1
Art History 10, 11
Chicano and Latin American Studies 7, 9
Dance 171
Drama 62, 163
Music 9, 74

Division 6 — Humanities and Literature
Applied Ethics 100
Armenian 148
English 20, 101, 102, 103
French 109, 148
German 148
Greek 148
History 1, 2
Humanities 10, 11, 12, 14
Philosophy 1, 10, 120, 131
Russian 148
Spanish 140, 142, 146

Division 7 — Languages
Armenian 1A, 1B, 2A, 2B
Chinese 1A, 1B, 2A, 2B
Communicative Disorders 133
French 1A, 1B, 2A, 2B
German 1A, 1B, 2A, 2B
Greek 1A, 1B
Hebrew 1A, 1B
Hmong 1A, 1B
Italian 1A, 1B, 2A, 2B
Japanese 1A, 1B, 2A, 2B
Latin 1A, 1B
Linguistics 10
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

Select at least one course from each of Divisions 8 and 9.

Division 8 — Social, Economic, and Political Systems
Agricultural Economics 1
Anthropology 2
Economics 25, 40, 50
Geography 2, 4
Political Science 1, 8, 120
Social Science 15 (MNE only)*
Sociology 1, 2

Division 9 — Other Cultures and Women's Studies
African American Studies 25, 27, 38, 144, 178
American Indian Studies 50, 103
Armenian Studies 10
Asian American Studies 15, 30, 56
Chicano and Latin American Studies 3, 5, 160
Ethnic Studies 1
History 101, 178
Sociology 131
Women's Studies 10, 101, 131, 135

Area E — 3 units minimum

Select at least one course from Division 4.

Division 4 — Personal Life and Growth
Art 13, 20, 30, 40, 50, 60, 70
Child and Family Studies 38
Dance 116
Drama 22, 32, 34
English 41, 43
Geron 10, 111
Health Science 90, 124
Industrial Engineering 125
Music 2 and 102, 3 and 103, 18 and 118, 21 and 121
Nutrition 53
Physical Education 31
Psychology 61, 132, 171
Recreation and Leisure Studies 80, 101
Speech 4

CAPSTONE
(6 upper-division units minimum)
A minimum total of 9 upper-division units in General Education is required, of which 6 units are CAPSTONE, to be taken after 56 units have been completed.

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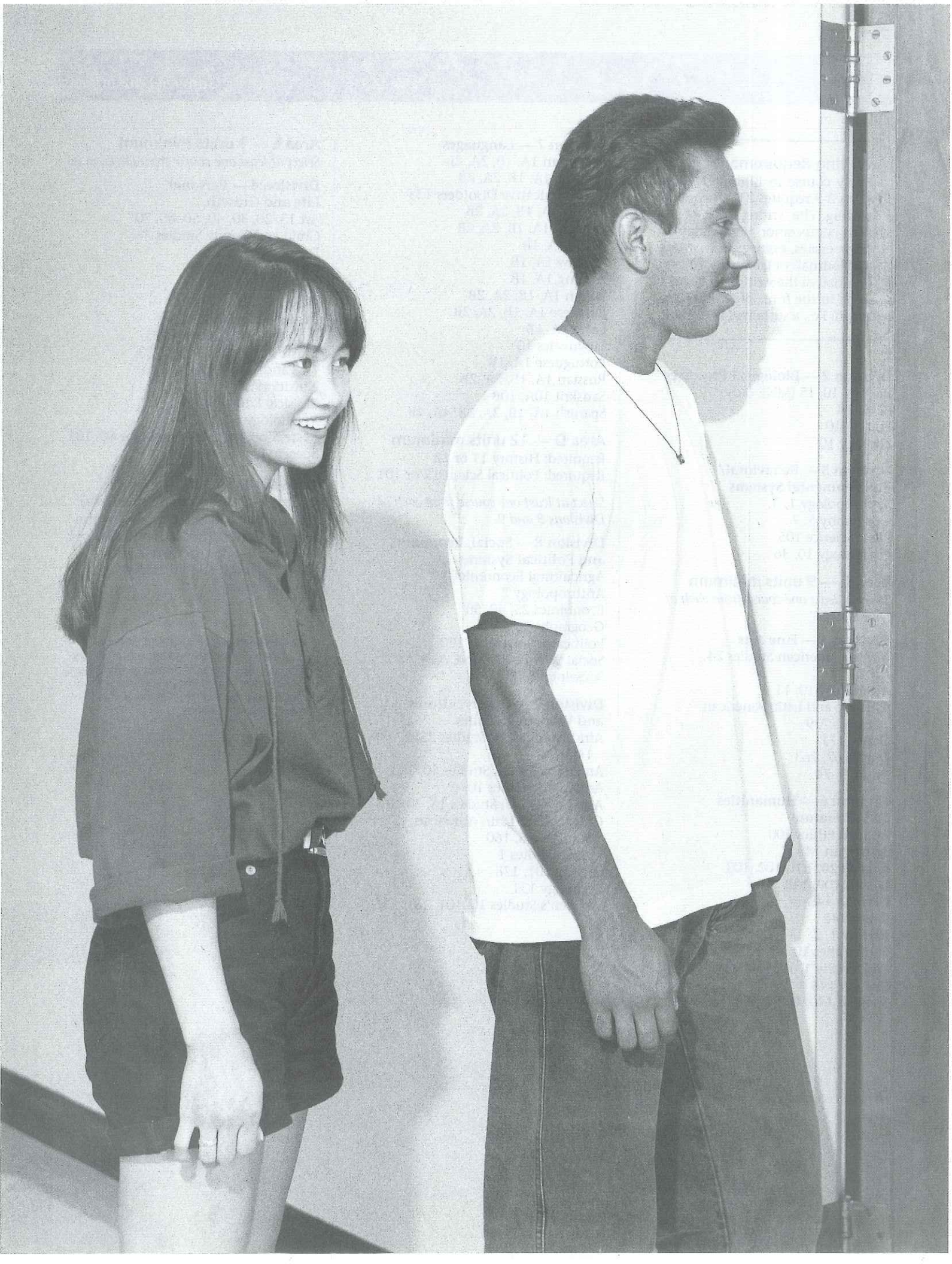
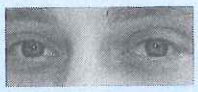
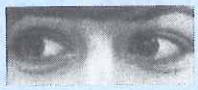
*Man/Woman and the Natural Environment (MNE) is an 18-unit interdisciplinary thematic cluster offered through the School of Natural Sciences. For more information about this program, see *Natural Science, Interdisciplinary Courses*.







Courses and Programs

"When one door
closes,
another opens,
but we often look
so long and
regretfully upon
the closed door,
we do not see
the ones
which
open for us."

Alexander Graham Bell

Course Prefixes, Symbols, and Terms

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 I S	American Indian Studies
A Sci	Animal Science
A Sp	Aerospace Studies
Acct	Accountancy
AET	Agricultural Engineering Technology
Af Am	African American
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
Biol	Biology
BioSc	Biological Science Core
Bot	Botany
Bus	Business and Administrative Sciences; Graduate
C D	Communicative Disorders
C E	Civil Engineering
C R P	City and Regional Planning
C Sci	Computer Science
CFS	Child and Family Studies
Chem	Chemistry
Chin	Chinese
CLS	Chicano and Latin American Studies
Com S	Students for Community Service
Const	Construction Management
COUN	Counselor Education
Cr Sc	Crop Science
Crim	Criminology
CSH	Consumer Science and Housing
CTET	Curriculum, Teaching, and Educational Technology
Dance	Theatre Arts
Drama	Theatre Arts
DS	Decision Sciences
E E	Electrical Engineering
E F L	English as a Foreign Language
EAD	Educational Administration
ECE	Electrical and Computer Engineering
Ecol	Ecology
Econ	Economics
EdL	Educational Leadership
EHD	Education and Human Development
Engl	English
Engr	Engineering
Enol	Enology
ERF	Educational Research, Foundations
Eth S	Ethnic Studies
F L	Foreign Language
F M	Fashion Merchandising
Fin	Finance
Fren	French
FSc	Food Science
FSM	Food Systems Management
G S	Graduate Studies
Genet	Genetics
Geog	Geography
Geol	Geology
Germ	German
Geron	Gerontology
GID	Graphic and Interior Design
GPA	Graduate Public Administration
Grk	Greek
H Ec	Home Economics Education; Graduate
H S	Health Science
Hebr	Hebrew
Hist	History
Hmong	Hmong
HRM	Human Resource Management
HSW	Health and Social Work
Hum	Humanities
I E	Industrial Engineering
I S A	International Studies — Abroad
I S C	International Studies Course
I T	Industrial Technology
IntD	CAPSTONE Interdisciplinary General Education
IntD (number) Nex	CAPSTONE Nexus General Education
IS	Information Systems
Ital	Italian
Japn	Japanese
Latin	Latin
LEE	Literacy and Early Education
Ling	Linguistics
M Com	Mass Communication
M E	Mechanical Engineering
M S	Military Science
M Sci	Moss Landing Marine Laboratories
Math	Mathematics
MBA	Master of Business Administration
MCJ	Mass Communication and Journalism
Mgt	Management
Micro	Microbiology
Mktg	Marketing
MSA	Master of Science in Accountancy
Music	Music
N Sci	Natural Science
Nurs	Nursing
Nutr	Nutrition
OH	Ornamental Horticulture
P E, PE AC	Physical Education
P Sci	Physical Science
Ph Th	Physical Therapy
Phil	Philosophy
PhyAn	Physiology/Anatomy/ Development
Phys	Physics
Pl Pr	Plant Protection
Pl Si	Political Science
Plant	Plant Science
PLM	Production and Logistics Management
Port	Portuguese
Psych	Psychology
R E S	Revising and Editing Skills
RLS	Recreation and Leisure Studies
Russ	Russian
S E	Surveying Engineering
S Sci	Social Science
S Wrk	Social Work Education
SI	Soils/Irrigation
Skt	Sanskrit
Soc	Sociology
Span	Spanish
Spch	Speech Communication
SPED	Special Education
Univ	University
VTF	Viticulture/Tree Fruit
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-level courses are designed for use in master's degree, credential, and doctorate curricula. Access to these courses is limited to those who have been officially admitted to a graduate degree or credential program. Prior to enrollment, last-semester, undergraduate seniors possessing a minimum cumulative GPA of 3.0 may enroll in 200-series courses through the recommendation of the master's degree program director and the approval of the graduate dean.

290

Independent study, graduate.

298

Graduate Degree Project. Restricted to graduate students having received official notification by the Division of Graduate Studies of approval for advancement to candidacy. For complete eligibility requirements, see *Criteria for Thesis and Project* under Graduate Studies, page 476. Project schedule numbers are obtainable through the student's department. Failure to meet the eligibility requirements may result in cancellation of such enrollment.

299

Graduate Degree Thesis/Dissertation. Registration in this course is restricted to graduate students who have officially been notified of their advancement to candidacy by the Division of Graduate Studies and who have filed and received official approval of their thesis committee assignment form by the Division of Graduate Studies. For complete eligibility requirements, see *Criteria for Thesis and Project* under Graduate Studies, page 476. Thesis schedule numbers are obtainable through the student's department. Failure to meet eligibility requirements may result in cancellation of such enrollment.

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 undergraduate 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 or a joint doctorate 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
M	Multiple subject designation for education courses/methods designation for speech communication courses
R	Remedial course
S	Single subject designation for education courses
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 students by ensuring that they have the necessary background and preparation for success in the course. Transfer courses with equivalent content are 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 if a student has not met the prerequisites.

Permission of 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.

CAN. The California Articulation Number identifies some of the transferable, lower-division, introductory (preparatory) courses commonly taught on California college campuses. The CAN (ex. CAN ECON 2) is listed parenthetically at the end of the course description.

Aerospace Studies

The Sid Craig School of Business and Administrative Sciences
Department of Aerospace Studies
LT COLONEL DARREL W. HAHN, *Chair*
North Gym, Room 158
(209) 278-2593, (209) 278-7080

Air Force Reserve Officer Training Corps (AFROTC)
Minor in Aerospace Studies

The Air Force Reserve Officer Training Corps Program is a college-based program open to men and women. Its 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 ROTC. 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 ROTC education program provides preprofessional 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 ROTC 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 ROTC courses are taken for academic credit as part of a student's electives. The two major phases of the curriculum are the General Military Course (GMC) and the Professional Officer Course (POC). In aerospace courses, all books, supplies, and uniforms are furnished at no cost to the student.

Air Force ROTC 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.

Aerospace Studies Minor

A Minor in Aerospace Studies consists of satisfactory completion of the AFROTC program (16 upper-division units).

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.

Most 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 specialties.

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 ROTC 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 Darrel W. Hahn, *Chair*
Captain Arnold R. Shaver
Captain Christopher D. Williams
Advisers:
MSgt Terry V. Logan
SSgt George Alvarez

General Military Course (GMC)

To be eligible for the GMC you must:

1. Be a full-time college student
2. Be age 14 or older
3. Be of good moral character
4. Meet the academic standards for admission to CSU Fresno

Professional Officer Course (POC)

To be eligible for the POC you must:

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 POC entry
4. Take the Air Force Qualifying Test
5. (a) For pilot and navigator: be not more than 26 ½ years of age at date of commissioning
   (b) For all other categories: be not more than 30 years of age (35 years for those with prior military service) at date of commissioning
6. Be a full-time student according to the rules of CSU Fresno
7. Be approved for AFROTC training by the professor of aerospace studies

COURSES

Aerospace Studies (A Sp)

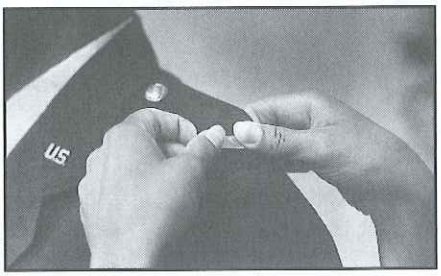
1A-B. The Air Force Today (1-1)
Corequisite: A Sp 3 Leadership Laboratory (one unit) if student desires an Air Force ROTC Commission. The Air Force in the contemporary world. The total force structure, strategic offensive and defensive forces, general purpose forces, and support forces.

2A-B. The Development of Air Power (1-1)
Corequisite: A Sp 3 Leadership Laboratory (one unit) if student desires an Air Force ROTC 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)
Open to students who are members of the Reserve Officer Training Corps or are eligible to pursue a commission as determined by the professor of aerospace studies. Course must be taken each semester of the General Military Course (GMC). Cadets experiment with and develop their military and leadership skills and techniques. ***CR/NC*** grading only.

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.

25. Air Force ROTC Field Training (3)
Taken during summer preceding entry into POC. 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.



"It will take work, time and a lot of just plain living for you to grasp all that officership means. But I promise you that when you do you'll be rewarded with a sense of self-fulfillment such as you never experienced before."

General Bennie L. Davis

103C. Air Force ROTC Field Training (3)
For those completed GMC 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)
Corequisite: A Sp 113 Leadership Laboratory (one unit) if student desires an Air Force ROTC 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.

105AW-BW. American Defense Policy (3-3)
Corequisite: A Sp 113 Leadership Laboratory (one unit) if student desires an Air Force ROTC Commission. (Students who have completed A Sp 104A-B and A Sp 105AW-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 (POC). Cadets experiment with and develop their leadership skills and techniques. ***CR/NC*** grading only.

AGRICULTURE Agricultural Economics

School of Agricultural Sciences and Technology
Department of Agricultural Economics
DENNIS L. NEF, *Chair*
Leon S. Peters Building, Room 302
(209) 278-2949 FAX: (209) 278-6536

B.S. in Agricultural Business
M.S. in Agricultural Business
Minor in Agricultural Business

Programs of Study:
Agribusiness Management
Agricultural Economics
Agricultural Finance
Agricultural Marketing
Farm Management
Food Industry Management
International Agriculture

Join the leader in science, technology, and management. The award-winning Agricultural Business Program at CSU Fresno is setting the pace — having been recognized in 1985 as a national model by the Agribusiness Education Project, sponsored by the U.S. Department of Agriculture and comprised of agricultural industry leaders and higher education scholars from around the country.

The agricultural business curriculum is a comprehensive and integrative program with a problem-solving orientation and a practical experience emphasis.

Degree Programs

The Bachelor of Science in Agricultural Business combines core undergraduate courses in agricultural economics (Ag Ec) with basic business management and agricultural science foundation courses. This undergraduate major allows you to emphasize a career specialty, such as the programs of study identified in the box above.

Certified Minor Programs. A Minor in Agricultural Business is available for students majoring in agricultural sciences, business, and other fields.

Ag One Grants for academic fees and books are available. Call (209) 278-2061 for information.

The Master of Science in Agricultural Business combines core graduate courses in agricultural business (Ag Bs) with elective courses from business, agricultural economics, and the agricultural sciences. This program 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, commodity trading programs, and to expose them to planning and decision-making aids as part of their professional expertise.

Students have access to the Marketing News Center and to a computerized database system through the statewide Advanced Technology Information Network (ATI-NET) established by the school's California Agricultural Technology Institute (CATI).

Center for Agricultural Business (CAB). Organized to promote the economic efficiency, profitability, and competitiveness of California agriculture, CAB uses faculty expertise and student assistance to address problems and opportunities in farm management, agribusiness finance, commodity marketing, agricultural trade, natural resources, and labor management. Seminars are held periodically on topics of concern to farmers and agribusiness managers. An annual Agribusiness Management Conference is co-sponsored with industry to explore current issues and report the economic outlook of the state's agricultural sector.

Career Opportunities

Graduates of the Agricultural Business Program can choose from more than 120 professional occupations in California's agricultural industry. Ask your faculty adviser for the agricultural business career opportunities list.

Professional Preparation

Students 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, an annual scholarship, and involvement in the annual national marketing competition for academic credit (Ag Ec 168);
- 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 and grants academic credit in the major 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). This is highly recommended and can be used in the major.

Faculty

Dennis L. Nef, *Chair*
David K. Smith, *Graduate Coordinator*
Herbert O. Mason, *Director, Center for Agricultural Business*

Juan C. Batista
James H. Cothern
John W. Hagen
Carl L. Pherson
John R. Shields
Douglas R. Williams

Faculty members 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 coursework.

Bachelor of Science Degree Requirements

Agricultural Business Major ***Units***

General Education 52
(including 9 upper-division units, after completing 56 units of coursework)
CORE
Category 3: Ag Ec 71 (required)
BREADTH
Division 1: Chem 3A (required)
Division 2: Biol 10, Bot 10, or Zool 10 (required)
Division 3: Plant 105 or Psych 10 (recommended)
Division 4: Nutr 53 or CFS 38 (recommended)
Division 8: Ag Ec 1 (required)
CAPSTONE
Agriculture and Government Policy Cluster (recommended): Ag Ec 150 and Phil 125 or Pl Si 150

Major 60
(including 20 upper-division units)
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
FSc/Nutr/Enol: FSc 50, Nutr 54, or Enol 15
AET: AET 1 or 2
Plant Sci: Cr Sc 1, VTF 1, OH 1, or Pl Pr 1
SI: SI 1

Business Management Base ..... (15)
Ag Ec 28 or B A 18
Ag Ec 31 or Acct 4A
Ag Ec 32 or Acct 4B
Ag Ec 78 or DS 71
Ag Ec 76 or IS 50

Agricultural Economics Core ..... (21)
Ag Ec 100, 110, 120, 130, 160, 170, 3 unit upper-division Ag Ec course

Career Specialty ..... (12)
A required concentration 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 check sheet for course listings by concentrations in various disciplines.)

Additional requirement 1-3
Upper-division writing skills by exam or writing course (Plant 110W, IS 105W recommended)

Electives 13-15
Courses supplementary to the major are strongly recommended.

Total requirements 128
(including 40 upper-division units)

Advising Notes

1. New students should request the Advising Information brochure that includes a program of study check sheet from the department.
2. All students should acquire and read the department's *Agricultural Advising Handbook* before they make an appointment with their assigned academic adviser prior to registration each semester.
3. Community college transfer students should consult their academic adviser to determine which CSU Fresno Ag Ec courses are articulated for credit as equivalent to their community college courses.
4. Credits earned for articulated community college courses do not count toward the minimum requirements of 20 upper-division units in the major and 40 upper-division units for the degree.
5. The General Education CORE course required of agricultural business students in Category 3 should be satisfied during the first year in residence at CSU Fresno.
6. The General Education BREADTH courses required of agricultural business students within Divisions 1, 2, and 8 should be completed by the end of the first semester of the sophomore year.
7. The General Education CAPSTONE cluster courses recommended for agricultural business students 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. Students electing a different cluster to satisfy the CAPSTONE requirement are advised to take Ag Ec 150 in the Agricultural Economics core.
8. 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.
9. Students intending to pursue graduate study in agricultural economics at another institution should include approved courses in intermediate macroeconomic theory, differential and integral calculus, inferential statistics, and linear regression in their bachelor's degree program.
10. A dual major of agricultural business with animal sciences, food and nutritional sciences, or plant science 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* or *Minor* in this catalog and consult with the appropriate department adviser.)

Agricultural Business Minor

This minor field of study is principally designed for agricultural science and business majors. Those students majoring in animal, plant, and food sciences or agricultural engineering technology may seek to complement their technical knowledge

with competencies in agricultural business for professional advancement. Students majoring in one of the business degree options may anticipate staying in the San Joaquin Valley where they will most likely become involved with and require an understanding of the agricultural sector as employees, clients, or customers of agribusiness firms. The minor also provides a foundation for graduate study in agricultural business or agricultural economics.

You should consult with your faculty adviser in the Agricultural Economics Department to plan your program. The adviser and the department chair must approve the minor program of study before it can be certified by the school dean, filed with the Office of Evaluations, and recorded on your transcript.

The minor consists of 24 units, of which equivalent courses are acceptable for 12 units.

	Units
Core Requirements	
Intro Microeconomics: Ag Ec 1	3
Financial Accounting: Ag Ec 31	3
Financial Principles: Ag Ec 130	3
Organizational Behavior: Ag Ec 120	3
Production Operations: Ag Ec 110N/110 or Ag Ec 124	3
Agricultural Marketing: Ag Ec 160	3
Government Policy: Ag Ec 150	3
Focus Elective	3
Agri Science Majors: Agri Economics (upper division)	
Business/Other Majors: Agri Science	
Total	24

Advising Notes

1. University policy states that courses fulfilling requirements for a minor may be counted toward General Education (e.g., Ag Ec 1 or Econ 40 in BREADTH Division 8; Ag Ec 150 in CAPSTONE).
2. The department waives the CORE requirements of Ag Ec 1, 31, 130, and 120 for students who have already received credit for Econ 40, Acct 4A, Fin 120, and Mgt 104 or 110 respectively. Such course waivers correspondingly reduce the unit requirement for the minor from the maximum of 24 to a possible 12 — the minimum allowable under the Title 5 code. This adjustment accommodates the university policy that "courses in a major cannot be applied toward a minor unless designated as 'additional requirements' to the major."
3. Concerning the course selections to satisfy the production operations core requirement and the focus elective, consult with the minor adviser about which choices match your career plans.
4. All courses in the minor must be taken for a letter grade; *CR/NC* grading is not acceptable.
5. Successful completion of this minor requires a 2.0 GPA for all courses in the program and for all courses taken at CSU Fresno.

Master of Science Degree Requirements

The Master of Science in Agricultural Business (MSAB) 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. Applicants are normally expected to have postbaccalaureate degree work experience in the agricultural sector in order to fully participate in and benefit from classroom seminars stressing the integration of theory and practice through the application of research knowledge to industry problems. Most graduate courses are offered in the evening to accommodate students who are employed full time.

Admission Requirements

Applicants must possess a baccalaureate degree in agricultural business, agricultural science, business, economics or a related undergraduate major from an accredited institution. Separate applications to the university and to the MSAB program, complete transcripts, letters of recommendation, and scores from either the GRE or GMAT must be submitted for consideration.

Candidates for admission will be evaluated using the following criteria: undergraduate coursework; grade point average of 3.0 or better (last 60 units); GRE scores of 480V/580Q or GMAT of 500 or better; statement of professional goals in application, and letters of recommendation. Applicants lacking in any area with compensating strengths in other areas are encouraged to apply.

Classified standing will be granted to students who meet all of the admission criteria.

Conditional classified standing will be granted to applicants with a 2.5 to 2.99 undergraduate GPA (last 60 units), if GRE or GMAT scores and letters of recommendation attest to the applicant's intellectual maturity, relevant experience, and potential for successful graduate work. Such students will be classified only when all prerequisite foundation courses taken at the undergraduate level have been completed with a minimum 3.0 GPA. Prerequisite foundation courses are not included in the 30-unit degree program.

Foreign students. Applicants whose preparatory education was principally in a language other than English must earn a minimum score of 550 on the Test of English as a Foreign Language (TOEFL).

Note: For complete information on admission requirements and application procedures see *Division of Graduate Studies*.

Prerequisite Courses

The following prerequisite foundation courses, or their equivalents, are expected to be completed prior to enrollment in graduate level agricultural business courses (Ag Bs prefix):

Agricultural Sciences

Three courses from at least two of the agricultural programs:

Animal Science; Dairy Industry, Enology, Food Science, and Nutrition; Plant, Crop Science, Viticulture/Tree Fruits, Ornamental Horticulture, Plant Protection, Soils/Irrigation, and Agricultural Engineering Technology.

Economic Theory

Introductory Microeconomics: Ag Ec 1 or Econ 40

Introductory Macroeconomics: Ag Ec 2 or Econ 50

Intermediate Microeconomics: Ag Ec 100 or MBA 200

Agricultural Economics

Farm Management: Ag Ec 110

Business Management: Ag Ec 120 or MBA 205

Finance Principles: Ag Ec 130 or MBA 212

Agricultural Marketing: Ag Ec 160

Business Foundation

Accounting Principles: MBA 201 or Acct 4A and 4B or Ag Ec 31 and 32

Quantitative Methods: DS 71 or Math 71

Statistical Methods: MBA 203 or Ag Ec 71 and DS 173

Microcomputers/Spreadsheets: Ag Ec 76

Business Law: B A 18 or Ag Ec 28

Organizational Behavior: MBA 210 or Ag Ec 120

Note: Courses prefixed Ag Bs or MBA are open only to graduate students admitted to the MSAB or MBA programs. MBA courses taken to meet MSAB prerequisites cannot be used in the degree program of study.

Program Requirements

All students must complete an agricultural business base, three elective graduate courses from the Sid Craig School of Business and Administrative Sciences, an agricultural elective, and a culminating experience. The agricultural business base consists of five graduate courses (Ag Bs prefix). Research projects are required in each agricultural business base course to allow students to develop skills in critical analysis of agribusiness problems employing appropriate research methodology and methods.

Additionally, students may focus their program to meet career goals by selection of approved electives in consultation with an adviser. Among the electives from the Sid Craig School of Business and Administrative Sciences (MBA prefix), graduate courses in international business and marketing management are recommended for most students. In addition to the above, there are two options for meeting the culminating experience requirement. The research plan requires a thesis or project. The comprehensive examination plan requires an additional approved elective and an examination. Specific program elements are:

Research Plan	*Units*
Agricultural Business Base	15
Ag Bs 210 or 225, 220, 230, 250, 260	
Business Electives	9
Three approved MBA graduate courses; MBA 204 and 214 (recommended)	
Agricultural Elective	3
One approved graduate course in Agricultural Business (Ag Bs), upper-division undergraduate course in Agricultural Economics (Ag Ec), or a graduate/upper-division course in agriculture	
Research Culminating Experience	3
Ag Bs 298 or 299 (See *Advising Note 9*)	
Total requirements	30

Comprehensive Examination Plan	*Units*
Agricultural Business Base	15
Ag Bs 210 or 225, 220, 230, 250, 260	
Business Electives	9
Three approved MBA graduate courses; MBA 204 and 214 (recommended)	
Agricultural Electives	6
Two approved courses in Agricultural Business (Ag Bs), upper-division undergraduate courses in Agricultural Economics (Ag Ec), or graduate/upper-division courses in agriculture	
Culminating Experience	
Comprehensive examination	0
Total requirements	30

Advising Notes

1. Students should obtain specific information concerning the MSAB degree program and "MSAB Advisee Check Sheet" from the department office.
2. Before enrolling in courses, students should contact the department graduate coordinator for aid in program planning.
3. See *Division of Graduate Studies* section in this catalog for university regulations governing the fulfillment of master's degree requirements.
4. In order to continue graduate enrollment the student must maintain a 3.0 GPA and demonstrate satisfactory progress through the degree program. (See *Division of Graduate Studies* for time limitations.)
5. The normal sequence of steps necessary to complete the degree is:
   a. Complete all prerequisite foundation coursework
   b. Attain classified standing
   c. Pass an oral diagnostic examination
   d. Meet the graduate writing skills requirement
   e. Consult with graduate coordinator regarding procedures and guidelines for the Research Plan and the Comprehensive Examination Plan, choose a plan, and petition for advancement to candidacy as soon as eligible
   f. Complete the agricultural business base and elective courses
   g. Maintain a 3.0 GPA
   h. If pursuing the Comprehensive Examination Plan, schedule the examination for the end of the semester in which courses are to be completed, and complete the culminating experience
   i. If pursuing the Research Plan, formally present a project or thesis proposal and file a project or thesis committee assignment form before the semester in which you will enroll in 298 or 299; complete the research and defend the results
6. The oral diagnostic examination may be waived for students with superior academic preparation in the MSAB prerequisite course requirements. (See graduate coordinator for criteria and petitioning process.)
7. Advancement to candidacy requires full classified standing, successful completion of 9 program units in residence, maintenance of a 3.0 GPA, meeting the graduate writing skills requirement, fulfillment of departmental requirements, and filing a petition for advancement to candidacy a minimum of one semester prior to enrollment in the thesis or project within the deadline.
8. The graduate writing skills requirement will be met by earning a minimum of 450 verbal on the GRE or the 50th percentile or above on the GMAT verbal. The requirement can also be met by earning a score of 80 or higher on the university Upper-Division Writing Examination or by earning a ***B*** or better in a designated course approved by the graduate committee of the School of Agricultural Sciences and Technology.
9. Students undertaking the Research Plan may register for a maximum of 6 units of Ag Bs 298 or 299 project or thesis. Such students are required to complete a minimum of 33 units instead of the normal 30 units wherein only 3 units of Ag Bs 298 or 299 is taken.

COURSES

Note: Active immunization against tetanus (available through Student Health Services) 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. The 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. General Education BREADTH, Division 8.

2. Agricultural Sector Analysis (3)
Domestic and international forces affecting industry profitability of farm input suppliers, agricultural producers, com-

modity 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 intermediate algebra. 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. Survey course for non-agricultural business majors. Introduction to applied economics and farm business management topics: farm accounting, financial statement analysis, management principles, computer assisted decision aids, animal and crop enterprise budgeting, farm business planning, tax management, investment analysis, agricultural finance. (2 lecture, 3 lab hours)

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) (Lab fee, $15)

114. Advanced Farm Management (3)
Prerequisite: Ag Ec 110. Design, computerization, and analysis of profit maximizing; cost minimizing and multiperiod linear programming models; risk and uncertainty; data and information requirements for decision making; optimizing the level and mix of crop 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.

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.

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.

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)

31. 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) (Lab fee, $15) (Former Ag Ec 30)

32. Agribusiness Managerial Accounting (3)
Prerequisite: Ag Ec 31 or Acct 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, 3 lab hours) (Lab fee, $15)

130. Agricultural Finance (3)
Prerequisite: Ag Ec 1 and Ag Ec 31 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.

136. Farm and Ranch Appraisal (3)
Prerequisite: Ag Ec 1; Ag Ec 110 or 110N (recommended). 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.

Agricultural Development (Ag Ec)

140. International Agriculture (3)
Prerequisite: Ag Ec 1. Comparative agricultural development in low, middle, and high income countries; structural, institutional, policy, research, technological, investment, trade strategies for modernizing food production/processing/distribution into technically sustainable, culturally compatible, economically viable farming systems; programs addressing poverty, malnutrition, overpopulation, underemployment, environmental degradation.

Public Policy (Ag Ec)

150. Agricultural and Food 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; consumer concerns about nutrition and food safety, biotechnology; food industry and government regulation; international agricultural trade. General Education CAPSTONE Cluster course.

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.

Product Marketing (Ag Ec)

160. Agricultural Marketing (3)
Prerequisite: Ag 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 160. 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 160. 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.

168. Agricultural Marketing Management Project (1-3; max total 3)
Prerequisite: Ag Ec 71, 164 (or equivalent) and permission of instructor. Marketing management principles in preparing marketing plan for annual National Agri-Marketing Association intercollegiate competition; strategic planning for product development, sales projections, distribution channels, pricing tactics, promotion/advertising, market share analysis; focus group, survey research, oral/audio-visual team presentation. (2 activity hours per unit)

Decision Analysis (Ag Ec)

71. Agricultural Business Statistics (3)
Prerequisite: Students must take the ELM exam; students who do not pass the exam must record a grade of *C* or better in a college-taught intermediate algebra course. 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. General Education CORE, Quantitative Reasoning.

76. Agribusiness Microcomputer Applications (3)
Prerequisite: intermediate algebra. 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, 3 lab hours) (Lab fee, $15)

78. Agricultural Systems Analysis (3)
Prerequisite: ELM requirement met. Functional relationships, marginal analysis and decision-making models in agribusiness; logic and probability in diagnosing problems, designing operations and achieving objectives; identification of procedures for efficient resource utilization. (Former Ag Ec 174)

170. Agribusiness Research Methods (3)
Prerequisite: senior standing or permission of instructor; Ag Ec 71, 76, 100, 120, 130, 160; 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. A culminating project includes proposal, research, written report, and oral presentation of findings.

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. Approved for ***SP*** grading.

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. Approved for ***SP*** grading.

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. (1 lecture, 2 lab hours) (Field trip fee, up to $75)

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. *CR/NC* grading only.

195. Agribusiness Career Seminar (2)
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.

GRADUATE COURSES

(See *Course Numbering System 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.

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.

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.

225. Food Processing and Distribution Management (3)
Prerequisite: Ag Ec 124 or permission of instructor. Analysis of strategic management decisions involving pricing relationships, processing and packaging systems, transportation modes and distribution logistics for agricultural products in domestic and global markets; application of modern management tools to food industry case problems including operations of international food marketing firms.

230. Agricultural Finance Analysis (3)
Prerequisite: Ag Ec 130 or Fin 120 or MBA 212. 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 database management, tax management, and optimal capital asset replacement scheduling.

240. Agricultural Sector Planning (3)
Prerequisite: Ag Ec 130 or Fin 120, 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.

260. Agricultural Marketing Analysis (3)
Prerequisite: Ag Ec 160. 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.

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: advancement to candidacy. Individually directed readings in a field of special concern to the student's graduate program; appropriate research proposal writing and evaluation required.

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.

290. Independent Study (1-3; max see reference)
See *Academic Placement — Independent Study*. Approved for *SP* grading.

298. Project (3-6; max total 6)
Prerequisite: prior advancement to candidacy; see *Criteria for Thesis and Project*. 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. Approved for *SP* grading.

299. Thesis (3-6; max total 6)
Prerequisite: prior advancement to candidacy; see *Criteria for Thesis and Project*. Preparation, completion, and submission of an acceptable thesis for the master's degree. Approved for *SP* grading.

IN-SERVICE COURSE

(See *Course Numbering System*.)

Agriculture (Agri)

300. Topics In Agriculture (1-3)
Topics may require lab hours. In-service professional training in selected areas of agriculture.

AGRICULTURE Animal Sciences and Agricultural Education

Prepare for the future in agricultural sciences, technology, and management with a degree in animal sciences or agricultural education. The Department of Animal Sciences and Agricultural Education offers options in agricultural communications, teacher preparation, basic animal science, dairy science, meat technology, preveterinary medicine, and production management. Courses integrate animal evaluation, behavior, disease, environmental management, genetics, health, marketing, muscle biology, nutrition, physiology, production, and reproduction.

The agricultural education major is designed to prepare students for positions as agricultural communication specialists and vocational agriculture teachers. Specializations may be developed in animal sciences, plant sciences, or agriculture.

Instructional Facilities

Instruction in the animal science disciplines is enhanced through practical application at the various farm laboratory units. The Beef, Dairy, Horse, Meats, Sheep, and Swine units are maintained to support this educational purpose. In addition, veterinary and physiology 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 are available.

Career Opportunities

Students specializing in animal science prepare for careers in the livestock industry where they may be engaged in consultation, management, production, research, teaching, or other professional services as well as careers in business, government and foreign service. Students specializing in agricultural education may pursue a variety of challenging careers in the educational field.

The courses offered in the programs listed below provide the necessary background to prepare students for careers in the agricultural industry.

Agricultural Communications. Combines courses in agriculture with a journalism core and a specialty in advertising, news-editorial, photo communications, public relations, or radio-television designed to train students for employment opportunities in the field of communication.

Basic Animal Science. Provides a science oriented curriculum in the disciplines of animal science. Prepares students for postbaccalaureate study or careers related to science, research, and the technical aspects of animal science.

Dairy Science. Prepares students for commercial and registered dairy herd management, breed association representatives, artificial breeding services, dairy sanitation, milk quality control, and other dairy-related occupations.

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.

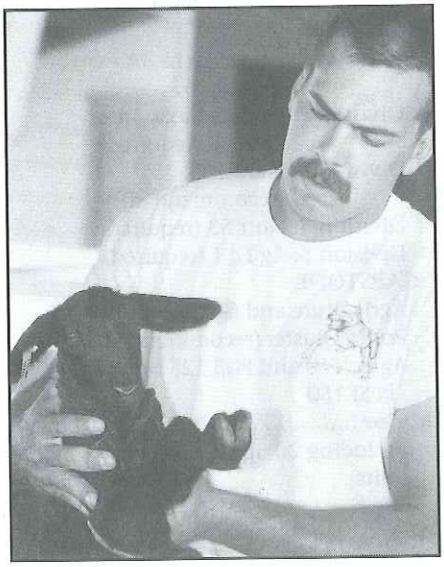
School of Agricultural Sciences and Technology
Department of Animal Sciences and Agricultural Education
ANNE V. RODIEK, *Chair*
Agriculture Building, Room 230
(209) 278-2971

B.S. in Animal Sciences
Options:
Basic Animal Science
Dairy Science
Meat Technology
Preveterinary Medicine
Production Management
B.S. in Agricultural Education
Options:
Agricultural Communications
Teacher Preparation
M.S. in Agriculture
Option: Animal Science
Minor in Animal Sciences

Preveterinary Medicine. Provides a structured program of courses in animal science and related biological/physical sciences which prepares students for admission to schools of veterinary medicine and for employment in the animal health industry.

Production Management. 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 Minor in Agricultural Business.

Teacher Preparation. Prepares students for positions as vocational agriculture teachers. (See *Agricultural Education Major.*)



Faculty

Anne V. Rodiek, *Chair*
Scott A. Williamson, *Graduate Coordinator*
Richard A. Rogers, *Agricultural Education Credentialing Coordinator*

David H. Bremel
John A. Jacobs
Arthur A. Parham
Randy C. Perry
Michael W. Thomas

The 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 have combined philosophies of undergraduate education, research, curriculum development, industry relations, and career placement into a unique program. Their experience combines the practical and theoretical aspects of the animal sciences to provide an education second to none. Students are assigned an adviser who assists in both academic and career planning on an individual basis. The faculty place a high priority on strong adviser-advisee relationships.

Bachelor of Science Degree Requirements

Animal Sciences Major

Options: Basic Animal Science, Dairy Science, Meat Technology, Preveterinary Medicine, Production Management.

Units

General Education 51
(including 9 upper-division units, after completing 56 units of coursework)
CORE
Category 3: Ag Ec 71 or Plant 99 (recommended)
BREADTH
Division 1: Chem 1A or 3A (required)
Division 2: Biol 10, BioSc 1A or Zool 10 (required)
Division 3: Plant 105 (recommended)
Division 4: Nutr 53 (required)
Division 8: Ag Ec 1 (required)
CAPSTONE
Agriculture and Government Policy Cluster (recommended): Ag Ec 150 and Phil 125 or Pl Si 150

Major 45
(including 20 upper-division units)
Animal Science Core ..... (33)
A Sci 1, 11, 35, 36, 65A, 101, 125, 135, 145A, 155, 156, 171A, 186
Options (select one) ..... (12)
Basic Animal Science
A Sci 180
Select one course from the following: A Sci 21, 31, 41, 51, 61
Select one course from the following: A Sci 146, 165, 166, 172
Select one course from the following: A Sci 121A, 131A, 151, 161
Dairy Science
A Sci 61, 161, 163, 181
Meat Technology
A Sci 165 or 194, 172, 181
Select one course from the following: A Sci 21, 31, 41
Preveterinary Medicine
A Sci 165, 166
Select two courses from the following: A Sci 21, 31, 41, 51, 61
Production Management
A Sci 181, 194 or 196
Select two courses from the following: A Sci 21, 31, 41, 51, 61
Select one course from the following: A Sci 121A, 131A, 151, 161

Additional requirements 16-29
Upper-division writing skills
Basic Animal Science Option
Ag Ec 76 or Plant 12; Chem 8, 150, 153; Micro 20
Dairy Science Option
A Sci 146, 165, 194; Ag Ec 76 or Plant 12; Ag Ec 110N or 117 or 120; FSc 3, 123 or 143
Meat Technology Option
Ag Ec 76 or Plant 12; Chem 3B; FSc 1, 110, 125, 141, 178; Micro 20;
Preveterinary Medicine Option
BioSc 1B; Chem 1B, 8, 109; Micro 20; PhyAn 135; Phys 2A
Production Management Option
Select 15 units from:
Ag Ec 28, 31, 76, 110N or 117 or 120, 130, 160

Electives 3-16
Courses supplementary to the major are strongly recommended.

Total minimum requirements ... 128
(including 40 upper-division units)

Advising Notes

1. New students should request an option check sheet from the department.
2. All students should make an appointment with their assigned faculty adviser prior to registration each semester.
3. *CR/NC* grading is not permitted for courses included in the major unless the courses have been designated *CR/NC* grading only.
4. Fifty-one units of General Education may be exceeded depending upon the selection of courses.
5. Some General Education courses in CORE and BREADTH may be double counted to simultaneously satisfy Major as well as General Education requirements.
6. The upper-division writing skills requirement can be met by passing the university examination (UDWE) 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 exam 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.
7. One semester prior to graduation make an appointment with your faculty adviser to prepare an official Certification of Major Requirements form.
8. Preveterinary medicine students should consult their faculty adviser regarding entrance requirements and admissions procedures to the School of Veterinary Medicine, University of California, Davis. Total number of units will exceed 128 if a student chooses to meet all of the UC Davis School of Veterinary Medicine entrance requirements.

Bachelor of Science Degree Requirements

Agricultural Education Major

Options: Agricultural Communications, Teacher Preparation

Units

General Education 51
(including 9 upper-division units, after completing 56 units of coursework)
CORE
Category 3: Ag Ec 71 or Plant 99 (recommended)
BREADTH
Division 1: Chem 3A (required)
Division 2: Bot 10 or Zool 10 (required)

Division 3: Plant 105 (recommended)
Division 4: Nutr 53 (recommended)
Division 6: Engl 20 (required)
Division 8: Ag Ec 1 (required)
CAPSTONE
Agriculture and Government Policy Cluster (recommended): Ag Ec 150 and Phil 125 or Pl Si 150

Major 54-57
(including 20 upper-division units)
Select Teacher Preparation or Agricultural Communications

Teacher Preparation Core.... (36)
Agricultural Economics .. (6)
Ag Ec 31, 110N or 120
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; SI 100; VTF 110
Agricultural Engineering Technology ..... (9)
AET 1, 50, 114
Teacher Preparation Career Specialty ..... (18)
Select one: Animal Science, Agricultural Engineering Technology, or Plant Science (see *Teacher Preparation Option check sheet*)

Agricultural Communications Core ..... (45)
Agricultural Economics ... (6)
Ag Ec 153, 166
Agricultural Education ... (3)
Ag Ed 150
Mass Communication and Journalism ..... (9)
MCJ 1, 10, 104
Plant Science ..... (12)
Cr Sc 1; OH 1; SI 100; VTF 110
Agricultural Engineering Technology ..... (3)
AET 2
Enology, Food Science, and Nutrition ..... (3)
FSc 3
Animal Science ..... (9)
A Sci 1, 11, 21 or 31 or 41 or 51 or 61
Agricultural Communications Career Specialty ..... (12)
Select one: Advertising, News-Editorial, Photo Communications, Public Relations, Radio and Television (see *Agricultural Communications Option check sheet*)

Additional requirements 6-22
Senior Project: Ag Ed 150 ..... (3)
Teacher Preparation
Upper-division writing skills
Teacher Education requirements: Ag Ed 135, 150, 187, 189; EHD 50; H S 121
Agricultural Communications
Upper-division writing skills (MCJ 102W required)

Electives 1-14
Courses supplementary to the major are strongly recommended.

Total minimum requirements ... 128
(including 40 upper-division units)

Advising Notes

1. See advising notes 1-8 following animal sciences major.
2. Teacher preparation majors seeking a Single Subject Teaching Credential are urged to take the Upper-Division Writing Examination (UDWE) at least once. Those who pass the examination may receive one unit of credit. (For details consult the Office of Testing Services.)
3. Contact the Admissions Office of the School of Education and Human Development for requirements related to the California Basic Educational Skills Test (CBEST).
4. 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.
5. 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.)
6. Agricultural communications students must take and pass the Language Qualification Examination. A screening examination administered by the Mass Communication and Journalism Department must be passed before permission is given for enrollment in MCJ 10 and in most of the other journalism 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.

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 coursework required for the B.S. degree in Agricultural Education.

Credential candidates must pass examinations in reading, writing, and mathematics in addition to other numerous state of California and CSU Fresno requirements. Consult the agricultural education major adviser and the School of Education and Human Development for details; file an official program of study.

Agricultural Specialist Credential Program

The Agricultural Specialist Credential, which authorizes holders to teach secondary school vocational agriculture, is offered jointly by the School of Agricultural Sciences and Technology and the School of Education and Human Development. It requires completion of the Single Subject Waiver Program (see above), professional education courses (see *Education — Single Subject Credential — Program Requirements, Professional Preparation*), and an approved fifth-year program of 30 postgraduate units including Ag Ed 135, 150, 187, 189; EHD 155B; CTET 161; and Agri 280, 281.

Animal Sciences Minor

This program is designed for agricultural business majors. Students in other majors who desire additional technical and animal management skills may also opt for this minor. Additional livestock knowledge and experience will help the manager or consultant relate to and communicate with employees or clients.

Students should consult with a faculty adviser in the Animal Sciences Department to plan the minor. The adviser and department chair must approve the minor program before it can be certified by the school dean. It is then filed with the Evaluations Office and recorded on the transcript.

A Minor in Animal Sciences consists of a minimum of 21 units. Nine of the units must be upper division.

	Units
Core Requirements	
Intro Animal Sciences: A Sci 1	3
Livestock Evaluation: A Sci 11	3
Animal Nutrition: A Sci 35	3
Farm Animal Environment: A Sci 101	3
Focus Areas	
Animal Science Principles	3-6
Production and Management	3-6
Total	21

Advising Notes

1. Obtain Animal Sciences Minor advising sheet from a faculty adviser for selection of courses in each of the focus areas.
2. Courses in a major cannot be applied toward a minor unless designated as additional requirements.
3. All courses in the minor must be taken for a letter grade. *CR/NC* grading is not acceptable.
4. A minor may be earned only at the time a student earns the first baccalaureate degree.

Master of Science Degree Program

The Master of Science in Agriculture with an option in animal science is a 30-unit degree program 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. Coursework in animal science includes animal nutrition, meats, physiology, breeding and genetics, management, and health. Full-time graduate students may earn the degree within two years when working closely with an adviser. To accommodate part-time students, graduate courses are offered in the late afternoon or evening.

Admission Requirements. The Master of Science in Agriculture with an option in animal science assumes preparation equivalent to a bachelor of science degree in animal science from an accredited institution. This degree must include the following courses or their equivalents: A Sci 35, 125, 135, 145A, 155, 165 or 166; BioSc 1A or Zool 10; Chem 1A or 3A, Chem 8; and two animal science production courses. The above courses or equivalents must be completed prior to enrollment in courses which will be applied to the master's program.

Admission by the university does not imply acceptance in the Master of Science in Agriculture program. Separate application must be made to the School of Agricultural Sciences and Technology.

Applicants whose preparatory education was principally in a language other than English must earn a minimum TOEFL score of 550.

Admission Materials. To be considered for admission to the graduate program, the candidate must submit the following materials: evidence of a baccalaureate degree in animal science from an accredited institution; official transcripts of all college work; scores from the Graduate Records Examination Aptitude Test (GRE); a university application; a school application; three letters of reference from employers or faculty at the university attended most recently; and a statement of 500 words or less indicating reasons for pursuing a master's degree.

Admission Criteria. Candidates for admission will be evaluated using the following criteria: undergraduate coursework; grade point average of 3.0 or better (last 60 units); GRE scores of 480V/580Q; 500-word statement of professional goals and three letters of recommendation. Students lacking in any area with compensating strengths in other areas are encouraged to apply.

Classified standing will be granted to students who meet all of the admission criteria. Conditional classified standing may be granted to applicants with a 2.75-2.99 GPA (last 60 units) and/or those required to complete prerequisite coursework.

Prerequisite Requirements. Plant 99 or Math 101 is required.

"One of my college professors was very influential. He encouraged me by telling me that there were career opportunities with horses and that I should do the things I like instead of the things I'm supposed to do."

Anne Rodiek
Chair, Animal Sciences
and Agricultural Education

Program Requirements

The student, under the direction of a graduate adviser, prepares and submits a coherent program individually designed within the following framework:

	Units
Core	9
Agri 200, 201, 220	
Required courses	8
Agri 260 (1+1) and select 6 units from the following: Agri 240T, 241, 242, 244, 246, 247, 248	
Electives	9
100-200 level courses with prior approval of adviser and thesis committee	
Culminating experience	4
Agri 299	
Total minimum requirements	30

Graduate 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 program from the department office.
3. Upon admission, students should see the graduate coordinator for aid in program planning, selection of graduate adviser, and selection of a thesis committee.
4. To progress through the graduate program, the student must:
   a. Maintain a minimum 3.0 GPA
   b. Complete all prerequisite coursework
   c. Attain classified standing
   d. Meet university writing requirement
   e. File for advancement to candidacy
   f. Complete the program requirements
   g. File a master thesis committee assignment form
   h. Formally present and defend the thesis research results
5. Advancement to candidacy requires the completion of 9 program units in residence (minimum GPA of 3.0), meeting the university writing skills requirement, departmental requirements, and filing a petition for advancement to candidacy a minimum of one semester prior to enrollment in thesis and within the deadline.
6. The student shall meet the university writing requirement by earning a minimum of 450 verbal on the GRE. 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 Agricultural Sciences and Technology.

7. The student may apply a maximum of 2 units of independent study to the master's program.
8. See *Division of Graduate Studies* in this catalog for university requirements.

COURSES

Note: Active immunization against tetanus (available through Student Health Services) 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 varies each semester depending upon itinerary. The student should ask the course instructor.

Animal Science Principles (A Sci)

1. Introduction to Animal Science (3)
Overview of the livestock and poultry industry; types and breeds, world distributions, foods and products from farm animals, reproduction, genetics, nutrition, and marketing. (2 lecture, 3 lab hours)

35. Feeds and Feeding (3)
Prerequisite: Chem 3A. Recommended concurrent enrollment in A Sci 36. Principles of nutrition; nutrients and their metabolism; comparison of qualitative nutrient requirements of non-ruminant and ruminant animals and formulating diets to meet these requirements.

36. Feeds and Feeding Lab (1)
Prerequisite: A Sci 35 or concurrently. Laboratory principles involved with nutrition, digestion, and diet formulation. (3 lab hours)

65A. Introduction to Animal Health (3)
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. (2 lecture, 3 lab hours)

101. Environmental Management of Farm Animals (3)
Prerequisite: A Sci 1. Basic principles of environmental management as applied to domestic farm animals. Special emphasis given to animal behavior, animal welfare, and animal performance. The optimal animal environment will be studied in detail.

125. Principles of Animal Breeding (3)
Prerequisite: A Sci 1. Genetic principles and application to livestock production; basic inheritance, qualitative genetics, variation in economic traits of livestock, quantitative inheritance, selection progress; current methods of genetic livestock improvement.

135. Animal Nutrition (3)
Prerequisite: A Sci 35. Principles of nutrition and metabolism; digestive physiology of farm animals.

145A. Anatomy and Physiology of Farm Animals (3)
Prerequisite: Biol 10 or Zool 10. General structures of farm animals and physiological functions of organs in the animal body.

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.

155. Animal Reproduction (3)
Prerequisite: A Sci 145A. Principles of reproductive physiology, associated endocrine hormones, and their application to domestic animals.

156. Artificial Insemination — Embryo Transfer (1)
Prerequisite: A Sci 145A, 155 (or concurrently). Basic principles of artificial insemination and embryo transfer with emphasis on application to cattle. (3 lab hours)

163. Dairy Cattle Nutrition (3)
Prerequisite: A Sci 135. Principles of dairy cattle nutrition. Nutritional requirements of the dairy calf through the mature cow. Special emphasis on computerized diet formulation and feed inventory control. (Former A Sci 185T section)

165. Infectious Diseases of Domestic Animals (4)
Prerequisite: Biol 10 or Zool 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)

166. Parasitology (4)
Prerequisite: college zoology. A study of the general biology of symbiotic organisms of animals and man; including life cycles, infection and disease processes, physiology, and treatment. Laboratory emphasis of biological processes, parasite identification, and diagnosis. (3 lecture, 3 lab hours)

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 cutability and quality. (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. Management principles and practices of purebred and commercial pork production. Nutrition, reproduction, environmental management, health, marketing, selection, and records are studied. (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)

52. Beginning English Equitation (2)
Basic horsemanship skills including haltering, grooming, saddling, and bridling; beginning English riding skills including proper body position at the walk, trot, and canter and simple use of aids to cue the horse; basic care of horse. (Two 2-hour activities) (Course fee, $100) (Former A Sci 185T section)

53. Intermediate English Equitation (2)
Prerequisite: A Sci 52 or equivalent. Development of a functional position to control and balance the horse at all three gaits (hunt seat style); beginning jumping; care and use of tack and equipment. (Two 2-hour activities) (Course fee, $100) (Former A Sci 185T section)

54. Beginning Western Horsemanship (2)
Basic horsemanship skills including haltering, grooming, saddling, and bridling; beginning Western riding skills at the walk, jog, and lope and simple use of aids to cue the horse. (Two 2-hour activities) (Course fee, $100) (Former A Sci 185T section)

55. Intermediate Western Horsemanship (2)
Prerequisite: A Sci 54 or equivalent. Western horsemanship skills to control and balance the horse at all three gaits and to perform other movements basic to the Western horse; care and use of tack and equipment. (Two 2-hour activities) (Course fee, $100) (Former A Sci 185T section)

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)

81. Introduction to Livestock and Dairy Evaluation (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, swine, dairy, and horse industries. (2 lecture, 3 lab hours)

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)

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)

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)

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)

171A. Meat Science (3)
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 processing without slaughtering. (2 lecture, 3 lab hours)

172. Meat Technology (3)
Prerequisite: A Sci 171A. Fabricating and pricing of wholesale and retail meats; technology of fresh and processed meat; sausage manufacturing; quality control. (2 lecture, 3 lab hours)

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. Approved for ***SP*** grading.

181. Advanced Livestock and Dairy Evaluation (3; max total 6)
Prerequisite: A Sci 11 or 81 or permission of instructor. Detailed analysis of animal form related to functional efficiency, economic value, and sound livestock production management. Written and oral defense of judgments (dairy, horse, livestock, meats). (2 lecture, 3 lab hours; field trips)

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)

183. Animal Science Tour (2; max total 4)
A field study tour of animal science enterprises including ranches, processing plants, and facilities at other universities. ***CR/NC*** grading only. (Field trip fee, $75)

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. (Rodeo Section A — Safety, $50; Rodeo Section B — Practice, $100)

186. Animal Science Seminar (1)
Prerequisite: senior standing or permission of instructor; 12 upper-division units in the major. Latest developments in research; assigned papers in animal science to be presented in both oral and written form.

190. Independent Study (1-3; max see reference)
See *Academic Placement — Independent Study*. Approved for ***SP*** grading.

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. ***CR/NC*** grading only.

196. Enterprise Management (1; max total 6)
Prerequisite: AET 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.

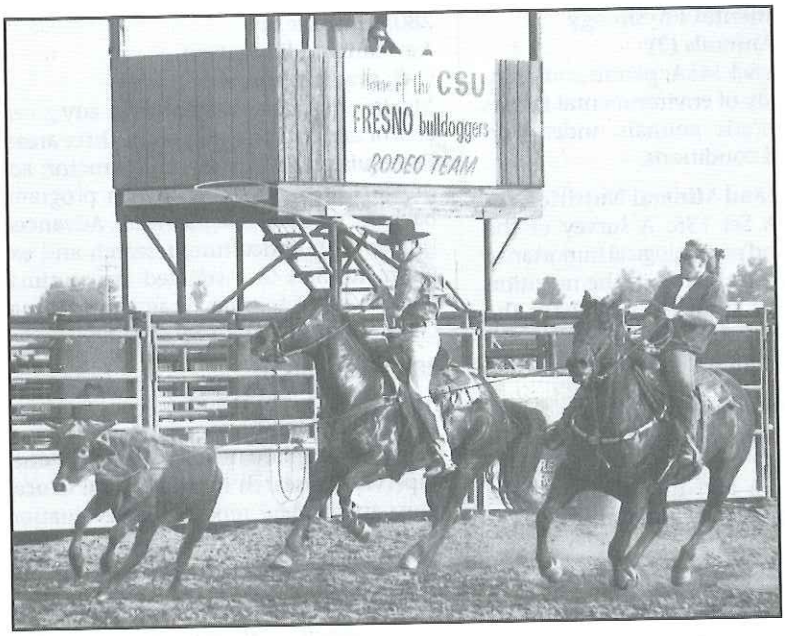
Agricultural Education (Ag Ed)

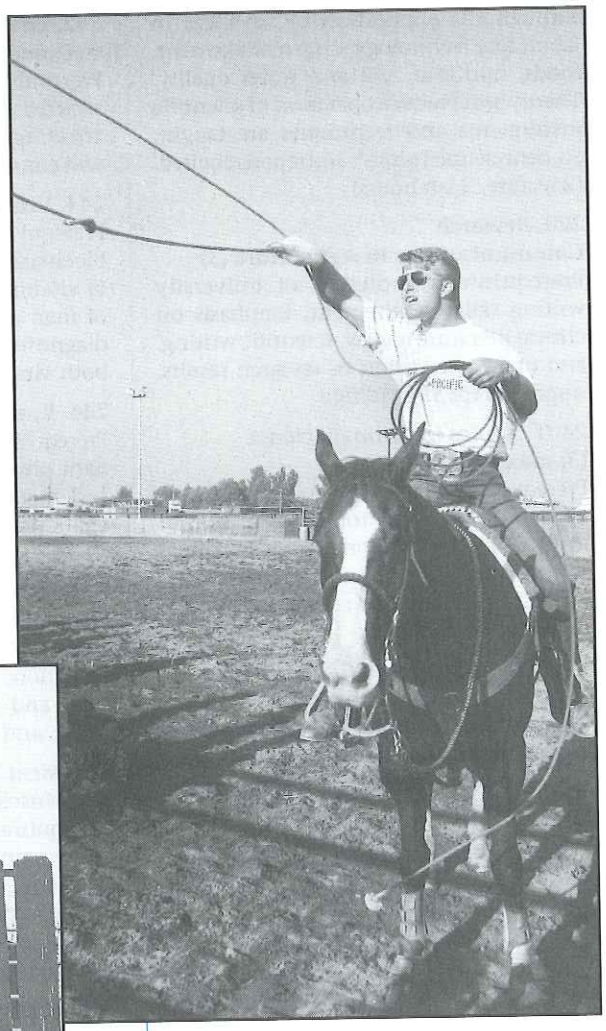
80. Undergraduate Research (1-4; max total 4)
Open to freshmen and sophomores with permission of instructor. Exploratory work on a suitable agricultural problem in agricultural education. Approved for ***SP*** grading.

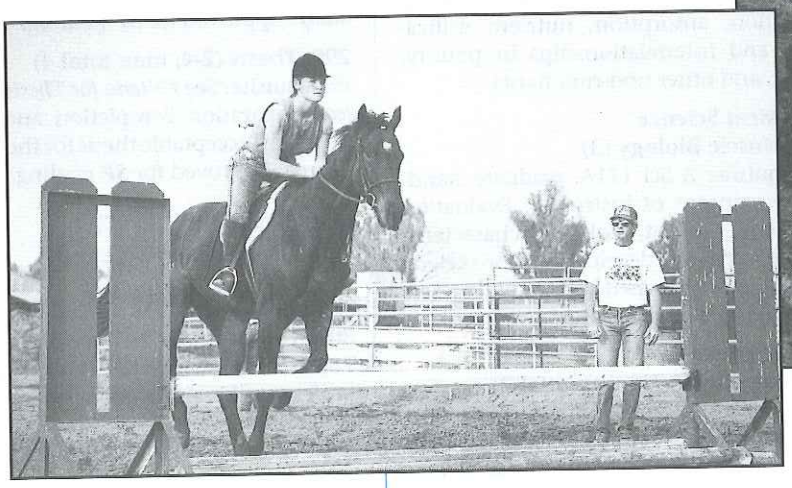
115. FFA Activities (2; max total 4)
Organization and administration of various FFA activities. Parliamentary procedure and meeting organization; committee work and structure. (Former Ag Ed 160T section)

135. Introduction to Agricultural Education (3)
Survey of agricultural education in California, including qualifications for teaching agriculture, structure and content of vocational agriculture programs. Supervision of vocational youth organizations.

150. Agricultural Resources and Computer Applications (3)
Prerequisite: senior standing or permission of instructor; 12 upper-division units in the major. Development and application of techniques for obtaining and using resource materials including government documents, university and experiment station reports. Development of computer skills utilized in agricultural education. (2 lecture, 2 lab hours) (Lab fee, $15)







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. Approved for ***SP*** grading.

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. Education in Agricultural Mechanics (3)
Prerequisite: junior standing. Strategies for organizing, teaching, and administering educational programs in agricultural mechanics for youth and adults.

190. Independent Study (1-3; max see reference)
See *Academic Placement — Independent Study*. Approved for ***SP*** grading.

GRADUATE COURSES

The following courses are open to students who have been accepted into the graduate program. Students who are not in graduate standing should contact the department graduate coordinator prior to enrolling.

Agriculture (Agri)

200. Biometrics in Agriculture (3)
Prerequisite: Math 101 or Plant 99, 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 130; Chem 105, 109, 151; Enol 115 or FSc 115. Agricultural problem solving

through the application of advances in laboratory technology, crop management, foods, nutrition, soil and water quality. Theory and practice operation of scientific instruments and techniques are taught. Student-defined project and report required. (2 lecture, 3 lab hours)

220. Research Communications in Agriculture (3)
Prerequisite: completion of university writing skills requirement. Emphasis on critical literature review, scientific writing, and oral presentation of research results. Approved for ***SP*** grading.

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.

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.

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.

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.

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.

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. Approved for ***SP*** grading.

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*. Approved for ***SP*** grading.

299. Thesis (2-4; max total 4)
Prerequisite: See *Criteria for Thesis and Project*. Preparation, completion, and submission of an acceptable thesis for the master's degree. Approved for ***SP*** grading.

IN-SERVICE COURSE

(See *Course Numbering System*.)

Agriculture (Agri)

300. Topics in Agriculture (1-3)
Topics may require lab hours. In-service professional training in selected areas of agriculture.

AGRICULTURE Child, Family, and Consumer Sciences

Join the leader in science, technology, and management. The Department of Child, Family, and Consumer Sciences 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, preschool laboratory, and after school children are maintained for instructional purposes. Students plan, implement, and evaluate activities for the children. Computer facilities are also available in the building. 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 concentrations of child and family studies, clothing and textiles, fashion merchandising, foods in business, consumer science and housing, general home economics, 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 academic adviser in selecting appropriate courses for their special areas of interest. Appropriate selection of courses offered in the concentrations listed below 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 (this requires a credential), 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. Computer-aided design is utilized in teaching merchandising and design principles. Career opportunities are found in retail, wholesale, and private apparel industries.

Foods in Business. Courses prepare students for careers as sales representatives for manufacturers of cookware and kitchen appliances, menu consultants, managers of food services, food brokers, food stylists, food editors, spokespersons, or market researchers.

School of Agricultural Sciences and Technology
Department of Child, Family, and Consumer Sciences
NINA J. DILBECK, *Chair*
Art-Home Economics Building, Room 204
(209) 278-2283

B.A. in Home Economics
B.S. in Child Development
M.S. in Home Economics
Minor in Home Economics

Programs of study:
Child and Family Studies
Clothing and Textiles
Consumer Science and Housing
Fashion Merchandising
Foods in Business
General Home Economics
Home Economics Teacher Education

General Home Economics. Courses prepare students for such careers as Cooperative Extension Service agents or specialists, and 4-H youth agents.

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.

A state-of-the-art textile laboratory gives students opportunity for advanced research.

Faculty

Nina J. Dilbeck, *Chair*

Coordinators:

Carolyn B. Jackson, *Graduate*

Dianne K. Dickerson, *Clothing and Textiles; Fashion Merchandising*

William R. Fasse, *Consumer Science and Housing*

Michele M. Kilner, *Child and Family Studies*

Elena F. Kissick, *Foods in Business*

To be appointed, *Home Economics Education*

Richard D. Berrett
N. Joanne Caid
David E. Goldbloom
Eugene Wm. Krebs
Vivian Y. Kunimitsu

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 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 51-52
(including 9 upper-division units, after completing 56 units of coursework)

CORE
Category 2: Spch 3 (recommended)
Category 3: Psych 42 or Math 11 (recommended for Child and Family Studies)

BREADTH
Division 1: Chem 3A (required for Clothing and Textiles, Foods in Business, and Home Economics Teacher Education)
Chem 3B (recommended for Child and Family Studies)
Division 2: Biol 10 (required for Home Economics Teacher Education, Foods in Business, Clothing and Textiles, and Child and Family Studies)
Division 3: Psych 10 (required for Home Economics Teacher Education, Foods in Business, and Clothing and Textiles)
Division 4: Nutr 53 or CFS 38 (recommended); H S 124, Psych 132 or Psych 171 (recommended for Child and Family Studies)
Division 8: Soc 2 (recommended for Child and Family Studies)
Ag Ec 1 or Econ 40 (required for Clothing and Textiles, Consumer Science, Foods in Business, Fashion Merchandising, and Home Economics Teacher Education)

CAPSTONE
Juveniles and Adolescence Cluster (recommended): Crim 120 and CFS 136 (recommended) or Psych 102

Major 48
(including 24 upper-division units)

Department Core ..... (18)
H Ec 1; and select one course from each area: CFS 131; F M 20 (required for Clothing and Textiles and Fashion Merchandising) or 120; CSH 105 or 113; FSc 50, Nutr 53 or 54; GID 70, 107 or CSH 171 (Note: H Ec 1, F M 20, Nutr 54, GID 70, CSH 113 or 115, and CFS 131 required for Home Economics Teacher Education)

Career Specialty ..... (30)
Select one:

Child and Family Studies
CFS 32, 37, 39, 131, (if not taken in the core), 133, 134, 135, and 9-12 upper-division units in consultation with adviser

Clothing and Textiles
CSH 105, GID 70 (if not taken in the core); F M 22, 24, 26, 120, 121, 123, 124, 126, and 2-8 upper-division units in consultation with adviser

Consumer Science and Housing
CSH 105 (if not taken in the core), 110, 111, 113, 114, 115, 116, 117, 118, and 3-6 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 2-8 upper-division units in consultation with adviser

Foods in Business
FSc 1, 50, 150; FSM 30, 131, 135 or CSH 114; Nutr 54, 149; 6 upper-division units in consultation with adviser

General Home Economics
Minimum 6 units from each discipline: CFS, CSH, F M, FSc or FSM or Nutr, GID (selection of courses in consultation with adviser)

Home Economics Teacher Education
(See *Single Subject Credential Waiver Program* below)

Additional requirements 1-21
Upper-division writing skills (by examination or course)

Clothing and Textiles
Chem 3B

Consumer Science and Housing
Econ 40 or Ag Ec 1, and Econ 50 or Ag Ec 2

Fashion Merchandising
Acct 3 or 4A; Ag Ec 1 or Econ 40, and Econ 50; Mgt 104 or 106 or 110 (HRM 150 may be substituted for Mgt 104, see adviser), Mktg 100, 130, 138

Foods in Business
Acct 4A, Chem 8, Mktg 100, 132 or 138; Mgt 104

Electives 3-24
Courses supplementary to the major are strongly recommended.

Total requirements 124
(including 40 upper-division units)

Single Subject Credential Waiver Program

Students who successfully complete the Single Subject Credential Waiver Program are not required to take the NTE (see *Education — Curriculum, Teaching, and Educational Technology,* General Requirements for Initial Admission and Requirements for Admission to Student Teaching). The Agriculture — Child, Family, and Consumer Sciences Single Subject Credential Waiver Program in home economics consists of **Core:** F M 24 or 26, 121, FSc 50, GID 107; CSH 114; CFS 136; **Breadth:** CSH 117, 171; CFS 135, 139; FSc 152. Additional requirements by the Commission on Teacher Credentialing include: H Ec 148, 241; CTET 101, 159, 161; ERF 151, 152; EHD 155A, 155B; LEE 156S; H S 121; and SPED 160.

Advising Notes

1. New students should request a program of study check sheet from the department.
2. All students should make an appointment with an assigned academic adviser prior to registration each semester. Check with department for academic adviser assignment.
3. *CR/NC* grading is not permitted in courses used to fulfill major requirements.
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. Career objectives should be selected on basis of individual interest.
6. 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; by obtaining a letter grade of *C* in an approved course the student meets the university writing skills requirement.
7. General Education courses designated as required by the department are prerequisites to many courses in the program of study.
8. One semester prior to graduation make an appointment with an assigned academic adviser to prepare and file an official certification of major requirements.

Bachelor of Science in Child Development

The university offers an interdisciplinary major leading to the Bachelor of Science in Child Development. Information about this major is in the *Special Programs* section in this catalog.

Home Economics 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. The minor program must be certified by the department chair and the school dean. The certified minor program is filed with the university Office of Evaluations.

Master of Science Degree Program

The Master of Science in Home Economics with an option in education is a 30-unit program designed to increase the competencies of secondary school teachers and other home economics related 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. Graduate courses are offered in the late afternoon or evening to accommodate part-time students. Full-time graduate students may earn their degree within two years when working closely with an adviser.

Admission Requirements. The Master of Science degree in Home Economics assumes preparation equivalent to a Bachelor of Arts degree in Home Economics; 3.0 GPA (last 60 semester units); 480V/580Q GRE score; completion of all prerequisite coursework; separate school application; three letters of reference, and a statement of 500 words or less indicating reasons for pursuing a master's degree. Students lacking in any area with compensating strengths in other areas are encouraged to apply.

Students who have not completed a Bachelor of Arts degree in Home Economics are expected to have completed the following prerequisite courses or their equivalents prior to enrollment in courses to be applied to the master's program:

H Ec 1, Contemporary Home Economics
Select one course from each area:
CFS 38, 39, 131;
CSH 105 or 113;
F M 20 or 120;
FSc 50 or Nutr 53 or 54;
GID 70, 107 or CSH 116.

Admission by the university does not imply acceptance in the Master of Science in Home Economics program.

Applicants whose preparatory education was principally in a language other than English must earn a minimum TOEFL score of 550.

Classified standing will be granted to students who meet all of the admission criteria. **Conditional classified standing** may be granted to petitioning applicants with a 2.5 to 3.0 GPA (last 60 units); GRE scores on file with the university; separate school application; three letters of reference; a statement of 500 words or less indicating reasons for pursuing a master's degree; and a minimum of 18 units of prerequisites completed (consult with your graduate coordinator for specific prerequisite foundation courses). Prerequisite coursework is not included in the 30-unit master's program. Students must request classified standing in the program by the semester in which a maximum of 10 units to be used toward the degree are completed.

Prerequisite Requirements. An introductory statistics course, such as Math 11, Soc 25, or Psych 42.

Program Requirements for 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
Core	9
H Ec 201, 241 and 243	
Electives	15
(in consultation with an adviser)	
H Ec 200-series courses in a specialized area (3 units), 100-200 level (12 units) courses in home economics or related areas, with a maximum of 6 units at 100 level	
Culminating Experience	6
Project or Thesis: H Ec 298 or 299	
Total minimum requirements	30

Graduate 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 or program advising sheet from the department office.
3. Upon admission, students should see the department graduate coordinator for aid in program planning, selection of graduate adviser, and selection of a thesis committee.
4. To progress through the graduate program, students must:
   a. Maintain a minimum of 3.0 GPA
   b. Complete all prerequisite coursework
   c. Attain classified standing
   d. Meet university writing requirement
   e. File for advancement to candidacy
   f. Complete the program requirements

g. File a master thesis or project committee assignment form
h. Formally present and defend the thesis/project research results

5. Advancement to candidacy requires the completion of 9 program units in residence, minimum 3.0 GPA, meeting the university writing skills requirement and filing a Petition for Advancement to Candidacy a minimum of one semester prior to enrollment in thesis/project and within the deadline.
6. The student shall meet the university writing requirement by earning a minimum of 450 verbal on the GRE. 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 Agricultural Sciences and Technology.
7. See *Division of Graduate Studies* in this catalog for university requirements.

Master of Science 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 with an option in Food Science and Nutrition.

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*. Approved for ***SP*** grading.

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. ***CR/NC*** 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.

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.

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.

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)

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.

113. Economics for Consumers (3)
Prerequisite: Econ 50 recommended. Consumer spending related to social and psychological factors influencing consumers. Legislation that protects and relates to the consumer on local, state, and federal levels.

114. Consumer Science and Family Studies Practicum (3)
Prerequisite: senior standing or permission of instructor; 12 upper-division units in the major. Integrated field experience in various phases of home economics as applied to consumer science and family studies; seminar. (6 lab hours)

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.

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.

117. Resource Management of Aging (3)
(Same as Geron 117.) 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.

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.

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 hours)

Fashion Merchandising (F M)

20. Beginning Textiles (3)
Fiber classification, yarn construction, fabric construction and production. Selection, use and care of fabrics in relation to consumer needs. (CAN H EC 6)

22. Fashion Analysis (1)
Analysis of the characteristics and nature of fashion; color, line, texture and principles of design applied to fashion. Selection guidelines for individual and family needs. Wardrobe needs for the professional as well as quality evaluation of apparel is included. (CAN H EC 20)

24. Clothing Construction I (3)
Pattern and fabric selection; basic construction techniques, use of commercial patterns; relationship between materials, construction methods, and apparel quality. (6 lab hours) (CAN H EC 10)

26. Clothing Construction II (3)
Prerequisite: F M 24 or experience in clothing construction. Individualization of basic and designer patterns: alteration principles; techniques of handling new fabrics. (6 lab hours)

120. Social and Psychological Aspects of Clothing (3)
Prerequisite: F M 22 recommended. The psychological, social, and economic aspects of clothing related to the individual, family, and society.

121. Tailoring (3)
Prerequisite: F M 22 and 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: F M 22 and 24 or 26. Application of pattern making methods to apparel design. Computer-aided design (CAD) skills as applied to pattern making. (6 lab hours)

124. Textile Finishing (3)
Prerequisite: F M 20. Finishing, dyeing and printing techniques, material and equipment. Evaluation through standard laboratory tests. (2 lecture, 2 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.

127. Fashion Merchandising (3)
Prerequisite: F M 20, 22; GID 107. Aspects of fashion marketing and fashion related careers. Computer application as applied to store layout and merchandising. Resource personnel and field trips. (2 lecture, 2 lab hours)

128. Fashion Display Techniques (3)
Prerequisite: F M 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: senior standing or permission of instructor; 12 upper-division units in the major including F M 127. Integrated field experience in various areas of fashion merchandising; seminar. *CR/NC* grading only.

130. Fashion Study Tours (3)
An in-depth study of industrial, retail, and wholesale sites in California. Field experiences are included to ensure optimum learning opportunities. *CR/NC* grading only. (1 lecture, 4 lab hours) (Course fee, $130)

131. Fashion Entrepreneurship (2)
Prerequisite: F M 127. Investigation of start-up procedures, location, financing, supplies, legal implications, target customers, record keeping, promotion, and customer relations are covered.

132. Textile Care (3)
Prerequisite: F M 124. The technology of home laundry, laundry aids and equipment, dry cleaning, and commercial laundry. Care methods for apparel, furs, upholstery, and carpet are investigated. Industry resource personnel and field trips.

133. Textile/Apparel Economics (3)
Prerequisite: F M 20, Econ 40 (recommended). Organization and development of the textile and apparel industries. Aspects of production, consumption, and international trade. Analysis of current problems facing the industry and industry's response.

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 are 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 or her relationship to family, peers, and adults. (2 lecture, 3 lab hours)

38. Life Span Development (3)
A balanced study of basic theories, research, applications, and principles of physical, cognitive, and psychosocial development from conception to death, presented in an integrated manner; includes behavior, sexuality, nutrition, health, stress, environmental relationships and implications of death and dying. General Education BREADTH, Division 4.

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. (CAN H EC 14)

131. Family Relationships (3)
Marital and family dynamics are 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)
Crises experienced by children and their families; child abuse, separation, dissolution, divorce, remarriage, and the consequent formation of step-relationships, death, alcoholism, drug abuse, and living with a child with special needs included.

134. Cultural Aspects of Child Rearing (3)
Prerequisite: 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 38, 39 or Psych 101. Examination and critique of several contemporary theories of effective adult-child relationships. Topics include: identity formation, self-esteem, children with special needs, discipline, ego boundaries, and co-dependency.

136. Middle Childhood and Adolescence (3)
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 interpersonal relations. General Education CAPSTONE Cluster course.

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.

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.

139. Child Development Practicum (3)
Prerequisite: senior standing or permission of instructor; 12 upper-division units in the major; CFS 37. Assume the responsibility of a nursery school head teacher; plan learning episodes for young children based on their needs, abilities and interests; work with parents and do diagnostic assessments of children. (2 lecture, 3 lab hours)

Food Science and Nutrition

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

The following graduate courses are open only to students who have been accepted into a graduate program. Students who are not in graduate standing, should contact the graduate coordinator prior to enrolling.

Home Economics Education (H Ec)

201. 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 242)

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: permission of instructor. 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: permission of instructor. Applied research; current and future trends of the multilevel areas of home economics education. Topics include: curriculum development, administration, evaluation, and supervision in home economics; home economics in higher education; and incorporating business and industry in home economics. Some topics may have labs.

241. Seminar in Trends and Issues in Home Economics Education (3)
Prerequisite: permission of instructor. A study of the history and current status of home economics. An examination of trends and issues pertaining to child and family studies, clothing and textiles/fashion merchandising, consumer science and housing, food and nutrition, and interior design.

243. Research Methods in Home Economics (3)
Prerequisite: H Ec 201 or equivalent; 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. (Former H Ec 200)

290. Independent Study (1-3; max see reference)
See *Academic Placement — Independent Study*. Approved for ***SP*** grading.

292. Readings in Home Economics (2-3; max total 6 if no topic repeated)
Prerequisite: 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. Approved for ***SP*** grading.

298. Project (2-6; max total 6)
Prerequisite: prior advancement to candidacy. See *Criteria for Thesis and Project.* The project is a significant undertaking of an approved pursuit appropriate to the applied arts, e.g., extensive curriculum design, development of new consumer products, a survey of disappearing textile techniques or similar professional endeavors with written documentation. Abstract required. Approved for ***SP*** grading.

299. Thesis (2-6; max total 6)
Prerequisite: prior advancement to candidacy; see *Criteria for Thesis and Project.* Preparation, completion, and submission of an acceptable thesis for the master's degree. Approved for ***SP*** grading.

IN-SERVICE COURSE

(See *Course Numbering System.*)

Home Economics Education (H Ec)

380. Topics in Home Economics (1-3; max total 9 if no area repeated)
Special problems in home management, foods and nutrition, child care, housing and home furnishings, textiles and clothing, household equipment, family finances, marriage, and the family.

AGRICULTURE Enology, Food Science, and Nutrition

Join the leader in science, technology, and management. 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 foodservice 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.

Instructional Facilities

The department facilities include the Enology Facility, Dairy Processing Plant, Food Preparation and Product Development Laboratories, and Computer Laboratory. These facilities are used by students and faculty to provide a practical education founded on science and technology.

Career Opportunities

Graduates of 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 options are available:

Dietetics and Food Administration. Graduates are prepared for challenging and rewarding employment in dietetics, nutrition, and foodservice. Employment is always available in hospital dietetics, nutrition consulting, school and community nutrition, education, commercial and institutional foodservices. By completing the requirements for this option, students meet the American Dietetics Association didactic requirements. Completion of an internship or approved program of study and registration exam is required to become a registered dietitian.

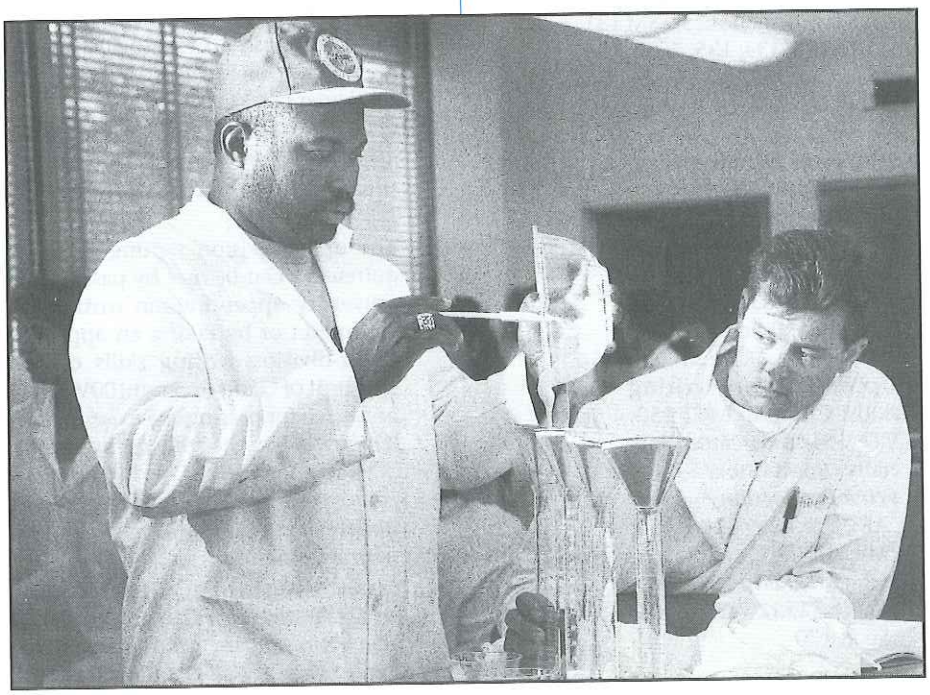
Enology. California is recognized, both nationally and internationally, as the foremost leader in enology. CSU Fresno is one of only two universities in the United States that offers a full program of study in enology. Enology graduates have taken employment leading to top positions with prestigious wineries that are recognized as the finest in California and in the world.

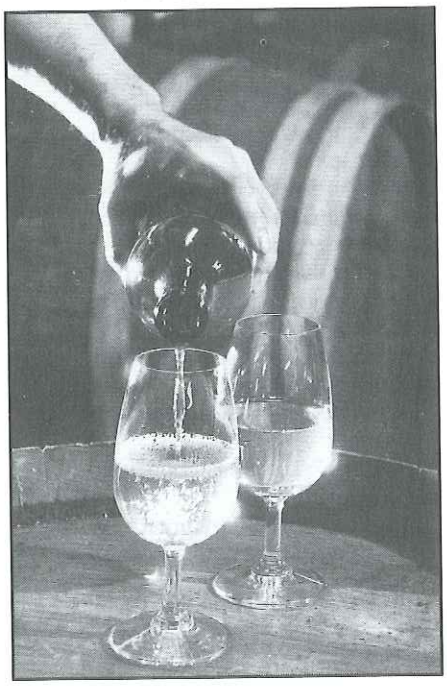
Food Science. Graduates are prepared for an endless variety of employment opportunities in the food industry, including laboratory, food processing and production, and governmental roles. New product development, management, distribution, and field service opportunities are present in many scientific, technological, and business endeavors.

Food Systems Management. Graduates are employed by food preparation and foodservice industries. The intense public interest in all aspects of nutrition provides employment, challenge, and reward to food systems management graduates.

School of Agricultural Sciences and Technology
Department of Enology, Food Science, and Nutrition
N. JOANNE CAID, *Chair*
Art-Home Economics Building, Room 103
(209) 278-2164

B.S. in Food and Nutritional Sciences
Options:
Dietetics and Food Administration
Enology
Food Science
Food Systems Management
M.S. in Agriculture
Options:
Food Science and Nutrition
Agricultural Chemistry
Minor in Food and Nutritional Sciences





Faculty

N. Joanne Caid, *Chair*

Coordinators:

Barry H. Gump, *Graduate; Agricultural Chemistry*

Marie G. Dunford, *Graduate; Food Science and Nutrition*

Sandra S. Witte, *Nutrition and Dietetics*

Carlos J. Muller, *Enology Program Director*

David E. Goldbloom — Fred S. Nury

Elena F. Kissick — Ray A. Speckman

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 CSUF. The faculty are noted for cooperation and activity within each industry to prepare and place graduates in their chosen career.

Bachelor of Science Degree Requirements

Food and Nutritional Sciences Major — ***Units***

General Education 51
(including 9 upper-division units, after completing 56 units of coursework)

CORE

1. Engl 1 (required)
2. Spch 3, 7, or 8
3. H S 92 (required for Dietetics and Food Administration Option)
4. Upon selection with adviser
5. Hist 11 or 12 (required)
6. Pl Si 2 or 101 (required)

BREADTH

Division 1: Chem 3A (required)
Division 2: Upon selection with adviser
Division 3: Psych 10 (required for Dietetics and Food Administration Option)
Division 4: Nutr 53 (required for Food Systems Management Option)
Division 5: Upon selection with adviser
Division 6: Upon selection with adviser
Division 7: Upon selection with adviser
Division 8: Soc 1 (required for Dietetics and Food Administration Option)
Econ 40 (required for Food Systems Management Option)
Division 9: Upon selection with adviser

CAPSTONE

Upon selection with adviser

Major 45
(including 20 upper-division units)

Core ..... (10)
FSc 1, 50; FSM 30; Nutr 54

Options (select one) ..... (35)

Dietetics and Food Administration: FSc 150; FSM 131, 132, 133, 134; Nutr 149, 153, 157A, 157B, 166; plus additional courses in consultation with adviser.

Enology: Enol 15, 25, 35, 135, 161, 163, 165, 175; FSc 178; career specialty core (select one):

Wine Production
Enol 110, 115, 125, 166

Wine Marketing
Ag Ec 124, 160; Enol 104, 105, 173; plus additional course in consultation with adviser

Wine Quality Assurance
Enol 110, 115, 125; plus additional courses in consultation with adviser

Food Science: FSc 100, 110, 111, 115, 125, 140, 141, 142, 178; plus 9 units of additional courses from the following list: A Sci 171A; Enol 15, 168; FSc 3, 123, 143, 150; I T 92

Food Systems Management: A Sci 171A; Enol 25; FSM 131, 132, 133, 134, 135, 162T, 193; FSc 150, 152; plus additional courses in consultation with adviser

Additional requirements 22-30

Dietetics and Food Administration ..... (27-30)
Upper-division writing skills; Acct 4A; Chem 8, 109, 150, 153; Micro 20; PhyAn 65; Psych 174

Enology ..... (25-27)
Upper-division writing skills; Chem 8; MCJ 152; VTF 104; plus career specialty (select one):

Wine Production
AET 109; Chem 105, 150; Micro 140

Wine Marketing
Ag Ec 31, 120, 130, 164; Spch 170

Wine Quality Assurance
Chem 109, 125, 150; Micro 140

Food Science ..... (27-30)
Upper-division writing skills; Chem 4, 8, 105, 150; Math 71, 72; Micro 140; Phys 2A

Food Systems Management .. (22)
Acct 4A; HRM 150, 152; IS 105W; Mgt 110; Mktg 100

Electives 2-10

Total requirements 128
(including 40 upper-division units)

Advising Notes

1. New students should request an option check sheet from the department.
2. All students should make an appointment with an academic adviser prior to registration each semester.
3. *CR/NC* grading is not permitted for courses included in the major, except work experience (FSc 193; FSM 193; and Nutr 193).
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 food and nutrition core 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 option check sheet) or an individually tailored emphasis area of logically integrated courses to meet the student's particular career objective.
7. General Education courses designated as required by the department are prerequisite to many courses in the program of study.
8. The upper-division writing skills requirement can be met by passing the university upper-division writing examination or by taking an approved upper-division writing skills course. One unit of credit (in Engl 100W) may be earned for passing the examination if requested by the student; by obtaining a letter grade of *C* or higher in an approved course (e.g., Plant 110W) the student meets the university writing skills requirement.
9. One semester prior to graduation make an appointment with your academic adviser to prepare and file an official Certification of Major requirement form.

10. The General Education units of 51 may be exceeded depending upon the selection of courses.

Food and Nutritional Science Minor

A Minor in Food and Nutritional Sciences consists of 21 units of which 10 must be upper division. All students must take FSc 1, 50; FSM 30, and Nutr 54. The additional 11 units will be selected in consultation with an adviser. The minor program must be certified by the appropriate department chair and the school dean. The certified minor program will be filed with the Office of Evaluations.

Graduate Programs

The Master of Science in Agriculture with an option in food science and nutrition or agricultural chemistry is a 30-unit degree program designed to provide the student with professional competence in the technology and science of food-related disciplines or the science of chemistry as it applies to agriculture. Enologists seeking the master's degree do so under the agricultural chemistry option.

Full-time graduate students may earn the degree within two years when working closely with an adviser. To accommodate part-time students, graduate courses are offered in the late afternoon or evenings.

Admission Materials. To be considered for admission to the graduate program, the candidate must submit the following materials: evidence of a baccalaureate degree in food science, nutrition, agricultural chemistry, or a related area from an accredited institution; official transcripts of all college work; scores from the Graduate Record Examination Aptitude Test (GRE); a university application; a school application; three letters of reference from employers or faculty at the university most recently attended; and a statement of 500 words or less indicating reasons for pursuing a master's degree.

Admission Criteria. Candidates for admission will be evaluated using the following criteria: undergraduate coursework; grade point average of 3.0 or better (last 60 semester units); GRE scores (480V/580Q are equivalent to the 50th percentile), 500-word or less statement of professional goals; and letters of reference. Students lacking in any area with compensating strengths in other areas are encouraged to apply. Admission by the university does not imply acceptance in the Master of Science in Agriculture degree program. Applicants whose preparatory education was in a language other than English must earn a minimum TOEFL score of 550.

Classified standing will be granted to students who meet all of the admission criteria.

Conditional classified standing may be granted to applicants with a 2.75 to 2.99 GPA (last 60 semester units) and/or those required to complete prerequisite coursework. Prerequisite coursework is not included in the 30-unit master's program. Students must request classified standing in the program by the semester in which a minimum of 10 units to be used toward the degree are completed.

Master of Science Program

Agriculture — Food Science and Nutrition Option

This program provides a graduate-level proficiency in food science or nutrition. The degree is applicable to specializations in food research, production, processing, chemistry and microbiology; dairy industry; nutrition; dietetics and food administration.

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 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 coursework and prior to beginning the master's degree coursework:

Food Science: FSc 100, 141, 178, and Chem 150.

Dietetics or Nutrition: FSc 150, Nutr 153, Chem 150, and PhyAn 65.

Program Requirements for Food Science and Nutrition Option

All students must complete a 9-unit common core. Under the direction of the graduate adviser, students may focus their program in a specialized area to meet their career goals. This is accomplished by the selection of required courses and electives. A 3-unit thesis or a comprehensive exam completes the program of study.

Plan A	*Units*
Core: Agri 200, 201, 220	9
Required Courses:	
Agri 229	1+1
Select four: Agri 204-223, inclusive, except 220	12
Approved Electives: appropriate to individually designed program (200 or 100 level courses in agricultural science or related areas)	4
Culminating Experience:	
Agri 299 (Thesis and defense)	3
Total minimum requirements	30

Plan C	*Units*
Core: Agri 200, 201, 220	9
Required Courses:	
Agri 229	1+1
Agri 290	3
Select three: Agri 204-223, inclusive, except 220	9
Approved Electives: appropriate to individually designed program (200 or 100 level courses in agricultural science or related areas)	7
Culminating Experience:	
Comprehensive Examination	0
Total minimum requirements	30

See graduate advising notes following the M.S. in Agriculture — Agricultural Chemistry Option.

Master of Science Program

Agriculture — Agricultural Chemistry Option

The Master of Science in Agriculture with an option in agricultural chemistry is designed to provide the student with advanced training and professional competence in the science of chemistry as it applies to agriculture. This degree permits the student and adviser to design an individual program in various specializations in the application of chemical and biochemical systems in agricultural industries.

Prerequisite Courses. The Master of Science degree in Agriculture with an option in agricultural chemistry is essentially a change of major for most students. Therefore, applicants to the agricultural chemistry option are expected to have completed the following prerequisite foundation courses prior to entering the graduate program.

	Units
Undergraduate Core Courses	
Micro 140: Microbiology	5
Bot 130: Plant Physiology	4
Chem 105: Quant Analysis	4
Chem 128B: Organic Chemistry	3
Chem 129B: Organic Chemistry Lab	2
Chem 125: Lab Instrument or equivalent laboratory experience	3
Math 72: Elem Math Anal II	3
Phys 2A, 2B: General Physics	4-4
Plant 99: App Agri Statistics	3
I T 102 or a course in computer literacy	3
Agricultural Science Core — Undergraduate (SAST requirements)	12
Additional requirements specified by department	

Program Requirements for Agricultural Chemistry Option

All students must complete a 9-unit common core. Under the direction of the graduate adviser, students may focus their program in a specialized area to meet their career goals. This is accomplished by the selection of 12 units of approved electives of which a maximum of 6 units may be 100 series (if not applied toward undergraduate degree requirements). A 4-unit thesis completes the program of study.

	Units
Core	9
Agri 200, 201, 220	
Required Courses:	
Chem 260: Adv Research Tech	3
Agri 229 or Chem 280	1+1
Approved Electives appropriate to individually designed program (200 or 100 level courses in agricultural science or related areas); minimum of 6 units of 200 series coursework	12
Culminating Experience:	
Agri 299 or Chem 299 (Thesis and defense)	4
Total minimum requirements	30

Graduate Advising Notes

1. Several of the 200-level and approved elective courses have prerequisites other than courses listed as admission requirements.
2. Students should request specific information concerning the master of science degree and the program advising sheet from the department office.
3. Upon admission, students should see the department graduate coordinator for aid in program planning, selection of graduate adviser, and selection of a thesis committee.
4. To progress through the graduate program, the student must:
   a. Maintain a minimum of 3.0 GPA
   b. Complete all prerequisite coursework
   c. Attain classified standing
   d. Meet the university writing skills requirement
   e. Pass a written departmental qualifying examination during the first semester of enrollment
   f. File for advancement to candidacy
   g. Complete the program requirements
   h. File a master thesis committee assignment form
   i. Formally present and defend the thesis results
5. Advancement to candidacy requires the completion of 9 program units in residence, a minimum GPA of 3.0, meeting the university writing skills requirement, passing the departmental qualifying examination, and filing a petition for advancement to candidacy a minimum of one semester prior to enrollment in thesis and within the deadline.
6. The student shall meet the university writing requirement by earning a minimum of 450 verbal on the GRE. If a minimum of 450 verbal is not achieved, the student shall meet the requirement by then earning a score of 80 or higher on the university 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 Agricultural Sciences and Technology.
7. Students may apply a maximum of 3 units of independent study to their program.
8. Students in the Food Science and Nutrition Plan C Option must successfully complete a final comprehensive examination consisting of two parts: a) a general written examination covering the broad areas of the student's program; b) an oral and/or written examination covering the results of the required student independent study project (Agri 290). See *Department Policy Statement — Plan C, Comprehensive Examination.*
9. See *Division of Graduate Studies* in this catalog for university requirements.

COURSES

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

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. Wine Evaluation Techniques I (2)
Parameters which determine sensory quality in wines. Principles of wine appreciation.

35. Wine Evaluation Techniques II (2; max total 4)
Prerequisite: Enol 25 or equivalent. Critical sensory evaluation of various wine types and styles including premium varietals.

102T. Topics in Sensory Evaluation of Wines (1-6; max total 6 if no topic repeated)
Prerequisite: Enol 15 and 35; Enol 161 recommended. Critical evaluation of selected varietal wines with regard to appellation of origin, vintage, and winemaking practices. (15-hour weekend lecture-demonstration)

104. Review of Award Wines (1; max total 4)
Prerequisite: Enol 35. Professional wine judging. Choice of panelists. Award process. Presentation of wines which have received awards at recent judgings. (Must be 21 years of age or older — State Law).

105. Advanced Sensory Evaluation of Wines (3)
Prerequisite: Enol 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 140; VTF 104. Critical study of chemical and biochemical interactions in winemaking.

115. Wine Analysis (4)
Prerequisite: Chem 105; Enol 161 or 165. Principles and practices of wine and fermented beverage analysis. (2 lecture, 6 lab hours)

125. Wine Microbiology (4)
Prerequisite: Enol 15; Micro 140; Chem 150. Identification, physiology, and biochemistry of bacteria and yeasts involved in winemaking 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 161; 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 sensory evaluation. Students may be required to purchase supplementary materials for class use. (2 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)

161. Winery Practice (3; max total 6)
Prerequisite: Enol 15; Chem 8 or concurrently. Pilot plant experience in winemaking operations, including harvest, scheduling, crushing, fermentation, safety, sanitation procedures, record keeping, analysis, and operation of enology facility equipment. May be repeated once for credit. (1 lecture, 6 lab hours) (Former Enol 100)

162T. Topics in Enology and Fermentation Science (1-4; max total 12 if no topic repeated)
Prerequisite: Enol 15. Topics in winemaking and fermentation science. Some topics may include labs.

163. Fermentation Laboratory (1; max total 4)
Prerequisite: Enol 15 or concurrently. Vinification/Fermentation Laboratory practice at the CSUF Enology Pilot Plants. Individual winemaking. Required every fall semester of all enology majors not enrolled in Enol 161, 165, 194, or 196. Students must supply their own grapes. (3 lab hours) (Former Enol 101)

165. Wine Technology (3)
Prerequisite: Enol 160 or 161. Technological study of winery equipment; evaluation, location and operation; sanitation procedures. (2 lecture, 3 lab hours; 3- or 4-day field trip)

166. Cellar Operations (2; max total 4)
Prerequisite: Enol 161. Survey of cellaring operations and equipment blending, fining, ion exchange, finishing, and bottling. May be repeated once for credit. (1 lecture, 3 lab hours; local field trips) (Former Enol 185)

168. Juice and Concentrate Production (2)
Prerequisite: Enol 15 or FSc 1; VTF 1 recommended. Principles and practice of fruit juice and concentrate production. Vacuum pan operation and essence recovery. (1 lecture, 3 lab hours; field trips) (Former FScN 163)

173. Wine Marketing (2)
Prerequisite: Enol 35, 161; Ag Ec 1. Marketing principles as applied to wine. Role of wholesalers, distributors, retailers, cooperatives. Advertising. Regulations. Interstate and international trade.

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.

180. Undergraduate Research (1-4; max total 4)
Prerequisite: Enol 161. Open to juniors or seniors with permission of instructor. Exploratory work on a suitable agricultural problem in enology. Approved for ***SP*** grading.

190. Independent Study (1-3; max see reference)
See *Academic Placement — Independent Study*. Approved for ***SP*** grading.

193. Wine Marketing Internship (2-12; max total 12)
Prerequisite: Enol 173; Enol 105 and Ag Ec 164 recommended; approval of internship committee. Emphasis on development of decision-making ability through marketing organization experience integrated with principles acquired in the classroom. ***CR/NC*** grading only.

194. Enology Internship (2-12; max total 12)
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. ***CR/NC*** grading only.

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 115, 155, 161, 166, 175; VTF 104; AET 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 (FSc)

1. Introduction to Food Science and Technology (3)
Basic characteristics of processed foods and the technology of their production. Applications to modern food processing; world food problems. (Former FScN 1)

3. Introduction to Dairy Industry (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) (Former D Ind 23)

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) (Former FScN 50) (CAN H EC 8)

100. Food Appraisal and Evaluation (3)
Prerequisite: Plant 99. Analysis, measurement, and methods used in sensory evaluation of foods. (2 lecture, 3 lab hours) (Former FScN 100)

110. Food Chemistry and Biochemistry (4)
Prerequisite: Chem 4, 150 or concurrently. Basic chemical composition, structure, and properties of foods. Chemical and biochemical changes in foods during production, processing, and utilization. (Former FScN 110)

111. Food Chemistry Lab (1)
Prerequisite: FSc 110 or concurrently. Laboratory techniques for determining chemical composition, structure, and biochemical changes in food. (3 lab hours)

115. Food Analysis (4)
Prerequisite: FSc 110, 111. Quantitative food analysis; sampling, separation, physical measurements, chemical and biochemical techniques. Quality control. Analyses compared to standards and regulations of food processing. (2 lecture, two 3-hour labs) (Former FScN 130)

123. Dairy and Food Plant Sanitation (3)
Prerequisite: FSc 3; Micro 140 or equivalent, or permission of instructor. Food plant sanitation as related to food safety. Public health issues. Requirements of regulatory agencies. Cleaning, sanitation procedures, housekeeping, and waste disposal. (Field trips) (Former D Ind 113)

125. Food Microbiology (3)
Prerequisite: Micro 140. The physical, biological, and chemical control of microorganisms in foods. Microbiological methods of examining foods and public health and sanitation microbiology. (2 lecture, 3 lab hours) (Former FScN 170)

140. Food Thermodynamics (3)
Prerequisite: Math 72; Phys 2A. Principles of plant operations used in food processing. Basic theory of material and energy balances, thermodynamics, fluid flow, heat transfer, and mass transport. (2 lecture, 3 lab hours)

141. Food Processing I (3)
Prerequisite: Chem 8; FSc 1; Phys 2A; Micro 140. Characteristics of raw fruits and vegetables. Processing principles. Processing factors which influence quality, packaging, water and waste management, and sanitation. (2 lecture, 3 lab hours; field trips) (Former FScN 141)

142. Food Processing II (3)
Prerequisite: FSc 141, senior-level standing. Application of the principles of food chemistry, food microbiology, food engineering, food processing, nutrition, sensory analysis, and statistics to the manufacturing of food products. (2 lecture, 3 lab hours; field trips) (Former FScN 142)

143. Manufacturing Dairy Products (3)
Prerequisite: FSc 3 or permission of instructor. Making common varieties of cheese, mix making and freezing desserts, churning butter, and culturing dairy products. (2 lecture, 3 lab hours; field trips) (Former D Ind 103)

150. Advanced Foods (3)
Prerequisite: FSc 50; Chem 3A. 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) (Former FScN 150)

151. Experimental Food Study (3; max total 6)
Prerequisite: FSc 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) (Former FScN 151)

152. Food for Health (3)
Prerequisite: FSc 50, Nutr 53 or 54. 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. (2 lecture, 2 lab hours) (Former FScN 56; FScN 152)

162T. Topics in Food Science (1-4; max total 12 if no topic repeated)
Prerequisite: FSc 50; Nutr 54. Topics relating to food science. Some topics may have labs. (Former FScN 162T)

178. Food Laws and Regulations (2)
Federal and state laws and regulations pertaining to the food industry, including product liability and recall systems. (Former FScN 125)

180. Undergraduate Research (1-4; max total 4)
Prerequisite: junior or senior standing and permission of instructor. Exploratory work on a suitable problem in food science. Approved for ***SP*** grading. (Former FScN 180)

190. Independent Study (1-3; max see reference)
See *Academic Placement — Independent Study*. Approved for ***SP*** grading. (Former FScN 190)

192. Readings and Conference (1-3)
Prerequisite: permission of instructor. Individually directed readings; reports and evaluation. (Hours arranged) (Former FScN 192)

193. Supervised Work Experience (1-6; max total 6)
Prerequisite: second semester junior standing and permission of instructor. Supervised work experience in food science. *CR/NC* grading only. (Former FScN 193)

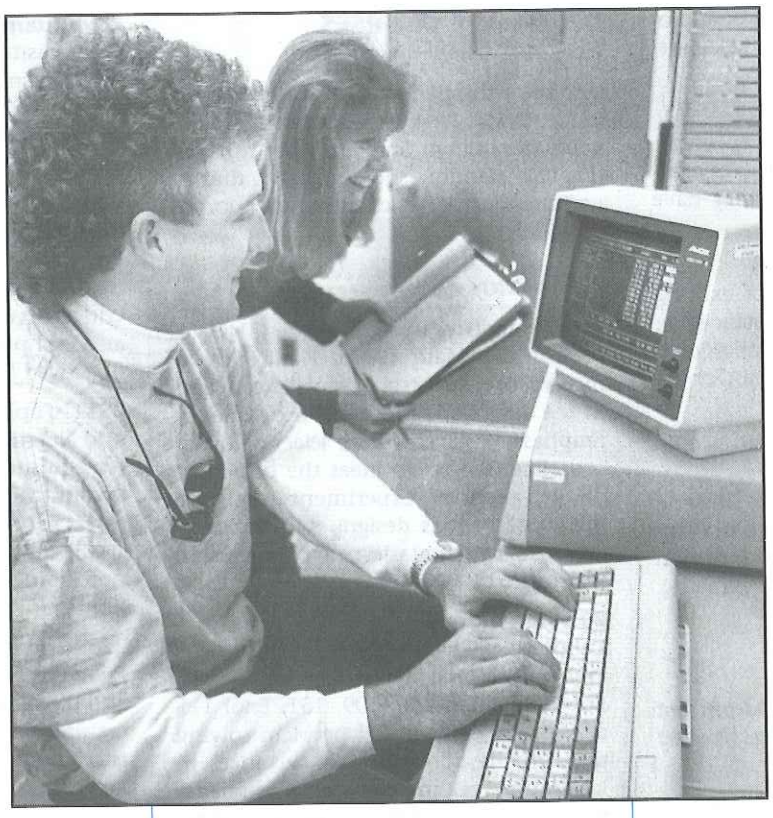
Food Systems Management (FSM)

30. Microcomputers in Food and Nutrition (1)
An introduction to the use of the microcomputer in food and nutritional sciences. (2 lab hours) (Lab fee, $15) (Former FScN 30)

131. Introduction to Food Systems Management (3)
Prerequisite: FSc 50. Responsibilities in organization and administration of the quantity foodservice establishment. Emphasis upon menu planning, recipe standardization, supervision of personnel, and computer applications. (Former FScN 131)

132. Food and Equipment Purchasing (3)
Prerequisite: FSc 50. Work simplification; plant layout; selection, procurement, and maintenance of equipment and furnishings for foodservice units. Quantity food selection, specification, and purchasing. (Former FScN 132)

133. Quantity Food Production (3)
Prerequisite: FSM 131, 132, and FSc 150; health clearance and health and accident insurance required. Preparation and service of conventional and convenience foods in patient and nonpatient foodservice. Emphasis on human relations, food safety and sanitation, production controls, work simplification, quality assurance, and energy conservation. (2 lecture, 3 lab hours) (Former FScN 158; FScN 133)



134. Cost Analysis in Food Systems Management (3)
Prerequisite: FSM 133; Acct 4A; FSM 30 recommended. Advanced concepts of planning, analyzing, decision-making and reporting procedures unique to food systems management. Emphasis on cost analysis and cost control in institutional and commercial operations. (2 lecture, 2 lab hours) (Former FScN 162T section; FScN 134)

135. Institutional Experience (3)
Prerequisite: FSM 134; health clearance and health and accident insurance required. Supervised work experience in food systems management. (1 lecture, 4 lab hours) (Former FScN 159; FScN 135)

162T. Topics in Food Systems Management (1-4; max total 12 if no topic repeated)
Prerequisite: FSc 50; Nutr 54. Topics relating to food systems management. (Former FScN 162T)

180. Undergraduate Research (1-4; max total 4)
Prerequisite: junior or senior standing and permission of instructor. Exploratory work on a suitable problem in food systems management. Approved for ***SP*** grading. (Former FScN 180)

190. Independent Study (1-3; max see reference)
See *Academic Placement — Independent Study*. Approved for ***SP*** grading. (Former FScN 190)

192. Readings and Conference (1-3)
Prerequisite: permission of instructor. Individually directed readings; reports and evaluation. (Hours arranged) (Former FScN 192)

193. Supervised Work Experience (1-6; max total 6)
Prerequisite: second semester junior standing and permission of instructor. Supervised work experience in food systems management. ***CR/NC*** grading only. (Former FScN 193)

Nutrition (Nutr)

53. Nutrition and Health: Realities and Controversies (3)
Optimal nutrition to reduce the risk of cancer, heart disease, allergies, obesity, and other diseases. Social, psychological, and cultural dictates that affect food selection and health. Personal strategies to develop a nutrition plan for better health. General Education BREADTH, Division 4. (Former FScN 53) (CAN H EC 2)

54. Elementary Nutrition (3)
Elementary knowledge of high school chemistry and biology strongly recommended. Scientific principles underlying normal nutritional requirements. (Former FScN 54)

147. Nutrition and the Athlete (3)
Prerequisite: PhyAn 33 or 65. Physiological principles underlying the normal nutritional requirements and the application of these principles to athletic performance. Role of diet in training. (Former FScN 147)

149. Food and Nutrition Resources (3)
Prerequisite: FSc 50 and Nutr 54. Selection of food and nutrition content and learning activities for a variety of teaching situations including the classroom, community, or clinic setting. Activities include writing lesson plans, developing instructional materials, and presenting lessons. Counseling techniques for health professionals. (Former FScN 149)

153. Advanced Nutrition (3)
Prerequisite: Nutr 54; Chem 150. Relationship of nutrients to maintenance of homeostasis. Factors affecting the nutrient demands with interpretation of biochemical indices. Structural and functional properties of nutrients. Gross and microscopic structures related to cell metabolism, digestion, bone mineralization and body composition. (Former FScN 153)

157A. Diet in Disease (3)
Prerequisite: Nutr 153; PhyAn 65. Assessment of nutritional status emphasizing dietary evaluation, nutrition care planning, and intervention. Application of dietary standards and principles for disease prevention and control. Methods for monitoring quality of nutritional care. (2 lecture, 3 lab hours) (Former FScN 157A)

157B. Diet in Disease (3)
Prerequisite: Nutr 157A. Advanced concepts of nutritional therapy in disease. Identification of goals of nutritional therapy and principles of dietary modification for specific conditions. Calculation of diet

prescriptions and identification of appropriate foods to meet prescription. (2 lecture, 3 lab hours) (Former FScN 157B)

162T. Topics in Nutrition (1-4; max total 12 if no topic repeated)
Prerequisite: FSc 50; Nutr 54. Topics relating to nutrition. Some topics may have labs. (Former FScN 162T)

166. Community Nutrition (3)
Prerequisite: Nutr 54. Survey of existing federal, state, and local food assistance programs. Proposal writing and subsequent steps in establishing a new program. (Former FScN 166)

180. Undergraduate Research (1-4; max total 4)
Prerequisite: junior or senior standing and permission of instructor. Exploratory work on a suitable problem in nutrition and dietetics. Approved for ***SP*** grading. (Former FScN 180)

190. Independent Study (1-3; max see reference)
See *Academic Placement — Independent Study*. Approved for ***SP*** grading. (Former FScN 190)

192. Readings and Conference (1-3)
Prerequisite: permission of instructor. Individually directed readings; reports and evaluation. (Hours arranged) (Former FScN 192)

193. Supervised Work Experience (1-6; max total of 6)
Prerequisite: second semester junior standing and permission of instructor. Supervised work experience in dietetics and nutrition. ***CR/NC*** grading only. (Former FScN 193)

GRADUATE COURSES

(See *Course Numbering System.*)

The following graduate courses are open to students who have been accepted into the graduate program. Students who are not in graduate standing should contact the department graduate coordinator prior to enrolling.

Agriculture (Agri)

200. Biometrics in Agriculture (3)
Prerequisite: Math 101 or Plant 99; 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 130; Chem 105, 109, 151; Enol 115 or FSc 115. Agricultural problem solving through the application of advances in laboratory technology, crop management, foods, nutrition, soil, and water quality. Theory and practice operation of scientific instruments and techniques are taught. Student-defined project and report required. (2 lecture, 3 lab hours)

204. Food Carbohydrates and Sweeteners (3)
Prerequisite: Chem 150; FSc 110 or 150. Advanced studies in the chemical and biochemical changes of food carbohydrates during processing and storage; quality control; nutritional aspects.

205. Food Lipids (3)
Prerequisite: Chem 150; and FSc 110 or 150. Advanced studies in the chemical and biochemical changes of food lipids during processing and storage. Mechanisms of formation and degradation. Importance in flavor and texture; quality control; and nutritional aspects.

209. Vitamins and Biocatalysts (3)
Prerequisite: Chem 150; FSc 110 or 150. Mechanisms of action of vitamins, coenzymes, and cofactors in biological transformations involving food processing and human nutrition.

220. Research Communications in Agriculture (3)
Prerequisite: completion of university writing skills requirement. Emphasis on critical literature review, scientific writing, and oral presentation of research results. Approved for ***SP*** grading.

221T. Topics in Food Science and Nutrition (3; max total 9)
Prerequisite: upper-division food science and nutrition course appropriate to study topic; permission of instructor. Advanced studies in a given area of food science and nutrition. Some topics may require lab hours.

223. Human Nutrition (3)
Prerequisite: Chem 150, Nutr 153. Review and discussion of the recent scientific literature in nutrition, physiological chemistry and medicine.

229. Seminar in Food Science and Nutrition (1; max total 4)
Prerequisite: permission of instructor. Investigation of current research and problems related to food science and nutrition. Oral and written reports.

290. Independent Study (1-3; max total 3)
See *Academic Placement — Independent Study*. Approved for ***SP*** grading.

299. Thesis (2-6; max total 6)
Prerequisite: prior advancement to candidacy. See *Criteria for Thesis and Project.* Preparation, completion, and submission of an acceptable thesis for the master's degree. Approved for ***SP*** grading.

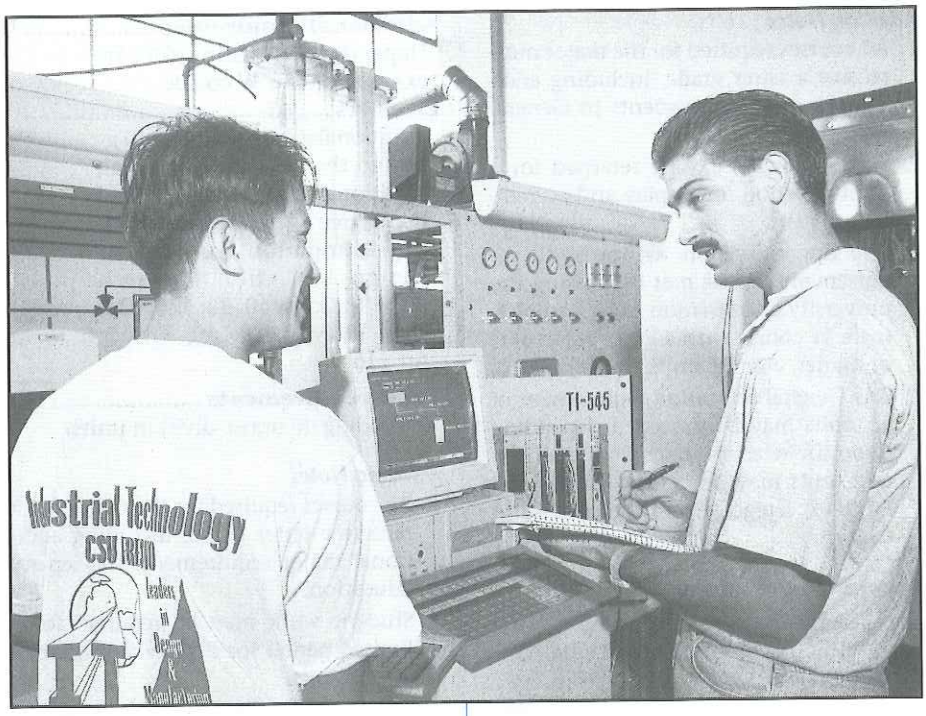
IN-SERVICE COURSE

(See *Course Numbering System.*)

Agriculture (Agri)

300. Topics in Agriculture (1-3)
Topics may require lab hours. In-service professional training in selected areas of agriculture.

AGRICULTURE Industrial Technology



School of Agricultural Sciences and Technology
Department of Industrial Technology
KENNETH D. MOSHIER, *Chair*
M. Grosse Industrial Technology Building, Room 212
(209) 278-2145

B.A. in Industrial Arts
B.A. in Interior Design
B.S. in Industrial Technology
Bachelor of Vocational Education (B.V.E.)
M.S. in Industrial Technology
Minor in Industrial Arts

Programs of Study:
Computer-Aided Design
Computer-Aided Manufacturing
Graphic Communications
Graphic Design
Industrial Control Electronics
Transportation Systems

Programs of study prepare leaders in science, technology, management, and design. Individual programs are planned to provide for professional careers in teaching, business, and industry. In addition, programs of study are available for interior design and graphic design.

The industrial technology program is accredited by the National Association for Industrial Technology and recognized as one of the premier programs in the nation. Emphasis is placed on training men and women for industrial management positions.

Instructional Facilities

Modern department facilities are equipped with robots, numerical control machines, programmable logic controllers, flexible manufacturing cells, and computer graphic workstations. IBM's selection of CSU Fresno to join the National Computer-Integrated Manufacturing (CIM) Alliance has significantly enhanced the department's ability to deliver instruction using state-of-the-art technology.

Career Opportunities

Manufacturing. It is projected that industrial technology graduates will be in high demand for many years. The reason for this demand is that manufacturing- and service-oriented industries are reorganizing facilities and personnel to facilitate contemporary management systems and technologies. Industry needs qualified technical managers who can contribute to better product reliability, efficiency, and improved productivity. Examples of positions held by manufacturing graduates are assistant plant engineer, fleet service representative, manufacturing engineer, operations supervisor, production planning analyst, production scheduling coordinator, and quality control supervisor.

Industrial and Technology Education Teachers. Teachers are in short supply. The need will become even greater as new curriculum programs emerge in industrial and technological education. This demand is attributed to emerging technologies and expanded applications for industrial and technological education.

Interior Design. The interior design major is accredited by the Foundation for Interior Design Education Research (FIDER). Interior design combines an excellent foundation of color, drafting, design — including computer-aided design (CAD) — professional practice, space planning, and presentation skills with unique strengths in architecture, building systems, and materials. Graduates have been placed in residential, contract, and institutional interior design firms, architectural firms, art galleries, set design, and contract and residential sales. Our students are actively involved in national and West Coast interior design competitions and are recipients of numerous awards.

Graphic Design. The graphic design 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. The program includes traditional and computer generated techniques.

Faculty

Kenneth D. Moshier, *Chair*

Coordinators:

Matthew M. Yen, *Manufacturing*

Patricia Hennings-Smith, *Graphic and Interior Design*

Ronald L. Blanton, *Teacher Education*

Gary E. Grannis, *Graduate*

Merle S. Adrian
Tony M. Au
Nancy K. Brian
Clift C. Cullen
Edward A. Gaiser
Norman A. Gullickson
Richard S. Jenne
Gary K. McCurry
Gary B. Paglierani
Lawrence E. Smith
Gary H. Winegar

The faculty are well qualified within their respective areas of instruction and each student is assigned an academic adviser within his or 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.

Bachelor of Arts Degree Requirements

Industrial Arts Major
Graphic Design Option

Units

General Education 51
(including 9 upper-division units, after completing 56 units of coursework)
BREADTH
Division 4: Art 30 (required)
Division 8: Ag Ec 1 or Econ 40 (recommended)
CAPSTONE
(upon selection with adviser)

Major 66
Core ..... (12)
I T 41 or GID 7; I T 60, 80, 102
Graphic Design requirements .. (54)
GID 43, 63, 70, 107, 111, 142, 143, 144, 146, 147, 148, 165; I T 160, 161; Art 116; MCJ 142; Acct 3 and GID 133 or Acct 4A and 4B

Additional requirement 1-3
Upper-division writing skills by examination or W course

Electives 4-6
(upon selection with adviser)

Total requirements 124
(including 40 upper-division units)

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. The upper-division writing skills requirement can be met by passing the university examination or by completing a W course with a letter grade of *C* or higher, after 56 units are completed.
4. The General Education requirement of 51 units may be exceeded depending upon the selection of courses; such excess units may be counted under the Electives category toward the 124-unit degree.

Interior Design Major

This program has full accreditation by the Foundation for Interior Design Education Research (FIDER).

Units

General Education ..... 54[4]
(including 9 upper-division units, after completing 56 units of coursework)
CORE
Category 1: Engl 1 (required)
Category 2: Spch 3 (required)
Category 3: Math 11 (required)
Category 4: Phil 25 or 45 (recommended)
Category 5: Hist 11 or 12 (required)
Category 6: Pl Si 2 or 101 (required)
BREADTH
Division 3: Psych 10 (required)
Division 4: Art 13 (required)
Division 5: Art H 11 (required)
Division 6: Hum 10 (recommended)
Division 7: Fren 1A (recommended)
Division 8: Ag Ec 1 or Econ 40 (recommended)
CAPSTONE
(upon selection with adviser)

Major 69
Core ..... (18)
GID 7, 70, 107, 111, 133; I T 102
Interior Design requirements ... (51)
GID 37, 43, 71, 110, 112, 114, 115, 130, 131, 134 or CSH 171; GID 135, 137, 138, 143, 144, 152, 155; F M 20; I T 115

Additional requirement 1
Upper-division writing skills by examination or W course

Electives 0
Additional courses supplementary to the major are optional. Additional coursework beyond the degree is recommended by the Foundation for Interior Design Education Research (FIDER): Const 10, 32, 120, 132; GID 113, 132T, 150; OH 2; Art 116

Total requirements 124
(including 40 upper-division units)

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. The upper-division writing skills requirement can be met by passing the university examination or by completing a W course with a letter grade of *C* or higher, after 56 units are completed.
4. The General Education requirement of 51 units may be exceeded depending upon the selection of courses.

Bachelor of Science Degree Requirements

Industrial Technology Major
Manufacturing Industries Option

Units

General Education 51
(including 9 upper-division units, after completing 56 units of coursework)
CORE
Category 3: Math 72 or 75 (required)
Category 4: C Sci 1 (recommended)
BREADTH
Division 1: Phys 2A and 2B (required)
Division 8: Ag Ec 1, Econ 40 or 50 (one required)
CAPSTONE
Energy and Society Cluster (recommended): I T 106 and Econ 117

Major 74
(including 18 upper-division units)

Manufacturing Core ..... (38)
I T 74, 92, 102, 104, 107, 114, 115, 117, 118, 199; Acct 3; Mgt 104 and 106 or Mgt 110

Technical Specialty ..... (36)
Select one:

Computer-Aided Design
I T 44, 116, 119, 134, 135, 144, 147, 148, 158, 177, 192; plus 5 units approved by your adviser

Computer-Aided Manufacturing
I T 112, 116, 119, 131, 133, 134, 135, 148, 156, 177, 184, 192; plus 2 units approved by your adviser

Graphic Communications
I T 60, 119, 160, 161, 162, 192; GID 63, 142, 148, 165; MCJ 142; plus 5 units approved by your adviser

Industrial Control Electronics
I T 53, 110, 112, 116, 131, 132, 133, 156, 158, 159, 192; plus 5 units approved by your adviser

Transportation Systems
I T 12, 53, 110, 112, 116, 120, 121, 122, 125, 129, 131, 192; plus 2 units approved by your adviser

Additional requirement 3
Upper-division writing skills: I T 198W (recommended)

Total requirements 128
(including 40 upper-division units)

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 must complete I T 198W with a grade of *C* or higher (after the completion of 56 units) to fulfill the upper-division writing requirement since this course is a prerequisite to I T 199, Senior Problem in Industrial Technology.
3. I T 41 and 52, which are prerequisites to some core and technical specialties in industrial technology, may be waived if equivalent work experience and/or training is demonstrated.
4. The General Education requirement of 51 units may be exceeded depending upon the selection of courses.
5. Students must take two science courses in Division 1 to meet NAIT accreditation.

Industrial Arts 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: computer-aided design, computer-aided manufacturing, graphic communications, industrial control electronics, or transportation systems.

Teacher Credential Program

The following requirements for the Single Subject Waiver Program in Industrial and Technology Education are: B.S. in Industrial Technology General Education and manufacturing core requirements; I T 12, 41, 52, 60, and 80; the upper-division writing skills requirement (I T 198W recommended); 3 elective units; and a minimum of 9 units, each in two areas of concentrations listed below. Choose from:

Visual Communications Technology (Graphic Arts): GID 63, 142, 165; I T 160, 161, 162

Electronics: I T 53, 131, 132, 153, 156, 159

Visual Communications Technology (Drafting): I T 44, 115, 144, 147

Transportation Technology (Automotive): I T 110, 120, 121, 122, 125, 129

Manufacturing Technology: I T 71, 82, 119, 177, 182, 184, 185

For additional requirements, see *Curriculum, Teaching, and Educational Technology — Single Subject Credential Program* requirements section in this catalog.

Master of Science Degree Requirements

The Master of Science in Industrial Technology is a 30-unit program which offers graduate study in both industrial and educational related professional and technical fields. Emphasis is directed toward the attainment of advanced competency in the areas of industrial and technology education as well as manufacturing technology. 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.

Admission Requirements. The Master of Science degree program in Industrial Technology assumes preparation equivalent to a CSU undergraduate major in technology education (industrial arts), industrial technology, or a related field. Students who have not completed a degree in technology education or industrial technology are expected to have completed the following courses or their equivalents prior to enrollment in courses to be applied toward the master's program: I T 41, 52, 60, 74, 102, 114, 115; Math 75; Phys 2A; ERF 153 or DS 173.

Applicants whose preparatory education was principally in a language other than English must earn a minimum TOEFL score of 550.

Classified Standing. A baccalaureate degree is required and an undergraduate major in technology education, industrial technology, or a related field; a 3.0 GPA (last 60 semester units); a 450V/430Q GRE score; separate school application; three letters of reference from employers or faculty at the university attended most recently; a personal statement of 500 words or less indicating reasons for pursuing a master's degree; a preadmission consultation session with the department graduate program coordinator. Students lacking in any area with compensating strengths in other areas are encouraged to apply.

Conditional classified standing may be granted to petitioning applicants with a 2.5 to 2.99 GPA (last 60 semester units); GRE scores on file with the university; separate school application; three letters of reference; and a personal statement of 500 words or less. Students must request classified standing in the program by the semester in which a maximum of 10 units to be used toward the degree are completed.

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	*Units*
Required courses	15
I T 223, 280, 282, 283, 285	
Electives in industrial technology or related field	12
(approved electives appropriate to individually designed program)	
Culminating Experience	3
I T 298 or 299	
Total minimum requirements	30

Graduate Advising Notes

1. Several of the 200-level and approved elective courses have prerequisites other than courses listed as admission requirements.

2. Students should request specific information concerning the Master of Science degree and the program advising sheet from the department office.
3. Upon admission, students should see the department graduate program coordinator for aid in program planning.
4. To progress through the graduate program, students must:
   a. Maintain a minimum 3.0 GPA
   b. Complete all prerequisite coursework
   c. Attain classified standing
   d. Meet the graduate writing skills requirement
   e. File for advancement to candidacy
   f. Complete the program requirements
   g. File a master's thesis or project committee assignment form
   h. Formally present and defend the thesis or project results
5. Classified standing must be achieved by the semester in which students take the 10th program unit. All admission requirements must be met. Students must maintain a 3.0 GPA.
6. Advancement to candidacy requires the completion of 9 program units at CSUF, a minimum GPA of 3.0, meeting the graduate writing skills requirement, and filing a Petition for Advancement to Candidacy a minimum of one semester prior to enrollment in thesis or project and by established deadline.
7. Students may meet the graduate writing skills requirement by earning a minimum of 450 verbal on the GRE. If a minimum of 450 verbal is not achieved, students shall meet the graduate writing skills requirement by earning a score of 80 or higher on the Upper-Division Writing Examination (UDWE) or by earning a ***B*** or better in a designated **W** course to be specified by the graduate committee of the School of Agricultural Sciences and Technology.
8. See *Division of Graduate Studies* section in this catalog for university requirements.

COURSES

Note: Expense to students in courses with variable fees depends upon the specific projects selected by the students. Students should consult with course instructors.

Industrial Technology (I T)

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. (2 lecture, 3 lab hours) (Former I Ed 12)

30. Plastics Technology (3)
Technical information on composition, characteristics, and uses of plastics; equipment design principles and manufacturing processes. (6 lab hours; field trips) (Course fee variable; not less than $3.50) (Former I Ed 30)

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. Introduction to CAD. (6 lab hours) (Former I Ed 41)

44. Descriptive Geometry (3)
Prerequisite: I T 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)

52. Basic Electricity (3)
Introduction to electricity including fundamentals of electrostatics, alternating and direct current electrical circuits, electrical calculations, magnetics, circuit applications, electrical measuring, and test equipment. (2 lecture, 3 lab hours) (Course fee variable; not less than $3) (Former I Ed 52)

53. Electronic Devices and Circuits (3)
Prerequisite: I T 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. (6 lab hours) (Course fee variable; not less than $3.50)

60. Basic Graphic Arts (3)
Introduction to the graphic arts; letterpress, photo offset lithography, screen printing; layout, composition, imposition, presswork, bindery. (6 lab hours; field trips) (Course fee, $6) (Former I Ed 60)

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) (Former I Ed 71)

74. Manufacturing Processes (3)
Material removal by turning and milling operations on aluminum, brass, steel, plastic and wood. Material fusing and severing operations on metals and plastics. Nonferrous metal casting and thin gauge metal and plastic forming operations. (6 lab hours) (Minimum course fee, $7) (Former I Ed 74)

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. (6 lab hours) (Course fee variable; not less than $10) (Former I Ed 80)

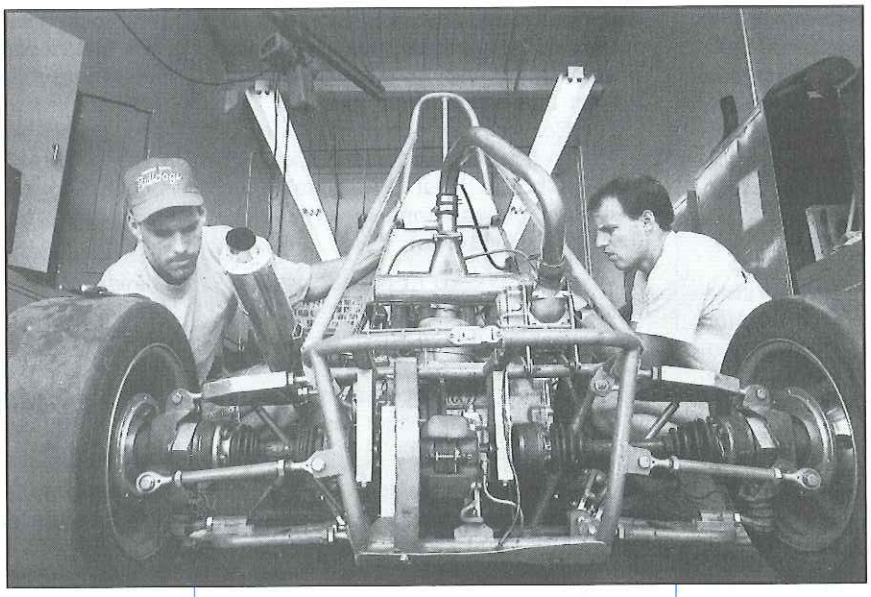
82. Wood Machining (3)
Prerequisite: I T 80. Development of proficiency in the operation and maintenance of modern woodworking machinery and spray finishing equipment; safety education, cutting principles and techniques, machine design and capabilities. (6 lab hours) (Course fee variable; not less than $10)

92. Industrial Safety Management (3)
Principles of safety management in an industrial environment; safety legislation and programs; management/supervisory and employee responsibilities and attitudes; physical hazards associated with chemicals, equipment, fire, compressed gases; other topics include eye, stress, drugs, lifting, office, and noise safety. (Former I Ed 92)

102. Industrial Computer Concepts and Applications (3)
Introduction to industrial computer systems. Comprehensive view of the components of a modern industrial information processing system and the parts each component plays in the processing of data. (Lab fee, $15)

104. Materials of Product Design (3)
Prerequisite: I T 41, 74, or equivalent. Elements, principles, methods, and materials of product design. Structure, properties, and manufacturing processes of materials as related to models, prototypes, and pro-

duction planning. Exploration of the design process from concept to manufacturing, including packaging. (6 lab hours) (Course fee variable; not less than $4.50)



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. General Education CAPSTONE Cluster course. (2 lecture, 2 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 T 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. (6 lab hours; field trips) (Course fee variable; not less than $5)

112. Industrial Process Control and Instrumentation (3)
Prerequisite: I T 52. Industrial process control system principles and components; computers, controllers, transducers, and actuators; mechanical and electrical instrumentation. (6 lab hours)

114. Industrial Materials (3)
Chemical and physical properties of metals, polymers, ceramics, composites. Atomic structure and phases of matter emphasizing crystalline and amorphous solids. Mechanical properties, strength and testing of materials including impact, hardness, and tensile. Metallographic, microscopic inspection of electronic, and metallic specimens. (6 lab hours)

115. CAD Principles and Methods (3)
Prerequisite: I T 41 or Const 42; I T 102. Computer-aided design applications. Special emphasis in manufacturing, construction, and interior design applications. Exposure to CAD software packages. (Lab fee, $15)

116. Industrial Programming (3)
Prerequisite: I T 102. Contemporary computer language used in automation, equipment communications, and manufacturing industry; basic concepts on structural programming, programming mechanics, and applications. (Former I T 191T section)

117. Quality Assurance (3)
Prerequisite: I T 102; Mgt 104 and 106 or Mgt 110. 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 and 106 or Mgt 110. 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. Strategies on how to implement Computer-Integrated Manufacturing (CIM) for a complete manufacturing enterprise. Focuses on CIM systems, opportunities, concerns and solutions; design, development, implementation, and operations; and employees' educational programs. Team efforts and management are emphasized.

120. Automotive Engine Systems (3)
Prerequisite: I T 12, 53 or concurrently. Advanced study of automotive engines and support systems. Includes engine theory, fuel and electrical systems, turbochargers, LPG, diesel, computerized emission and engine controls, and dynamometer testing analysis. (6 lab hours; field trips)

121. Automotive Engine Machining (3)
Prerequisite: I T 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. (6 lab hours; field trips) (Course fee, $6)

122. Automotive Chassis Analysis (3)
Prerequisite: I T 12. Advanced study of automotive chassis components including power transmission, brake systems, wheel suspension, air conditioning, body repair and refinishing, computer controls and diagnostics. (6 lab hours; field trips)

125. Multifuel Engine Power Analysis (3)
Prerequisite: I T 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)

127. Vehicle Design and Development (3)
Design and mechanical development of vehicles for intercollegiate competition events. Students will select one or more vehicle research projects: innovative future fuels, supermileage, mini baja, formula, aero design, walking robot. (6 lab hours) (Former I T 191T section)

129. Automotive Diagnostic Procedures (3)
Prerequisite: I T 12, 53 or concurrently. Laboratory study and analysis of mechanical, electrical, and computer control prob-

lems. Technical reports. (6 lab hours) (Course fee, $5)

131. Digital Circuits and Systems (3)
Prerequisite: I T 52. Number systems, Boolean logic, and fundamentals of digital devices; basic applications of logic devices in computers and control systems. (2 lecture, 3 lab hours; field trips)

132. Microprocessor Applications (3)
Prerequisite: I T 131. Microprocessor characteristics and programming; application and interface to digital and analog control and communication circuits; introduction to microcomputer hardware. (2 lecture, 3 lab hours)

133. Programmable Logic Controllers (3)
Prerequisite: I T 131; I T 112 recommended. Programmable logic controller principles and equipment; programming languages, procedures, and documentation; equipment and software selection and application. (2 lecture, 2 lab hours)

134. Programmable Automation (3)
Prerequisite: I T 177 or a high level programming language. Study, analysis, and evaluation of programmable industrial systems. APT programming language for numerical control and application languages for robots, programmable logic controllers, process controllers, and microcomputers. Applications of these systems in flexible manufacturing cells. (2 lecture, 2 lab hours)

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. (Lab fee, $15)

140. Principles of Applied Technology (3)
Prerequisite: Math 72 or 75; Phys 2A, 2B. Problem solving and analysis using physical science principles of mechanics, thermodynamics, and hydraulics.

141. Machine Design Graphics (3)
Prerequisite: I T 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)

144. Tool Design Graphics (3)
Prerequisite: I T 41, 44, 115. 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)

147. Advanced CAD Applications (3)
Prerequisite: I T 115, 140, 144. CAD as a tool to facilitate design activities. An overview of design processes and methods. Solid modeling techniques are introduced. A team approach in system design is emphasized. (Lab fee, $15)

148. CIM Systems Analysis and Development (3)
Prerequisite: I T 115. Computer-Integrated Manufacturing (CIM) systems utilized in manufacturing industries, systems development cycle, systems analysis, justification, benchmarking, personnel, and facilities planning. (Lab fee, $15)

149. CIM Systems Management (3)
Prerequisite: I T 148. Computer-Integrated Manufacturing (CIM) system database philosophies. System administration, facility organization and administration, personnel development and organization, training, system maintenance, and evaluation.

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. Electric Power Systems (3)
Prerequisite: I T 52. Electrical power generation and distribution systems. Power and control circuits in commercial and industrial facilities. Building codes and analysis of electrical demands are emphasized. (6 lab hours; field trips)

156. Electric Motors and Controls (3)
Prerequisite: I T 52. Study and analysis of the characteristics and industrial applications of electric motors. Major emphasis is placed on programmable, solid state, and electromechanical motor controllers. (6 lab hours; field trips) (Course fee variable; not less than $4)

158. Local Area Network Fundamentals (3)
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; I T 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) (Course fee variable)

160. Graphic Communication Developments (3)
Prerequisite: I T 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. (6 lab hours; field trips) (Maximum course fee, $10)

161. Photo Offset Lithography (3)
Prerequisite: I T 60. Photo offset lithography techniques and processes: design, layout, cold type composition, and paste-up, line, and half-tone copy, imposition, multicolor printing. (6 lab hours; field trips) (Course fee, $15)

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. (6 lab hours; field trips) (Course fee, $6.35) (Former I Ed 162)

170. Advanced Principles of Metalworking (3; max total 6)
Study and experience in the technological, scientific, and historical aspects of nonferrous metal casting, core-making; forging, principles of metal spinning. (6 lab hours) (Course fee, $6.50)

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. (6 lab hours) (Course fee, $6.50)

177. Computer Numerical Control (3)
Prerequisite: I T 74, 102. Introduction to computer numerically controlled hardware including milling and turning centers and flexible manufacturing systems. Programming in languages common to computer numerically controlled machine tools. Computer-controlled machining of industrial materials including aluminum, brass, steel, plastic, expanded foam, and wax. (6 lab hours) (Minimum course fee, $5)

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. (6 lab hours) (Course fee variable; not less than $10)

184. Wood Production Technology (3)
Prerequisite: I T 74. Wood microstructure, seasoning, and physical properties. Production processing, including product design, tooling, capacity planning, material handling, scheduling and flow chart. (6 lab hours; field trips) (Course fee variable; not less than $2)

185. Advanced Wood Machining (3)
Prerequisite: I T 82. Design, construction, and finishing of furniture, cabinet work, millwork. Production methods, analysis of cutting processes. (6 lab hours) (Course fee variable; not less than $10)

190. Independent Study (1-3; max see reference)
See *Academic Placement — Independent Study*. Approved for ***SP*** grading. (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. ***CR/NC*** grading only.

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. ***CR/NC*** grading only.

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)

198W. Technical Writing (3)
Prerequisite: Engl 1; completion of 56 units. Preparation of technical reports, research proposals, specifications, resumes, and correspondence using effective writing techniques, formats, and styles. Meets upper-division writing skill requirement for graduation. (Former I T 198)

199. Senior Problem in Industrial Technology (2)
Prerequisite: I T 198W and permission of instructor. Approved problem or research project, with seminar, in the area of the student's option and emphasis. Approved for ***SP*** grading.

Graphic and Interior Design (GID)

7. Drafting for Interior Design (3)
Interior drafting techniques for complete working drawings in plan and elevation, interior millwork, introduction to codes, standards, ink and lettering. (6 lab hours)

37. Interior Graphics (3)
Introduction to basic black and white interior graphic communication techniques including one- and two-point perspective sketch techniques, graphic charts, material representation, plan and elevation graphics; emphasis on composition, shade, shadow, lighting, and texture. (6 lab hours)

43. Visualization and Illustration (3)
Not open to students with credit in I Ed 141 or GID 141. Rapid visualization as a means of quick visual communication for the illustrator or designer. Illustration techniques include projects in pencil, pen, markers, shading, and opaque water color. (6 lab hours) (Course fee, $5)

63. Computer Imaging and Publishing (3)
Publication imaging using the computer. Typography: typeface selection, spacing, positioning, readability, legibility; page layout for various style publications. Illustrations: computer drawing, tints, clip art; integration of illustrations and type. PageMaker and other programs on the Macintosh computer. (6 lab hours) (Lab fee, $15; course fee, $5) (Former GID 172T section)

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.

71. Residential Interior Design (3)
Prerequisite: GID 70. Introductory residential experience in interior design. Studio work, creative aesthetics, spatial arrangements, design process programming. (6 lab hours) (Course fee, $5)

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 critiques. (6 lab hours) (Course fee, $5)

110. Basic Building and Mechanical Systems (2)
Not open to students with credit in Const 50 or 162. Fundamentals of building systems as related to interiors, including construction products and techniques, acoustics, electrical, plumbing, heating, ventilating, and cooling. (Field trips) (Former GID 172T section)

111. Design Presentation Techniques (3)
Prerequisite: GID 70. Introductory experiences in creative design presentation and technique, architectural graphics, product presentation boards, three dimensional model design problems, and use of color media. (6 lab hours) (Course fee, $5) (Former GID 72)

112. Space Planning (3)
Prerequisite: GID 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. Design for special populations. (6 lab hours) (Course fee, $5) (Former GID 117)

113. 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. (6 lecture-lab hours) (Course fee, $150) (Former GID 173)

114. History of Architecture and Interiors: Ancient World to Baroque Period (3)
Prerequisite: course in art history recommended. A stylistic survey of characteristics common to each historical period of architectural and furniture design. (Former GID 175A)

115. History of Architecture and Interiors: Baroque to Modern (3)
Prerequisite: course in art history recommended. A stylistic survey of characteristics common to each historical and modern period of architectural and furniture design. (Former GID 175B)

130. Interior Lighting (3)
Prerequisite: GID 70, 110. Introduction to lighting of residential and commercial interiors. Laboratory testing and lighting calculations. (2 lecture, 2 lab hours) (Course fee, $10) (Former GID 182)

131. Interior Design Materials and Specifications (3)
Prerequisite: GID 70; F M 20. Selection, specifications, and computations of interior design materials available for the residential and commercial market. Lecture, small group research, and field trips. (2 lecture, 2 lab hours) (Course fee, $10) (Former GID 176)

132T. Topics in Graphic and Interior Design (1-4; max total 12 if no topic repeated)
Prerequisite: GID 70, 111. Topics related to graphic and interior design. Some topics may have labs. (Former GID 172T)

133. Professional Interior Design Practices (3)
Prerequisite: GID 70, 131; 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) (Course fee, $10) (Former GID 177)

134. Restoration and Preservation (3)
Prerequisite: GID 114, 115, 131, 174, 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) (Course fee, $5) (Former GID 180)

135. Commercial Interior Design (3)
Prerequisite: GID 7, 70, 71, 111, 112, and 144. Introduction to the application of contemporary designs and office systems as related to the field of light commercial interiors. (6 lab hours) (Course fee, $10) (Former GID 170)

137. Interior Architectural Models and Graphics (3)
Prerequisite: GID 37. Three dimensional interior architectural models and graphic techniques integrating color and composition and its impact on design communication; media to include illustration board, balsa wood, photography, markers, color pencil, pastel, and water color. (6 lab hours)

138. Advanced Residential Interior Design (3)
Prerequisite: GID 37, 110, 114, 115, 131, 135, 144; I T 115. A series of advanced creative design solutions for residential environments. Design for new construction, remodeling, and restoration for a variety of lifestyles, budgets, and physical conditions. Working drawings, presentation techniques, and specifications. (6 lab hours) (Course fee, $10) (Former GID 178A; GID 151)

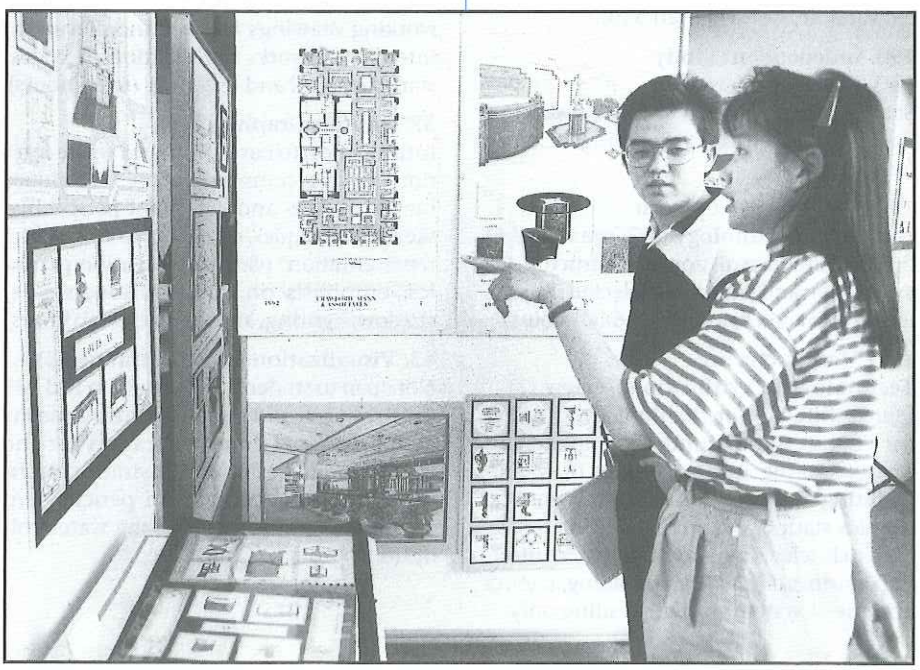
142. Advertising Design (3)
Prerequisite: I T 60. Advertising and illustration problems from rough sketches to finished artwork. Emphasis on good design and professional techniques. Preparation of artwork for reproduction including overlays, art type, photo mechanical procedures, and advertising production methods. (6 lab hours) (Course fee, $5)

143. Rendering (3)
Prerequisite: GID 43. 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. (6 lab hours) (Course fee, $5)

144. Perspective Drawing (3)
Prerequisite: GID 43 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)

146. Advanced Rendering (3; max total 6)
Prerequisite: GID 143. Advanced rendering for industrial design, architecture, interior design, commercial art, and illustration. Includes limited and full color problems with emphasis on professional presentation. Individual exploration encouraged. (6 lab hours)

147. Advertising Illustration (3)
Prerequisite: GID 43. Illustration as it applies to advertising situations. Composition and techniques designed for quick



Interior design majors view the annual Senior Portfolio Review exhibit.

reading and ease of execution. Black and white and limited color. (6 lab hours) (Course fee, $5)

148. Advanced Advertising Design (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, TV, etc. Emphasis on production procedures, professionalism, and building a strong portfolio, including critiques. (6 lab hours)

150. Design Exhibits and Competitions (3; max total 6)
Prerequisite: GID 135; permission of instructor. Provides a structure for students to participate in creative design shows or manufacturer design competitions and exhibits. (6 lab hours) (Course fee, $10) (Former GID 179)

152. Interior Design Practicum (1; max total 6)
Prerequisite: senior standing; GID 131, 138, or 155; permission of instructor. Supervised professional practice in interior design related business or industry. Participation in Senior Portfolio Review required. (Former GID 181)

155. Advanced Commercial Interior Design (3)
Prerequisite: GID 114, 115, 131, 135, 144; I T 115; senior standing or permission of instructor. 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 GID 178B)

165. Typography (3)
Prerequisite: I T 60. Typographic principles, elements, and techniques: type classification and selection, copyfitting, design and layout. Modern composition; computerized phototypesetting systems. Paste-up techniques. (6 lab hours; field trips) (Course fee, $4)

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.

190. Independent Study (1-3; max see reference)
See *Academic Placement — Independent Study*. Approved for ***SP*** grading. (Course fee variable)

GRADUATE COURSES

(See *Course Numbering System.*)

The following graduate courses are open only to students who have been accepted into a graduate program. Students who are not in graduate standing should contact the department graduate coordinator prior to enrolling.

Industrial Technology (I T)

223. Technology and Society (3)
Study of the developmental history of technology and its impact on people and their institutions. Topics focus on the consequences of rapid technological change as it relates to education and training, energy demands, and environmental concerns. (Former I Ed 223)

270. Technical Problems (2-3; max total 9 if no area repeated; max combined total with I T 290 is 12)
Technical work in selected areas; research under supervision of instructor. Approved for ***SP*** grading. (Former I Ed 270)

280. Research Methodology (3)
Prerequisite: ERF 153 and advancement to candidacy. Seminar in research procedures in industrial education and technology; basic bibliography, research form and methods. (Former I Ed 280)

282. Advanced Communication Concepts and Visual Presentations (3)
Prerequisite: I T 115. Preparation and use of agendas, memoranda, business letters, electronic mail, fax communications. Video development and slide and transparency preparation and the incorporation of these media into presentations. Interview techniques, resume evaluations, dictation skills, professional relations with personnel, business etiquette. (Former I Ed 284T section)

283. Advanced Materials and Processes (3)
Prerequisite: I T 114. Chemical and physical properties of metals, polymers, ceramics and composites. The atomic structure and phases of matter emphasizing crystalline and amorphous solids. Materials technology of metallic, polymeric, ceramic, and advanced composites are stressed. (Former I Ed 284T section)

284T. Topics in Industrial Technology (2-3; max total 9 toward master's degree if no area repeated)
Advanced study in technical areas; current industrial practices, developments and trends related to design, materials, and processes. (Former I Ed 284T)

285. Advanced Manufacturing Systems (3)
Prerequisite: I T 74, 115. A comprehensive study of modern manufacturing systems. Topics include plant layout, material control and transfer, operations measurement, transfer lines, CNC and DNC, machine tool network, computer-integrated manufacturing, flexible manufacturing systems, group technology, robotics, and manual assembly systems. (Former I Ed 284T section)

290. Independent Study (1-3; max total 6 if no area repeated; max combined total with I T 270 is 12)
See *Academic Placement — Independent Study*. Approved for ***SP*** grading. (Former I Ed 290)

298. Project (2-4; max total 4)
Prerequisite: I T 280; prior advancement to candidacy. See *Criteria for Thesis and Project*. 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. Approved for ***SP*** grading. (Former I Ed 298)

299. Thesis (2-4; max total 4)
Prerequisite: I T 280; prior advancement to candidacy. See *Criteria for Thesis and Project*. Preparation, completion, and submission of an acceptable thesis for the master's degree. Approved for ***SP*** grading. (Former I Ed 299)

IN-SERVICE COURSE

(See *Course Numbering System.*)

Industrial Technology (I T)

341. Problems in Industrial Arts (2-3; max total 6 if no area repeated)
Prerequisite: permission of instructor. Intensive analysis of a selected area in industrial arts or industrial technology. Research paper, project, or reports. (Former I Ed 341)

AGRICULTURE Plant Science and Mechanized Agriculture

School of Agricultural Sciences and Technology
Department of Plant Science and Mechanized Agriculture
SAYED A. BADR, *Chair*
Agriculture Building, Room 220
(209) 278-2861

B.S. in Plant Science
Options: Crop Science (Agronomy and Vegetable Crops), Ornamental Horticulture, Plant Protection, Soils/Irrigation, Viticulture/Tree Fruits
Emphases: Production Management, Science and Technology

B.S. in Agricultural Science
Option 1: Production
Concentration: Agricultural Engineering Technology
Programs of Study: Automation, Food Technology, Power and Machinery, Soil and Water

M.S. in Plant Science
Options: Crop Science, Plant Protection, Soil Science/Irrigation

Minor in Plant Science
Minor in Agriculture (Agricultural Engineering Technology)

Join the leader in science, technology, and management. The Department of Plant Science and Mechanized Agriculture offers programs in production with classes in business management and in science and technology. Within the production or science emphases, students select an option in crop science (agronomy and vegetable crops), ornamental horticulture, plant protection, soils/irrigation, or viticulture/tree fruits.

Additionally, the department offers an agricultural science degree with a concentration in agricultural engineering technology that includes classes in business management or science and technology.

Courses offered by the department integrate physiology, soils and nutrition, cultural practice, protection against plant pests, marketing, storage and handling practices, and mechanization to provide students with a well-balanced background for positions in plant/soil sciences, crop production, and agricultural engineering technology. In addition, courses in areas such as micropropagation, plant improvement, and seed technology provide students with a background for further studies in plant biotechnology.

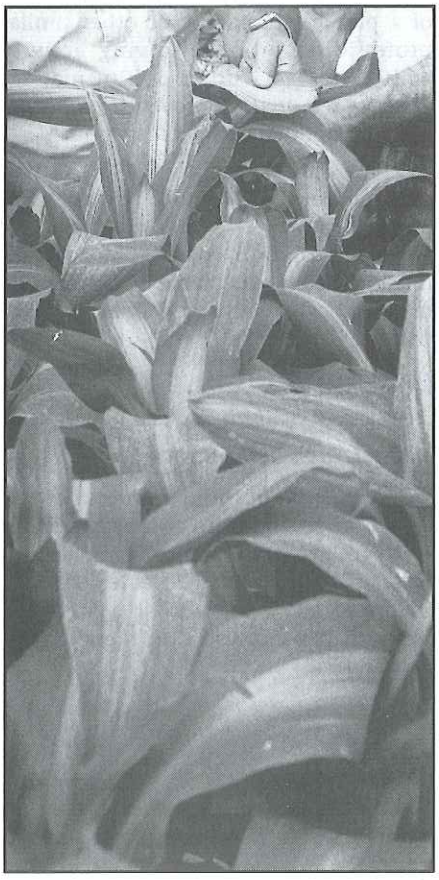
Each degree option integrates departmental curricula with the basic sciences (e.g., biology, chemistry, mathematics, physics) and management skills to build a well-balanced foundation.

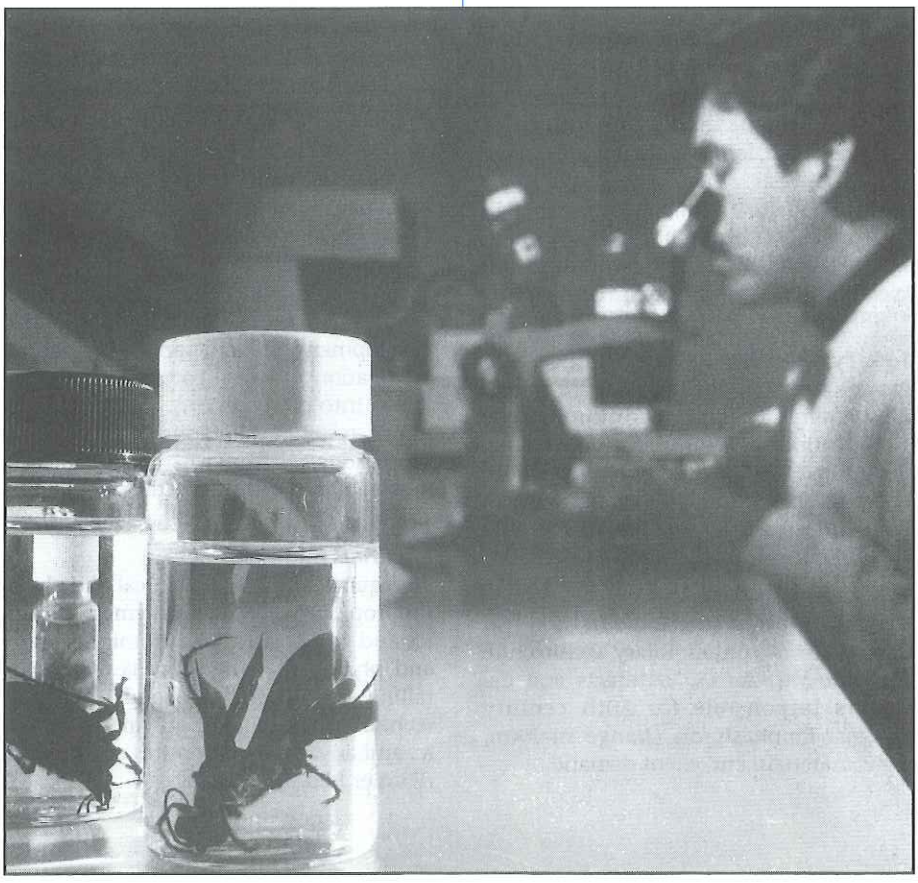
The irrigation and viticulture programs have received the Western Region and National Awards for Excellence in Agricultural Technology Instruction respectively. These prestigious awards are sponsored by the National Association of State Departments of Agriculture and R. J. Reynolds Industries Inc.

For information about laboratory units and supervised projects, see *School of Agricultural Sciences and Technology*.

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 many exciting, well-paying careers. For a list of career opportunities, contact the department office.





Faculty

Sayed A. Badr, *Chair*

Arthur J. Olney, *Graduate Coordinator*

Daniel P. Bartell
Earl H. Bowerman
Mahlon M. S. Hile
Joo I. Kim
Gary M. Koch
Charles F. Krauter
Mark A. Mayse
Vincent E. Petrucci
Gary L. Ritenour

The faculty hold advanced degrees in their fields of specialization from 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 academic 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 — the Center for Irrigation Technology and the Viticulture and Enology Research Center — and the San Joaquin Experimental Range. The centers offer excellent opportunities to undergraduate and graduate students who gain experience by participating in applied research projects that address and help solve problems faced by California's agricultural industry.

Bachelor of Science Degree Requirements

Plant Science Major

Production Management Emphasis

Options: Crop Science, Ornamental Horticulture, Plant Protection, Soils/Irrigation, Viticulture/Tree Fruits

Recommended curriculum for students interested in crop science (agronomy, vegetable crops), ornamental horticulture, plant protection, soils/irrigation, or viticulture/tree fruits, with emphasis on production, business management, and marketing.

Units

General Education 51
(including 9 upper-division units, after completing 56 units of coursework)
CORE
Category 3: Plant 99 (recommended)
BREADTH
Division 1: Chem 3A (required)
Division 2: Bot 10 (required)
Division 3: Plant 105 (recommended)
Division 4: CFS 38 or Nutr 53 (recommended)
Division 8: Ag Ec 1 (recommended)
CAPSTONE
Either cluster recommended:
Agriculture and Government Policy: Ag Ec 150 and Pl Si 150 or Phil 125
Energy and Society: I T 106 and P Sci 168 or Geog 134 or Econ 117

Major 45
(including 20 upper-division units)
Plant Science Core ..... (22)
Pl Pr 103, 105, 106; Plant 107, 150; SI 2, 100, 100L
Option ..... (23)
Select 3 units from Plant 180, 190 and/or 196 (required)
Select 20 units of departmental courses in consultation with adviser (15 units must be from **one** of the following option categories and 12 of those units must be upper division)
Crop Science — Agronomy and Vegetable Crops
Ornamental Horticulture
Plant Protection
Soils/Irrigation
Viticulture/Tree Fruits

Additional requirements 12-15
Upper-division writing skills requirement by examination or Plant 110W
Chem 3B
Management courses
Ag Ec 31; choose two from: Ag Ec 110N, 117, 120, 130, 160, 164

Electives 17-20
Courses supplementary to the major are selected in consultation with your adviser.

Total requirements 128
(including 40 upper-division units)

Advising Notes

1. New students should request a program of study check sheet from the department.
2. Meet with your academic adviser prior to registration each semester.
3. General Education courses designated as required by the department are prerequisites to many courses in the program of study. The General Education requirement of 51 units may be exceeded depending upon your selection of courses.
4. *CR/NC* grading is not permitted for courses included in the major.
5. Upper-division courses (i.e., 100-level courses) should not normally be attempted until 45 lower-division units toward the degree have been completed.
6. The upper-division writing skills requirement can be met by passing the university Upper-Division Writing Examination (UDWE) or by taking an approved upper-division writing skills course. One unit of credit (i.e., English 100W) may be earned for passing the exam; 3 units of credit is earned by obtaining a letter grade of *C* or higher in an approved course, i.e., Plant 110W. In either case, the requirement will have been met.
7. One semester prior to graduation, contact your academic adviser to prepare and file an official Certification of Major Requirements form. Your Application for Graduation cannot be processed by the Evaluations Office until this form has been submitted.
8. Students interested in becoming Certified Professional Agronomists, Crop Scientists/Specialists or Soil Scientists/Specialists should consult with their department faculty adviser for additional requirements for certification.

Plant Science Major

Science and Technology Emphasis

Options: Crop Science, Ornamental Horticulture, Plant Protection, Soils/Irrigation, Viticulture/Tree Fruits

Recommended curriculum for students interested in pursuing a high technology career in crop science (agronomy, vegetable crops), ornamental horticulture, plant protection, soils/irrigation, or viticulture/tree fruits. Also recommended for students planning to pursue graduate study in plant science and for those who wish to become certified professional

agronomists, crop scientists/specialists, or soil scientists/specialists.

Units

General Education 51
(including 9 upper-division units, after completing 56 units of coursework)
CORE
Category 3: Plant 99 (recommended)
BREADTH
Division 1: Chem 3A (required)
Division 2: Bot 10 (required)
Division 3: Plant 105 (recommended)
Division 4: CFS 38 or Nutr 53 (recommended)
Division 8: Ag Ec 1 (recommended)
CAPSTONE
Either cluster recommended:
Agriculture and Government Policy: Ag Ec 150 and Pl Si 150 or Phil 125
Energy and Society: I T 106 and P Sci 168 or Geog 134 or Econ 117

Major 45
(including 20 upper-division units)
Plant Science Core ..... (16)
Pl Pr 103, 105, 106; SI 2, 100, 100L
Career Option ..... (29)
Plant 99 (required)
Select 3 units from Plant 180, 190, 196 (required)
Select 23 units of departmental courses in consultation with adviser (12 units must be from **one** of the following option categories and 9 of those units must be upper division)
Crop Science — Agronomy and Vegetable Crops
Ornamental Horticulture
Plant Protection
Soils/Irrigation
Viticulture/Tree Fruits

Additional requirements 18-23
Upper-division writing skills requirement by UDWE or Plant 110W
Science courses
Bot 130; Chem 8 and either Chem 4 and 105, or 150; Genet 120; Micro 20

Electives 9-14
Courses supplementary to the major, selected in consultation with department faculty adviser, are strongly recommended. Zool 10 recommended for Plant Protection Emphasis.

Total requirements 128
(including 40 upper-division units)

Advising Notes

See *Advising Notes*, Plant Science Major, Production Management Emphasis.

Plant Science Minor

Options: Crop Science, Ornamental Horticulture, Plant Protection, Soils/Irrigation, Viticulture/Tree Fruits

The 21 units of courses will constitute a basic background in plant science. The program is similar to the major core and provides students with an introduction to the broad spectrum of plant science. Other majors in the School of Agricultural Sciences and Technology, particularly the Agricultural Business and Education majors, require students to be knowledgeable of plant science in order to pursue their careers or teach the subjects of agricultural production. This minor would be a way in which students could acquire those courses they need and get credit for completing a program of study rather than only a series of courses.

Units

Select from the following 3
Plant 107: Plant Propagation
Plant 196: Crop Project* (AET 3 and instructor's permission and appropriate production course)
Plant 150: Crop Improvement* (Bot 10 or Biol 10)
Select from the following 6
Pl Pr 103: Economic Entomology* (Bot 10 or Biol 10 or Zool 10)
Pl Pr 105: Weeds* (Bot 10 or Biol 10 and Chem 3A)
Pl Pr 106: Plant Pathology* (Bot 10 or Biol 10)
Select from the following 3
SI 2: Agricultural Water
SI 100: Soils* (Chem 3A)
Select from one of the option areas in Plant Science (at least 6 units must be upper division) 9
Total 21

*Course requires a prerequisite.

Bachelor of Science Degree Requirements

Agricultural Science Major

Option 1: Production (Agricultural Engineering Technology)

The flexible agricultural science degree enables students interested in agricultural engineering technology related careers to choose appropriate programs of study in power and machinery, automation, food technology, and soil and water.

The **power and machinery** program of study is the recommended curriculum for students interested in designing, testing, installing, selling, servicing, or recommending agricultural equipment. An alternative curriculum is available in this program of study for students wishing to gain necessary business management background while increasing their knowledge of mechanized agriculture.

The **automation** program of study is the recommended curriculum for students wishing to obtain a strong background in science and industrial technology devoted primarily to agricultural electrification, construction, automation, waste management, and the development and management of farm equipment.

The **food technology** program of study is the recommended curriculum for students wishing to obtain a strong background in science and technology devoted primarily to food production operations, processing and handling, food industry management, and waste management.

The **soil and water** program of study is recommended for students interested in designing, fabricating, testing, installing, selling, servicing, or recommending irrigation facilities and systems.

Units

General Education 51
(including 9 upper-division units, after completing 56 units of coursework)
CORE
Category 3: Math 70 or Plant 99 (recommended)
BREADTH
Division 1: Chem 3A (required)
Division 2: Biol 10 or Bot 10 or Zool 10 (required)
Division 3: Plant 105 (recommended)
Geog 5 (recommended for Soil and Water)
Division 4: CFS 38 or Nutr 53 (recommended)

Division 8: Ag Ec 1 (recommended)
CAPSTONE
Either cluster recommended:
Agriculture and Government Policy: Ag Ec 150; and Pl Si 150 or Phil 125
Energy and Society: I T 106 and P Sci 168 or Geog 134 or Econ 117

Major 45
(including 20 upper-division units)
Elect one course from four of these six disciplines ..... (12)
Ag Ec
AET
A Sci
EFSN (Enol, FSc, FSM)
Plant Science (Cr Sc, OH, Plant, Pl Pr, VTF)
Soils/Irrigation (SI)

Program of Study ..... (33)
Select one:

Automation
Select 33 units of departmental courses in consultation with adviser from the following: AET 50, 103, 104, 105, 106, 107, 109, 116, 190; IS 50; I T 41, 52, 53, 74 and other upper-division courses

Food Technology
Select 33 units of departmental courses in consultation with adviser from the following: AET 1, 50, 53, 103, 106, 108, 109, 110, 115, 116, 180, 190; Ag Ec 31; VTF 114 and other upper-division courses

Power and Machinery
Select 33 units of departmental courses in consultation with adviser from the following: AET 1, 3, 50, 52, 53, 91, 103, 104, 105, 106, 107, 108, 109, 112, 113, 115, 116; I T 41 and other upper-division courses

Soil and Water
Select 33 units of departmental courses in consultation with adviser from the following: AET 3, 50, 53, 91, 106, 108, 115, 116, 190; SI 2, 100, 100L, 111, 112; Plant 134 and other upper-division courses

Additional requirements 15-32
Upper-division writing skills requirement by examination or Plant 110W

Automation
Phys 2A
Select 25-27 units in consultation with adviser from the following courses: I T 102, 104, 118, 119, 131, 132, 177, 178; Mgt 104, 106

Food Technology
Ag Ec 120, 124; Chem 3B, 8, 150; FSc 1, 110, 178; Micro 20

Power and Machinery
Ag Ec 31; Phys 2A; SI 2, 100, 100L
Students desiring business management courses take: Ag Ec 28, 110N, 120, 160
Students not desiring business management courses take: Const 105; I T 74

Soil and Water
Ag Ec 28, 110N; I T 41; Phys 2A; Plant 12; SI 113

Electives 0-17
It is strongly recommended that courses supplementary to the program of study be selected in consultation with the faculty adviser.

Total requirements 128
(including 40 upper-division units)

Advising Notes
See *Advising Notes*, Plant Science Major, Production Management Emphasis

Agriculture Minor

A Minor in Agriculture (agricultural engineering technology) consists of 21 units of which 9 must be upper-division. At least 12 units must be taken in the AET prefix. The minor program is planned with an adviser and must be certified by the department chair and the school dean. The certified minor program is filed with the Office of Evaluations.

Master of Science Degree Requirements

The Master of Science degree in Plant Science with authorized options in crop science, soils and irrigation, and plant protection is a 30-unit program designed to provide advanced studies and in-depth knowledge in the fundamentals of plant physiology and experimental design, as well as technical writing and formal presentation of research reports.

This degree is for individuals seeking career advancement in agronomy, agricultural research and development, plant physiology, pest management, plant pathology, and soils and irrigation. Graduate courses are offered in the late afternoon or evening permitting students to earn their degree within two years when working closely with an adviser.

Admission Requirements. The Master of Science degree in Plant Science assumes preparation equivalent to a Bachelor of Science in Plant Science. The following courses or equivalents are expected to be completed prior to enrollment in courses to be applied to the master's program: Bot 10, 130; Chem 3A, 3B (or 2A and 2B) and 8; Genet 120 or equivalent; Pl Pr 103, 105, 106; Plant 99; SI 2, 100, 100L.

Admission by the university does not imply acceptance in the master's program in plant science. Applicants whose preparatory education was principally in a language other than English must earn a minimum TOEFL score of 550.

Admission as a classified student will be based on consideration of a combination of all the following criteria:

1. GRE scores, which must be submitted with application (suggested minimum scores of 480 verbal and 580 quantitative)
2. grade point average for the last 60 units (minimum 2.75 GPA)
3. college transcript verifying completion of prerequisite courses
4. completed School of Agricultural Sciences and Technology "Graduate Programs Admission Application"
5. three letters of reference, and
6. a typewritten statement of 500 words explaining the applicant's professional goals.

Conditional classified standing may be granted by the department to applicants who have a minimum GPA of 2.5 (last 60 semester units) and who have 9 or fewer units of prerequisite courses to complete. Students must achieve a 3.0 GPA on prerequisite coursework.

Students must achieve classified standing in the program by the semester in which a maximum of 10 units to be used toward the master's degree are completed.

Students are not normally accepted into the Master of Science in Plant Science degree program if they have more than 10 units of prerequisite courses to complete. Prerequisite coursework cannot be used to fulfill the 30 unit master's program requirements. Potential graduate students who have 10 or more units of prerequisite courses to complete are encouraged to enroll as

unclassified postbaccalaureate students in plant science at CSUF and apply to the master's program when they have 9 or fewer units of prerequisite courses to complete. Students must achieve a 3.0 GPA on prerequisite coursework.

Program Requirements

Thesis Plan

All students must complete a 9-unit common core. Students focus their program on an authorized option to meet educational/professional goals by taking the 9 units of coursework within the selected option and by the appropriate selection of 5 units of approved electives, of which a maximum of 5 units can be 100 series. A 3-unit thesis completes the program of study.

	Units
Core	9
Agri 200, 220; Plant 257	
Additional requirements	13
Agri 201; Plant 270	(4)
Option	(9)
Crop Science: Plant 252, 254, 255	
Soils/Irrigation: Plant 253, 256, 259	
Plant Protection: Plant 251, 258, 261	
Electives	5
In consultation with the adviser, students select from the approved elective list. A maximum of 5 units may be 100 level.	
Culminating experience	3
Plant 299	
Total minimum requirements	30

Comprehensive Examination Plan

All students must complete a 9-unit common core. Students focus their program on an authorized option to meet educational/professional goals by taking the 9 units of coursework within the selected option and by the appropriate selection of 8 units of approved electives, of which a maximum of 6 units can be 100 series. A comprehensive examination completes the program of study.

	Units
Core	9
Agri 200, 220; Plant 257	
Additional requirements	13
Agri 201; Plant 270	(4)
Option	(9)
Crop Science: Plant 252, 254, 255	
Soils/Irrigation: Plant 253, 256, 259	
Plant Protection: Plant 251, 258, 261	
Electives	8
In consultation with the adviser, students choose from the approved elective list. A maximum of 6 units may be 100 level.	
Culminating experience	0
Comprehensive examination	
Total minimum requirements	30

Graduate Advising Notes

1. Several of the approved elective courses have prerequisites other than courses listed as admission requirements.
2. To obtain the required school application form and more specific information concerning the Master of Science in Plant Science degree, interested students should call or write the department office. Upon acceptance in the Master of Science in Plant Science program, students should obtain the *Graduate Student Handbook* from the department office.
3. Upon acceptance into the M.S. in Plant Science program, students will be assigned an initial faculty adviser by the department chair. Students may subsequently select a faculty adviser upon obtaining his/her approval and notifying the department office of that selection.
4. Electives should be selected from the approved list of 100 and 200 series courses listed in the *Graduate Student Handbook*. Under special circumstances and with prior written approval from the adviser and department chair, a student may select an elective course other than those on the approved list of 100 and 200 series courses listed in the *Graduate Student Handbook*.
5. To progress through the graduate program, the student must:
   a. Maintain a minimum GPA of 3.0
   b. Complete all prerequisite coursework
   c. Attain classified standing
   d. Meet the university graduate writing requirement
   e. File for advancement to candidacy
   f. Pass the department qualifying examination
   g. Complete the program requirements
   h. File a master's thesis committee assignment form
   i. Formally present and defend the thesis research results
6. Advancement to candidacy requires the completion of 9 program units in residence, meeting the university graduate writing requirement, and filing a Petition for Advancement to Candidacy a minimum of one semester prior to enrollment in thesis and within the deadline.
7. The student may meet the university graduate writing requirement by earning a minimum of 450 verbal on the GRE. If a minimum of 450 verbal is not met by a student, the student shall meet the requirement by earning a score of 80 or higher on the Upper-Division Writing Examination (UDWE) or by earning a ***B*** or better in a designated **W** course to be specified by the graduate committee of the School of Agricultural Sciences and Technology.
8. All students must successfully complete the department qualifying examination, which is taken as soon as possible after completing the required plant science core courses — Agri 200, 201, 220 and Plant 257. Information on the department qualifying examination is included in the *Graduate Student Handbook*.
9. See *Division of Graduate Studies* section in this catalog for university requirements.

COURSES

Note: Active immunization against tetanus (available through Student Health Services) 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 varies each semester depending upon itinerary. The student should ask the course instructor.

Plant Science (Plant)

1. Introduction to Plant Science (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.

12. Microcomputers in Plant Science (3)
Prerequisite: intermediate algebra. 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 112)

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. Approved for ***SP*** grading.

99. Applied Agricultural Statistics (3)
Prerequisite: Students must take the ELM exam; students who do not pass the exam

must record a grade of *C* or better in a college-taught intermediate algebra course. Introduction to experimental methods and statistical procedures used in agricultural research. Self-paced laboratories utilizing microcomputers in the use of spreadsheet computations, design recognition, statistical analysis, and inference. General Education CORE, Quantitative Reasoning. (2 lecture, 3 lab hours) (Former Plant 100)

102. Micropropagation (3)
Prerequisite: Bot 10 or Biol 10; and Bot 130 or Chem 150 or permission of instructor. 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)

105. Food, Society, and Environment (3)
Prerequisite: General Education BREADTH, Divisions 1, 2, and 8 completed (or concurrent enrollment). Linkages among food production systems, human social behavior, and environmental quality. Basic principles of environmental and agricultural sciences as applied to interrelationships among social value systems, agricultural activities and environmental resources. General Education BREADTH, Division 3.

107. Plant Propagation (3)
Prerequisite: Bot 10 or Biol 10. Principles and practices of propagating plants, sexual and asexual. Seeds, cuttings, layering, grafting, budding, and tissue culture. Propagation media and rooting aids. (2 lecture, 3 lab hours) (Former Plant 2)

110W. Dimensions in Agriculture (3)
Prerequisite: Engl 1; completion of 56 units. Current agricultural problems and developments; nature of agricultural industries in a changing world. Interrelationships among agriculture, government, labor, and the public. Meets the upper-division writing skills requirement for graduation.

134. Microclimatology (3)
(See *Geog 114.*)

137. Apiculture (3)
Prerequisite: Bot 10 or Biol 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)

150. Crop Improvement (3)
Prerequisite: Bot 10 or Biol 10. Application of genetic, cytological and environmental principles to improvement of plants; heredity and variation in plants, effects of environmental factors, biotechnology, self- and cross-fertilization, principles and results of selection and hybridization in plant improvement.

170T. Topics in Plant Science (1-4; max total 6 per discipline if no topic repeated)
Prerequisite: junior standing. Selected topics in 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. Approved for ***SP*** grading.

190. Independent Study (1-3; max see reference)
See *Academic Placement — Independent Study*. Approved for ***SP*** grading.

194. Agricultural Internship (1-8; max total 8)
Prerequisite: junior standing; approval of faculty adviser and department chair. Field experience in your career specialty that integrates with classroom instruction. Written reports of knowledge and experience gained are required. ***CR/NC*** grading only.

196. Crop Projects (1; max total 4)
Prerequisite: AET 3 or equivalent, appropriate production course and permission of instructor. Knowledge gained from classroom instruction applied to field conditions. Students will participate in cultural practices using the University Farm Laboratory in growing and marketing a crop.

Crop Science — Agronomy and Vegetable Crops (Cr Sc)

1. Introduction to Crop Science (3)
Cr Sc 1L required for majors. Principles of production for cereal, row, forage and vegetable crops. Culture, insect and disease control, harvesting, storage, and marketing.

1L. Introduction to Crop Science Lab (1)
Prerequisite: Cr Sc 1 or concurrently. Systematic examination of structure, classification, crop culture, handling, storage and marketing of selected agronomic crops grown in the San Joaquin Valley. (3 lab hours) (2-day field trip fee, $35-65)

101. Row Crops (3)
Prerequisite: Bot 10 or Biol 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)

102. Cereal Crops (3)
Prerequisite: Bot 10 or Biol 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) (Two 1-day field trips)

103. Forage Crops (3)
Prerequisite: Bot 10 or Biol 10, Cr Sc 1. The culture of alfalfa, silage, irrigated pasture and range related to livestock feed enterprises; varieties, nutrition, insect, disease and weed control; harvesting, uses, and marketing. (2 lecture, 3 lab hours)

104. Seed Production and Technology (3)
Prerequisite: Bot 10 or Biol 10, Cr Sc 1. The principles of specialized agronomic seed production; harvesting, mechanical conditioning, storage, treatment and viability testing. (2 lecture, 3 lab hours) (2-3 day field trip fee, $35-65)

105. Range Management (3)
Prerequisite: Bot 10 or Biol 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)

111. Warm Season Vegetables (3)
Prerequisite: Bot 10 or Biol 10, Cr Sc 1, 1L. Cultural practices, harvesting, processing, and marketing of warm season vegetables of economic importance to California and the San Joaquin Valley. (2 lecture, 3 lab hours) (2-3 day field trip fee, $35-65)

112. Cool Season Vegetables (3)
Prerequisite: Bot 10 or Biol 10, Cr Sc 1, 1L. Cultural practices, harvesting, processing, and marketing of cool season vegetables of economic importance to California and the San Joaquin Valley. (2 lecture, 3 lab hours) (2-3 day field trip fee, $35-65)

113. Small Farms and Gardens (3)
Prerequisite: Bot 10 or Biol 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)

120. Advanced Crop Science (3)
Prerequisite: Bot 130, 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 and productivity; their impact on industry, management, and the environment.

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)

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.

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)

4. Floral Design (3)
Principles and rules of design and color using plants as a media; European and Japanese influences; emphasis on American line-mass and contemporary designs. An assortment of arrangements are made in lab. (2 lecture, 3 lab hours) (Course fee, $25) (Former OH 103)

5. Nursery Management I (3)
Prerequisite: Bot 10 or Biol 10, Plant 107, OH 1. Design, construction and utilization of nursery structures; production of annual and perennial nursery stock with emphasis on wholesale nursery practices. (2 lecture, 3 lab hours) (Former OH 104)

101. Floriculture I (3)
Prerequisite: Bot 10 or Biol 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; field trip)

102. Floriculture II (3)
Prerequisite: Bot 10 or Biol 10, OH 1. Cultural and environmental techniques used in the production of winter and spring floral crops. (2 lecture, 3 lab hours; field trip)

105. Nursery Management II (3)
Prerequisite: OH 5 and/or permission of instructor. Practices and principles in planning and managing a retail nursery, flower shop, or garden center; includes special occasion floral designs. (2 lecture, 3 lab hours; field trips)

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)

107. Advanced Landscape Design (4)
Prerequisite: OH 3, 106; OH 108 recommended. The analysis and solution of design problems as they relate to the site development of residential and commercial structures. (2 lecture, 6 lab hours)

108. Ornamental Trees (3)
Prerequisite: Bot 10 or Biol 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; field trip)

109. Arboretum and Botanical Gardens (2)
Prerequisite: Bot 10 or Biol 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; 3 Saturday field trips)

110. Turfgrass Production and Management (3)
Prerequisite: Bot 10 or Biol 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; field trip)

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.

101. Agricultural Chemical Applications (3)
Prerequisite: intermediate algebra. 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)

102. Properties of Pesticides (3)
Prerequisite: Chem 3B or 8. Typical uses, modes of action, mechanisms of selectivity, environmental interactions, and user safety of insecticides, herbicides, fungicides, nematocides, rodenticides, and plant growth regulators. (2 lecture, 3 lab hours)

103. Economic Entomology (3)
(Same as Zool 122). Prerequisite: Bot 10 or Zool 10. Biology, ecology, management and taxonomy of economically important arthropods, with special emphasis on agricultural ecosystems in California. (2 lecture, 3 lab hours) (Former Ent 106)

104. Plant Nematology (3)
Prerequisite: Zool 10 or Biol 10, Pl Pr 1. Morphology, life history, host plant relationships, and population management of economically important nematodes with emphasis on plant-parasitic forms.

105. Weeds (3)
Prerequisite: Bot 10 or Biol 10, Chem 3A. Weed control in California. Identification of common weeds. Fundamentals of preventive, cultural, biological, physical, and chemical weed control methods. (2 lecture, 3 lab hours)

106. Plant Pathology (3)
Prerequisite: Bot 10 or Biol 10. Study of the causal agents, disease cycles, and control of plant diseases. (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)

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)

109. Diagnosis of Plant Diseases (3)
Prerequisite: Pl Pr 106 or concurrently. Techniques for 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)

Soils/Irrigation (SI)

1. Introduction to Irrigated Soils (3)
Prerequisite: high school chemistry and/or physics. Interpretation of physical and chemical properties of biological and min-

eral matter for the management of soils in irrigated agriculture. Emphasis on soil/plant and plant/water relationships. (2 lecture, 2 lab hours)

2. Agricultural Water (3)
Prerequisite: intermediate algebra. Water resources and problems in California; water requirements for agricultural and ornamental crops; irrigation scheduling and application methods. (2 lecture, 3 lab hours) (Lab fee, $15) (Former SI 110)

100. Soils (3)
Prerequisite: Chem 3A, intermediate algebra. 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. (Saturday field trip)

100L. Soils Lab (1)
Prerequisite: SI 100 or concurrently. Physical, chemical, and biological analysis. Interpretation of field and laboratory data. (3 lab hours)

101. Soil Fertility and Fertilizers (4)
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)

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)

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.

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)

105. Soil Chemistry (3)
Prerequisite: Chem 3B, 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)

111. Irrigation Design I (3)
Prerequisite: SI 2. Design, installation, and operation of irrigation systems for field, vine, and tree crops. (2 lecture, 3 lab hours) (Lab fee, $15)

112. Irrigation Design II (3)
Prerequisite: SI 2. Design, installation, and operation of irrigation systems used for ornamental plants, turf areas, nurseries, and greenhouse operations. (2 lecture, 3 lab hours)

113. Water Management (3)
Prerequisite: SI 2. Management and planning of irrigation systems with regard to crop water requirements, scheduling, evaluation of irrigation efficiency, and salinity problems.

114. Pumps and Motors (3)
(See AET 115.)

Viticulture/Tree Fruit (VTF)

1. Introduction to Grape and Tree Crops (3)
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 FS 1)

101. Grape Production I (3)
Prerequisite: Bot 10 or Biol 10, VTF 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 FS 101)

102. Grape Production II (3)
Prerequisite: Bot 10 or Biol 10, VTF 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 FS 102)

103. Raisin Production and Processing (3)
Prerequisite: Bot 10 or Biol 10 or VTF 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 FS 103)

104. Grape Varieties (3)
Prerequisite: Bot 10 or Biol 10 or VTF 1. Grape varieties common to California; rootstocks and species; identification, adaptability, use and acreage; taste testing fresh grapes. (2 lecture, 3 lab hours) (Former FS 104)

110. Fruit Species of California (3)
Prerequisite: Bot 10 or Biol 10 or VTF 1. Fruit and nut species common to California, their adaptation and uses. (Former FS 110)

111. Fruit Production I (3)
Prerequisite: Bot 10 or Biol 10 or VTF 1. Adaptation of fruits to their environment; training, pruning; propagation; varieties and rootstocks; fundamentals of fall cultural practices. (2 lecture, 3 lab hours) (Former FS 111)

112. Fruit Production II (3)
Prerequisite: Bot 10 or Biol 10 or VTF 1. Fruit and vegetative development; pollination; nutrition; product utilization; fundamentals of spring cultural practices. (2 lecture, 3 lab hours) (Former FS 112)

113. Tropical Fruit Production (3)
Prerequisite: Bot 10 or Biol 10 or VTF 1. The production of fruits in tropical climates. Emphasis on citrus, pineapple, papaya, mango, and banana. (Former FS 113)

114. Postharvest Handling of Perishable Crops (3)
Prerequisite: Bot 10 or Biol 10. Physiological aspects of fruit maturation and ripening. Principles of postharvest handling of fruit and vegetables for the fresh market as they apply to harvesting, packaging, storage, and transportation. (2 lecture, 3 lab hours) (2-day field trip fee, $50-75) (Former Plant 101)

120. Orchard-Vineyard Management (3)
Prerequisite: 6 units viticulture/tree fruit 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. (2 lecture, 3 lab hours) (Former FS 120)

Agricultural Engineering Technology (AET)

Note: Suitable eye protection is required in many AET 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) (Course fee variable, not less than $7.50) (Former Me Ag 1)

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. (Former Me Ag 2)

3. Farm Tractors and Equipment (3)
Operation and maintenance of farm tractors; operation of farm tractors and equipment under field conditions; service, maintenance and minor repair of engines of wheel and crawler type. (2 lecture, 3 lab hours; 5 hours field operation) (Former Me Ag 3)

50. Agricultural Welding (3)
Prerequisite: AET 1 or permission of instructor. Basic metallurgy, arc and gas welding processes in the construction and repair of farm machinery, and the design of welded structures. (2 lecture, 3 lab hours) (Former Me Ag 50; Me Ag 100)

52. Farm and Landscape Structures (3)
Prerequisite: AET 1 or permission of instructor. 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 Me Ag 52; Me Ag 102)

53. Agricultural Electrification (3)
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 Me Ag 53; Me Ag 111)

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 engineering technology. Approved for ***SP*** grading. (Former Me Ag 80)

91. Farm Surveying (3)
Use of level, transit, compass, and laser; land leveling, laying out fields, irrigation ditches, pipelines, and drains. (2 lecture, 3 lab hours) (Former Me Ag 91; Me Ag 101)

103. Hydraulic Systems (3)
Prerequisite: AET 1, 3. 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 Me Ag 103)

104. Farm Machinery I (3)
Prerequisite: AET 1, 3. 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 Me Ag 104)

105. Farm Machinery II (3)
Prerequisite: AET 1, 3. 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 Me Ag 105)

106. Agricultural Machinery Management (3)
Prerequisite: AET 104. 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) (Former Me Ag 106)

107. Agricultural Engineering Technology (3)
Prerequisite: AET 3. Elements of engineering in agriculture. Power application, equipment efficiency, cost analysis, geometry of land use, and heat transfer. Applications of modern technology in agriculture. (Former Me Ag 107)

108. Agricultural Waste Management (3)
Prerequisite: AET 53. 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) (Former Me Ag 108)

109. Agricultural Processing Technology I (3)
Prerequisite: AET 53. 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 Me Ag 109)

110. Agricultural Processing Technology II (3)
Prerequisite: AET 53. Processing techniques including heat exchange equipment, distillation, process condition, pumps in food industry, and fluid flow measurement. (2 lecture, 3 lab hours) (Former Me Ag 110)

112. Farm Power (3)
Prerequisite: AET 3. Principles of the internal combustion engine; overhauling, repairing, and adjusting of gasoline, diesel, and LPG farm engines. (2 lecture, 3 lab hours) (Former Me Ag 112)

113. Diesel Engines and Power Transmissions (3)
Prerequisite: AET 3. Theory and operation of diesel injection systems and turbochargers; clutches; transmissions; brakes; and tractive devices. (2 lecture, 3 lab hours) (Former Me Ag 113)

114. Small Engines (3)
Prerequisite: AET 1. Not open to students with credit in AET 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 Me Ag 114)

115. Pumps and Motors (3)
(Same as SI 114.) Prerequisite: AET 53. 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 Me Ag 115)

116. Agricultural Sensors and Control (3)
Prerequisite: AET 53, and Plant 12 or IS 50. Agricultural application of measurement sensors, techniques, and systems. Use of the microcomputer to evaluate input signals and regulate processes. (2 lecture, 3 lab hours)

160T. Topics in Agricultural Engineering Technology (1-4; max total 6 per discipline if no topic repeated)
Prerequisite: junior standing; permission of instructor. Selected topics in agricultural engineering technology. Topics may require lab hours. (Former Me Ag 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 agricultural engineering technology. Approved for ***SP*** grading. (Former Me Ag 180)

190. Independent Study (1-3; max see reference)
See *Academic Placement — Independent Study*. Approved for ***SP*** grading. (Former Me Ag 190)

194. Agricultural Internship (1-8; max total 8)
Prerequisite: junior standing; approval of faculty adviser and department chair. Field experience in your career specialty that integrates with classroom instruction. Written reports of knowledge and experience gained are required. ***CR/NC*** grading only. (Former Me Ag 194)

GRADUATE COURSES

The following graduate courses are open to students who have been accepted into the graduate program. Students who are not in graduate standing should contact the department graduate coordinator prior to enrolling.

Agriculture (Agri)

200. Biometrics in Agriculture (3)
Prerequisite: Math 101 or Plant 99; 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 130; Chem 105, 109, 151; Enol 115 or FSc 115. Agricultural problem solving through the application of advances in laboratory technology, crop management, foods, nutrition, soil and water quality. Theory and practice operation of scientific instruments and techniques are taught. Student defined project and report required. (2 lecture, 3 lab hours)

220. Research Communications in Agriculture (3)
Prerequisite: completion of university writing requirement. Emphasis on critical literature review, scientific writing and oral presentation of research results. Approved for ***SP*** grading.

Plant Science (Plant)

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. (Former Agri 250T section)

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. Biotechnology developments, pesticide use in integrated pest management systems. (Former Agri 251)

252. Plant Nutrition (3)
Prerequisite: Bot 130. 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) (Former Agri 252)

253. Irrigation Water Quality (3)
Prerequisite: SI 2. 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 253)

254. Plant Hormones and Regulators (3)
Prerequisite: Bot 130, 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) (Former Agri 254)

255. Advanced Plant Breeding (3)
Prerequisite: BioSc 140A-B; Genet 120. Principles and techniques of plant improvement, breeding methods, combining ability, sterility systems, quantitative genetic analysis, heritability estimates, experimental designs for plant breeding. (Former Agri 255)

256. Plant-Water Relationships (3)
Prerequisite: Bot 130. 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. (Former Agri 256)

257. Physiology of Cultivated Plants (3)
Prerequisite: Bot 130. 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. (Former Agri 257)

258. Plant Disease Control (3)
Prerequisite: Pl Pr 106. Principles of 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) (Former Agri 258)

259. Physical Properties of Soil (3)
Prerequisite: SI 100; Math 70 recommended. 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 259)

261. Advanced Pest Management (3)
Prerequisite: Pl Pr 108 or permission of instructor. 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 Agri 261)

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. (Former Agri 270)

290. Independent Study (1-3; max see reference)
See *Academic Placement — Independent Study*. Approved for ***SP*** grading. (Former Agri 290)

299. Thesis (3)
Prerequisite: prior advancement to candidacy. See *Criteria for Thesis and Project.* Preparation, completion, and submission of an acceptable thesis for the master's degree. Oral defense of thesis required. Approved for ***SP*** grading. (Former Agri 299)

IN-SERVICE COURSE

(See *Course Numbering System.*)

Agriculture (Agri)

300. Topics in Agriculture (1-3)
Topics may require lab hours. In-service professional training in selected areas of agriculture.

Anthropology

School of Social Sciences
Department of Anthropology
MARY A. LUDWIG, *Chair*
Peters Business Building, Room 389
(209) 278-3002

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 fieldwork. 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, 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 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

Mary A. Ludwig, *Chair*
Shien-min Jen — Franklin C. L. Ng
Roger M. LaJeunesse — Sydney R. Story

Bachelor of Arts Degree Requirements

Anthropology Major

	Units
Major requirements[1]	33-35
A. *Core curriculum*	(21-23)
Anth 1	(3)
Anth 2 or S Sci 15[2*]	(3-5)
Anth 3	(3)
Anth 101	(6)
Anth 103	(3)
Anth 107	(3)
B. *Elective curriculum***	(12)
Four upper-division courses from at least two topic areas	
General Education	51
Second major, electives, and remaining degree requirements	38-46[3***]
(See *Degree Requirements*); may be used toward a dual major or minor	
Total	124

Advising Notes

1. *CR/NC* grading is not permitted in the anthropology major or minor.
2. S Sci 15, a special 5-unit course, is part of the *Cluster* "Man/Woman and the Natural Environment," an 18-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. (See *Man/Woman and the Natural Environment*, Natural Science — Interdisciplinary Courses section in this catalog.)
3. 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* or departmental minor).

* If the content of S Sci 15 is approved by the Anthropology Department in a semester when you've enrolled, it may be substituted for Anth 2.

** Students preparing for immediate employment following graduation should include an internship and/or fieldwork in their major program. See an adviser.

*** This figure takes into consideration the fact that a maximum of 6 units of Anth 1, 2, 3, or S Sci 15 may also be applied toward the General Education requirements. Consult the anthropology department chair or faculty adviser for further information.

Students planning to pursue graduate training in any aspect of anthropology are advised to take a more rigorous program of coursework designed specifically to facilitate that goal.

Anthropology Minor

	Units
Minimum requirements (See *Note 1)*	18
A. *Core curriculum*	(12)
Anth 1	(3)
Anth 2 or S Sci 15*	(3)
Anth 3	(3)
Anth 103 or Anth 107	(3)
B. *Elective curriculum*	(6)
Two upper-division courses, at least one from an area not covered in Anth 103/Anth 107 Core	
Total	18

Asian American Studies

Asian American courses familiarize students with the historical, socioeconomic, and cultural adaptations that peoples from Asia made to live 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*.

COURSES

Anthropology (Anth)

A. THE CORE CURRICULUM

I. Basics

Anth 1, 2, and 3 are taught each semester. Anth 101 and S Sci 15 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. General Education BREADTH, Division 3. (CAN ANTH 2)

2. Introduction to Cultural Anthropology (3)
Not open to students with credit in Anth 15 or S Sci 15. 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. General Education BREADTH, Division 8. (CAN ANTH 4)

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. General Education BREADTH, Division 3. (CAN ANTH 6)

30. Critical Thinking in Anthropology (3)
Introduction to the basic concepts and skills of critical thinking illustrated with anthropological topics such as race and intelligence, religion and values, and social policy. General Education CORE, Critical Thinking.

B. THE ELECTIVE CURRICULUM

II. Method and Theory

These courses are offered once each year.

101. Fieldwork in Anthropology (6)
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.

102. Introduction to Linguistic Anthropology (3)
Prerequisite: Anth 1 or 2. A compendium of current thinking on language from a variety of interdisciplinary perspectives. Discusses brain functions and language process in human and nonhuman communication systems, and the roles of language in human evolution, behavior, and thought.

103. Concepts and Applications in Anthropology I: Physical Anthropology and Archaeology (3)
Prerequisite: Anth 1 or 3 or permission of instructor. The nature of core concepts such as evolution, adaptation and variability. Their development, research value and current usefulness in applied contexts are examined.

104. History and Theory of Anthropology (3)
Prerequisite: Anth 2. 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)
Prerequisite: Anth 2, 3, or permission of instructor. An overview of the nature of archaeological data and its use in reconstructing the lifeways of prehistoric peoples. Special emphasis is given to the development of modern archaeological theory, the current state of the profession, and its present trends and limits.

107. Concepts and Applications in Anthropology II: Cultural Anthropology (3)
Prerequisite: Anth 2 or permission of instructor. The nature of core concepts such as culture, ethnocentrism, and diversity. Their development, research value and current usefulness in applied contexts are examined.

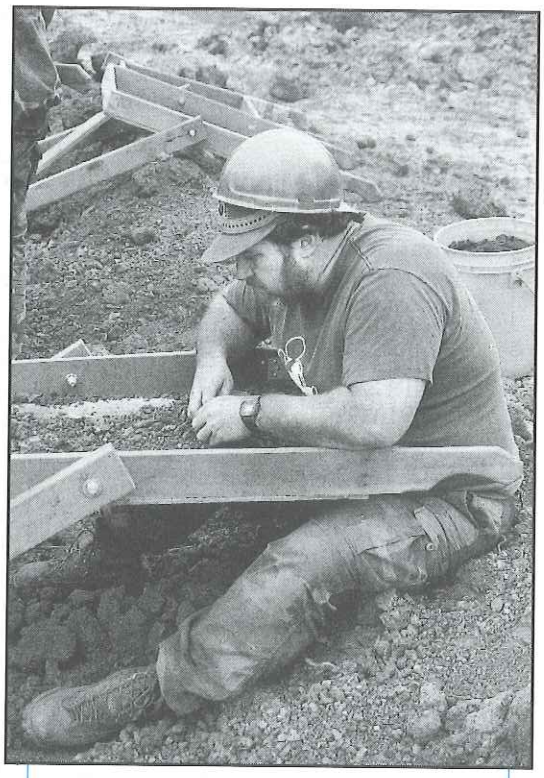
108. Urban Anthropology (3)
Prerequisite: Anth 2, 3, or permission. The uneven distribution and explosive growth of humanity during this century evolved a lifestyle whose implications are poorly understood: urban existence. Reviews cross-cultural and interdisciplinary evidence and explanations for urbanization, with a focus on American life. General Education CAPSTONE Cluster course.

109. Internships in Anthropology (1-6; max total 6)
Prerequisite: Anth 1 or 3. Interns will work on a variety of tasks involving the analysis and curation of archaeological collections; design and curation of museum displays; and the collection and analysis of physical anthropological data, including working with primates at local zoos.

III. Area Surveys

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. General Education CAPSTONE Cluster course.

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 United States and Northwestern Mexico from their prehistoric origins to the present. Emphasis is placed on cultural continuity and change during the past 400 years of contact with western culture.

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.

139T. Topics in Archaeology (1-6; max total 12 if no topic repeated)
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

144W. Cultural Scenarios (3)
Prerequisite: Engl 1, Anth 2 or 3, and at least 56 completed units. Using ethnological data, students reconstruct an extinct society's basic challenges, adaptations, and collapse; derive the implications for the world today; and show what alternatives would have prolonged the viability of its culture. Designed for writers, planners, and applied anthropologists. (Former Anth 144)

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. General Education CAPSTONE Cluster course.

149T. Topics in Social Organization (1-6; max total 12 if no topic repeated)
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. General Education CAPSTONE Cluster course.

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.

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. 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 (1-6; max total 12 if no topic repeated)
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 (3)
(Same as W S 170.) 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. General Education CAPSTONE Cluster course.

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. Offers a critical review of major theories on ethnic politics, economics, and ideology in the light of cross-cultural evidence. General Education CAPSTONE Cluster course.

179T. Topics in Subcultural Variation (1-6; max total 12 if no topic repeated)
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 (3)
(Same as AsAm 151.) Treats cuisine as a systematic product of the interaction between culture and ecology. Focuses on sociocultural 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.

186. Tradition and Change in China and Japan (3)
(Same as Hum 140.) 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. General Education CAPSTONE Cluster course.

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*. Approved for ***SP*** grading.

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.

198. Senior Project (2)
Prerequisite: senior standing or permission of instructor; 12 upper-division units in the major. Students will be guided through the selection, definition, and execution of research on an anthropological topic of each student's choosing. Includes lecture, discussion, practice, and independent student research. Satisfies the senior major requirement for the B.A. in Anthropology.

199. Honors Thesis (1-3)
Prerequisite: normally open only to those who have completed the core curriculum and who maintain a GPA 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.

Armenian Studies

Office of the Provost and Vice President
Armenian Studies Program
DICKRAN KOUYMJIAN, *Haig and Isabel Berberian Professor of Armenian Studies, Coordinator; Director, Kalfayan Center for Armenian Studies*
Peters Business Building, Room 384
(209) 278-2669; FAX (209) 278-2129

Minor in Armenian Studies

The Armenian Studies Program offers a wide variety of courses, including Armenian language, literature, history, art and architecture, film, the writings of William Saroyan, the Genocide, and contemporary issues. Armenian courses are also available through the Foreign Languages and History departments.

The Minor in Armenian Studies prepares students for teaching careers in one of the 25 Armenian schools in the United States, for administrative positions in Armenian cultural, social and benevolent organizations, for study and volunteer work in the Armenian Republic, or for graduate work in Armenian doctoral programs at UCLA, Harvard, Columbia, the University of Michigan, or Oxford.

Berberian Endowed Professorship of Armenian Studies. In 1988, the Haig and Isabel Berberian Endowed Chair of Armenian Studies was instituted, providing financial support for a distinguished Armenologist. It was the first operative endowed chair at CSU Fresno. The endowment honoring Haig and Isabel Berberian was established by their son-in-law and daughter, Dr. and Mrs. Arnold H. Gazarian. Other friends have made significant contributions to this endowment.

Kalfayan Center for Armenian Studies. The Armenian Studies Program is housed in the Sarkis and Meliné Kalfayan Center for Armenian Studies in the Leon S. Peters Business Building. The Kalfayan family has pledged a major endowment to guarantee the future financial stability of the Center and the program. The Center houses the Index of Armenian Art, the Sahatdjian Library and the Avedian Archives. Next to the Center are the Bedrosian Conference Room and the Mirigian Gallery-Lounge.

The program supports the Armenian Students Organization and advises the student newspaper, *Hye Sharzhoom/ Armenian Action*.

Thanks to an exchange program between CSU Fresno and Yerevan State University, qualified students can study up to one year in Armenia while registering and paying tuition in Fresno.

Students working toward a Minor in Armenian Studies, or who need financial aid, or who simply enroll in Armenian courses are eligible for a large number of university scholarships administered by the program. These include the Pategian, Knights of Vartan, and Azadian Memorial scholarships, and the Levonian Educational Grants. Annual renewals are assured for students who continue their Armenian studies. Full tuition scholarships and research-assistant grants are also available.

Armenian Studies Minor

	Units
Arm 1A and 1B or Arm 2A and 2B	8
Arm S 10 and 20	6
Arm S 120T and Arm S 45 or Arm 148	4
Elect from Arm S 121 or 123 and Arm S 190 or Hist 108A or 108B	6
Total	**24**

COURSES

Armenian Studies (Arm S)

10. Introduction to Armenian Studies (3)
An introduction to Armenia and the Armenians through literature, art, history, and current events. Films will reinforce readings and lectures. General Education BREADTH, Division 9.

20. The Arts of Armenia (3)
An introduction to Armenian architecture, painting, sculpture, ceramics, metal work, and textiles. All lectures are illustrated with slides.

45. William Saroyan (3)
The ethnic experience in America, especially the San Joaquin Valley, through the writings of William Saroyan. The author's major literary successes will be read and compared with films made of these same works. Writing assignments of at least 2,500 words. (Former Arm S 50T section)

50T. Studies in Armenian Literature (3)
Various Armenian literature: David of Sassoun, Saroyan, historical literature, modern literature, Armenian American authors.

108A. Armenian History I: Ancient and Medieval (3)
(See Hist 108A.)

108B. Armenian History II: Modern and Contemporary (3)
(See Hist 108B.)

120T. Topics in Armenian Studies (1-3; max total 6)
Specialized topics in Armenian history, art and culture, not normally covered in other Armenian Studies courses. Topics include the Armenian church, minor arts, film, the Diaspora, and the Genocide.

121. Armenian Painting (3)
History and development of Armenian painting with special concentration on the art of manuscript illumination and the origins of Christian art. All lectures illustrated with slides.

123. Armenian Architecture (3)
History and development of Armenian architecture is presented in the context of early Christian architecture. There will be a survey of monuments from the fourth to the 17th centuries. All lectures illustrated with slides.

190. Independent Study (1-3)
See *Academic Placement — Independent Study*. Approved for ***SP*** grading.

Art

The Department of Art program offers 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 program of study is derived from an educational conviction that a foundation in the craft of art is an essential prerequisite to the production of works exhibiting sophistication both conceptually and visually.

Courses offered in the 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 the student of art a variety of complementary disciplines to explore. Selected 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 offer diverse, skilled, and professional approaches to art education. The methods of teaching reflect distinctive yet complementary ways and means of introducing their disciplines while guiding 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 and a lecture hall in a contemporary art building complex.

School of Arts and Humanities
Department of Art
RICHARD W. DELANEY, *Chair*
Conley Art Building, Room 105
(209) 278-2516

B.A. in Art
M.A. in Art
Minor in Art
Single Subject Credential

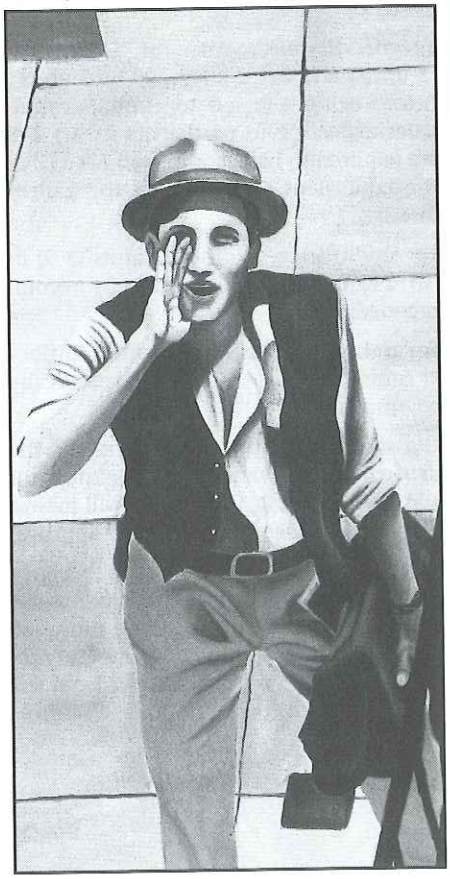
Career Opportunities

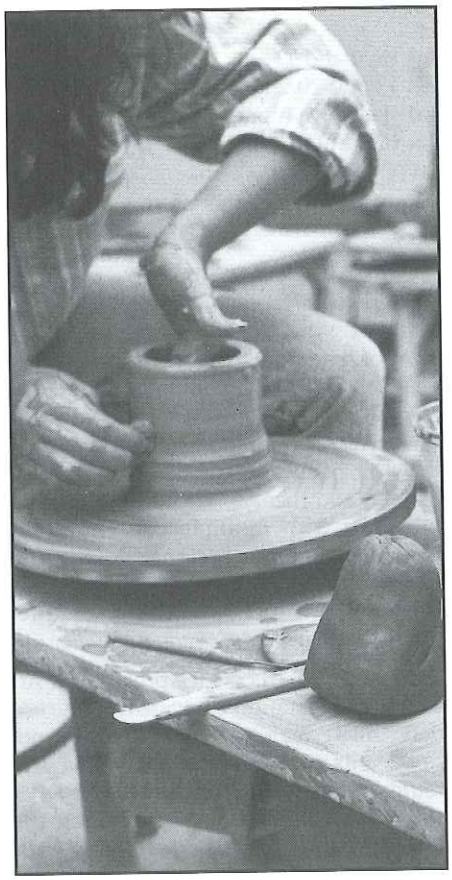
Completion of the art major enables graduates to pursue advanced study leading to careers in fields such as:

- Fine Arts
- Studio Production
- Art History

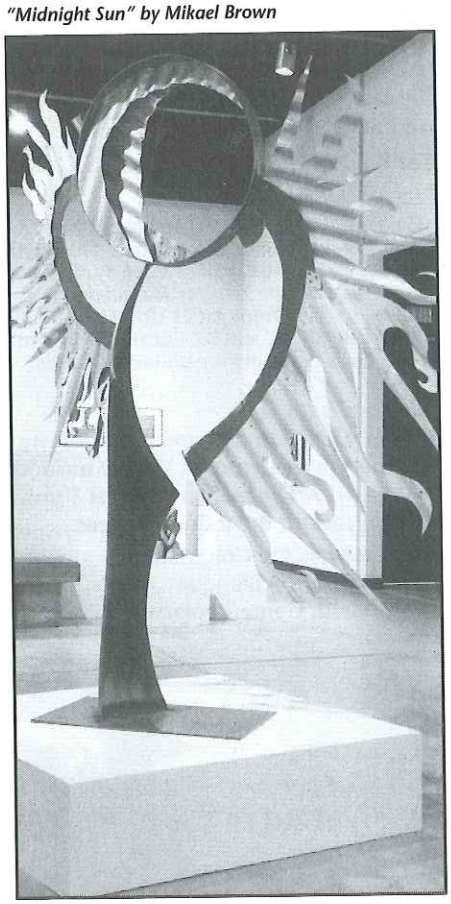
Prospective students should contact faculty in their area of interest to further explore specific career opportunities.

Painting by Ana Mae Espejo





"Midnight Sun" by Mikael Brown



Faculty

Richard W. Delaney, *Chair*

Lawrence L. Anderson
Ara H. Dolarian
Paulette S. Fleming
Charles F. Gaines
Edward O. Lund
Mary L. Maughelli
Thomas McDougall
William E. Minschew Jr.
Dan G. Nadaner
Ernest Palomino
Raphael X. Reichert
R. Gayle Smalley
Gina Strumwasser

Bachelor of Arts Degree Requirements

Art Major	*Units*
Major requirements (See *Note 1*)	42
Lower-division requirements	(18)
Select two: Art H 10, 11, 12	(6)
Art 13	(3)
Art 20 or 40	(3)
Art Studio electives	(6)
Upper-division requirements	(24)
Art H 136 and 3 additional Art H units	(6)
Art H and/or Studio electives	(6)
Art 101 and 112	(6)
Art Studio Electives (one area)	(6)
General Education	51
Electives and remaining degree requirements (See *Degree Requirements*); may be used toward a dual major or minor.	31-37*
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*). These can be selected from Art H 10, 11; Art 1, 13, 20, 30, 40, 50, 60, and 70. Consult the department chair or faculty for additional details.

Advising Notes

1. Upper-division requirements for students emphasizing art history include: Art 101, Art H 136, and at least 3 units from each of the following areas:
   - Primitive, Pre-Columbian
   - Renaissance, Baroque
   - Modern, Contemporary
2. No course used to satisfy General Education CAPSTONE requirements may be used to satisfy art major requirements.
3. *CR/NC* grading is only permitted in Art 198, Internship.
4. General Education and elective units may be used toward a dual major or minor (see *Dual Major* or departmental minor). Consult the appropriate department chair, program coordinator, or faculty adviser for further information.

Credential Program

The Single Subject Waiver Program in art consists of the Core: Select 6 units from Art H 10, 11, or 12; Art 13, 21, 40, 50, 60, 70, 120, 140, and 150 or 160; Breadth: Art H 136, select 3 units from Art 24, 25, 26, 27, 30, or 80; select 3 units from Art 125, 127, 130, or 180; select 3 units from Art 113, 170, 171, or 175; select 3 units from Art H 134 or 170. Consult single subject coordinator in the School of Education.

Art Minor

The Art Minor consists of a minimum of 21 units of which 9 must be upper division. Six units of *CR/NC* grading will be accepted.

	Units
Art H 10 and 11	6
Art 13 and 20	6
Art H elective (upper division)	3
Art H or Studio electives (upper division)	6
Total	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*.

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, 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.*)

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 are 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-14th century. General Education BREADTH, Division 5.

11. The Modern World (3)
An introductory survey of Western art from the Renaissance through the 19th century, including Mannerism, Baroque, Rococo, Neoclassicism, and Impressionism from the mid-14th century to the end of the 19th century. General Education BREADTH, Division 5.

12. The Twentieth Century (3)
A survey of art from the beginning of the 20th century to the present day.

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. General Education CAPSTONE Cluster course.

122. Northern Renaissance (3)
Painting and sculpture from the Netherlands, France, and Germany between 1300-1550. General Education CAPSTONE Cluster course.

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.

131. Nineteenth Century Modern Art (3)
A more developed critical look at modern art in its relationship to the needs of the social political context of the 19th century.

132. Twentieth Century Modern Art (3)
A more developed critical look at modern art in its relationship to the needs of the social political context of the 20th century, up to the mid-1950s.

134. America (3)
Art from colonial times to 1945.

136. Contemporary Art (3)
A comprehensive survey of contemporary art focusing on the issue of postmodernism from the mid-1950s onward.

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. General Education CAPSTONE Cluster course.

190. Independent Study (1-3; max see reference)
See *Academic Placement — Independent Study*. Approved for ***SP*** grading.

Studio (Art)

1. Art Forms (3)
Slide lecture-discussion. An introduction to art/seeing and appreciating the visual world around us. General Education BREADTH, Division 5. (Course fee, $5)

13. Design (3)
Exploration of basic art concepts through two- and three-dimensional design problems. Field trips may be required. General Education BREADTH, Division 4. (6 lecture-lab hours)

20. Drawing (3)
Introductory course in drawing concepts, materials, and techniques. General Education BREADTH, Division 4. (6 lecture-lab hours) (CAN ART 8)

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. (6 lecture-lab hours) (Course fee, $15)

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. (6 lecture-lab hours) (Course fee, $15)

26. Intaglio Processes (3)
Studio class offering in printing in the intaglio process using such techniques as etching, drypoint, aquatint, and soft-ground on metal plates. Printing in black ink as well as color will be covered. (6 lecture-lab hours) (Course fee, $15)

27. Screenprinting (3)
Investigation into techniques of printing with a screen. Paper, film, tusche, and glue techniques for creating printing stencils will be covered. (6 lecture-lab hours) (Course fee, $15)

30. Photography (3)
Introductory course in black and white photography. Basic theoretical and practical aspects of the photographic process relevant to the medium as an art form. General Education BREADTH, Division 4. (2 lecture, 3 lab hours)

40. Painting (3)
Introduction to painting processes through studio problems and critiques. General Education BREADTH, Division 4. (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. General Education BREADTH, Division 4. (6 lecture-lab hours) (CAN ART 12)

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. General Education BREADTH, Division 4. (6 lecture-lab hours) (Course fee, $15) (CAN ART 6)

70. Crafts (3)
Fundamental exploration of several media (fiber, wood, leather) with emphasis on understanding the potential of the various materials. Field trips may be required. General Education BREADTH, Division 4. (6 lecture-lab hours)

80. Introduction to 35mm Photography (3)
Introductory course in the creative and practical aspects of small format black and white photography. Emphasis on individual assistance and guidance in the craft and technique of interpreting, photographing, and printing a range of assignments that form the term portfolio. (2 lecture, 3 lab hours) (Course fee, $25)

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: African American art, Chicano art, cinema art, urban aesthetics, formalism in art, economics of art, careers in art, portfolio preparation.

101. Content and Form (3)
Introduces students to the problems of the modern/postmodern debate through first, a historical analysis of structuralism and poststructuralism, and second, the application of these ideas to art production.

103. Guest Artists (3; max total 9)
Seminar with experienced guest artists.

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. (6 lecture-lab hours) (Course fee for chartered travel costs, $140)

107. 2-D Computer Art (3; max total 9)
Prerequisite: Art 20 or equivalency. Art 13 and Art 40 recommended. Introductory 2-dimensional computer art integrating painting, drawing, and design graphics. (6 lecture-lab hours) (Course fee, $20) (Former Art 109T section)

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, computer graphics. (6 lecture-lab hours) (Course fee variable)

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)

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)

117. 3-D Computer Art (3; max total 9)
Prerequisite: Art 107. Introductory 3-dimensional computer art integrating video-animation, sculpture, and design. Selected emphasis will be determined by instructor. (6 lecture-lab hours) (Course fee, $20) (Former Art 109T section)

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. (6 lecture-lab hours) (Course fee, $15)

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, drypoint, and aquatint in black ink as well as color. Multiple plate printing will also be covered. Emphasis placed on imagery development. (6 lecture-lab hours) (Course fee, $15)

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. (6 lecture-lab hours) (Course fee, $15)

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)

137. Visual Concepts, Macintosh (3)
Exploring Macintosh applications that relate to visual arts such as SuperPaint™ animation. Demonstrations of professional illustration and image enhancement programs, design with a computer, scanner use, and adding sound to HyperCard™ presentations. (6 lecture-lab hours) (Lab fee, $15) (Former Art 109T section)

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. (6 lecture-lab hours) (Course fee, $50)

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. (6 lecture-lab hours) (Course fee, $15)

161. Advanced Ceramics (3; max total 9)
Prerequisite: Art 160. Advanced study in ceramic art. Individual projects in selected ceramic areas with emphasis on showing

and portfolio presentation of work. (6 lecture-lab hours) (Course fee, $15)

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. (6 lecture-lab hours) (Course fee, $25)

166. 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. (6 lecture-lab hours) (Course fee, $50) (Former Art 109T section)

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. Field trips may be required. (6 lecture-lab hours) (Course fee, $15)

175. Metal Design (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) (Course fee, $20)

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. Field trips may be required. (6 lecture-lab hours) (Course fee, $15)

180. Advanced 35mm Photography (3; max total 6)
Prerequisite: permission of instructor. Emphasis on the formulation and execution of individual thematic photographic projects. Supplemental assignments that explore optical and chemical methods of image modification. Continuation and elaboration of applied compositional design. Introduction to interactive critique and evaluation of photographic prints and projects. (2 lecture, 3 lab hours) (Course fee, $20) (Former Art 180A)

182. Introduction to Large Format Photography (3; max total 12)
Prerequisite: permission of instructor. Introduction to the unique aspects of the large format camera and its creative application in field assignments. Emphasis on individual assistance in both field and laboratory work. Introduction to selective exposure and development control, optical effects, and applied compositional design. (2 lecture, 3 lab hours) (Course fee, $25)

183. Field Studies in Photography (3; max total 12)
Prerequisite: permission of instructor. Individual guidance in the formulation of exploratory multi-image photographic essays produced on location. Emphasis on forming individual conceptual goals and acquiring communicative skills appropriate to the medium. Introduction to photographic theory and its practical application to individual creative objectives. (2 lecture, 3 lab hours) (Course fee, $25)

185. Color Photography (3; max total 12)
Prerequisite: permission of instructor. Introduction to the unique attributes of color in the design and production of photographic prints. Multiformat color printing. Emphasis on directed exploration of color both conventional and experimental. Monochromatic and multichrome printing utilizing the camera and other printmaking sources. (2 lecture, 3 lab hours) (Course fee, $25)

190. Independent Study (1-3; max see reference)
See *Academic Placement — Independent Study*. Approved for ***SP*** grading. (Course fee variable)

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, 6 units. ***CR/NC*** grading only. (Minimum of 3 field hours per unit)

GRADUATE COURSES

(See *Course Numbering System.*)

Art (Art)

220T. Topics in Studio Processes (3; max total 9)
Prerequisite: permission of instructor. Investigation of advanced studio topics selected by the department. Coursework 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: 6 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*. Approved for ***SP*** grading. (Course fee variable)

298. Project (2-6; max total 6)
Prerequisite: permission of art department graduate coordinator. (See *Criteria for Thesis and Project.*) 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. Approved for ***SP*** grading. (Course fee variable)

299. Thesis (2-6; max total 6)
Prerequisite: permission of art department graduate coordinator; see *Criteria for Thesis and Project.* Preparation, completion, and submission of an acceptable thesis for the master's degree. Approved for ***SP*** grading.

IN-SERVICE COURSE

(See *Course Numbering Systems.*)

Art (Art)

343. Contemporary Approaches in Art (1-3; repeatable for credit)
Advanced processes not normally offered in regular courses. Areas may include art education, drawing, painting, ceramics, sculpture, photography, printmaking, design, crafts, and motion picture.

Asian American Studies

School of Social Sciences
Department of Anthropology
FRANKLIN C. L. NG, Coordinator
Peters Business Building, Room 389
(209) 278-3002

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 interethnic relations. Those who major in business, social science, international relations, and the human service professions 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 Filipino 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, contact the coordinator at (209) 278-3002, or write to: **Asian American Studies Program, c/o Department of Anthropology, California State University, Fresno; Fresno, CA 93740.**

Asian Studies 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. Examines variables such as cultural heritage, family organization, intergenerational conflict, and the experience of racism in the changing world of Asian Americans. General Education BREADTH, Division 9.

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. Considers identity, marginality, acculturation, and cultural traditions in Japan and in American communities. General Education BREADTH, Division 9.

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. Considers identity, marginality, acculturation, and cultural traditions in China and in American communities. General Education BREADTH, Division 9.

110. Asian American Communities (3)
A multidisciplinary study of Asian American communities and their relations with the larger society. Analyzes values, lifestyles, processes of group identity and boundary maintenance, social organization, and cultural change. Examination of Chinese, Japanese, Filipino, and other Asian American subcultures. General Education CAPSTONE Cluster course.

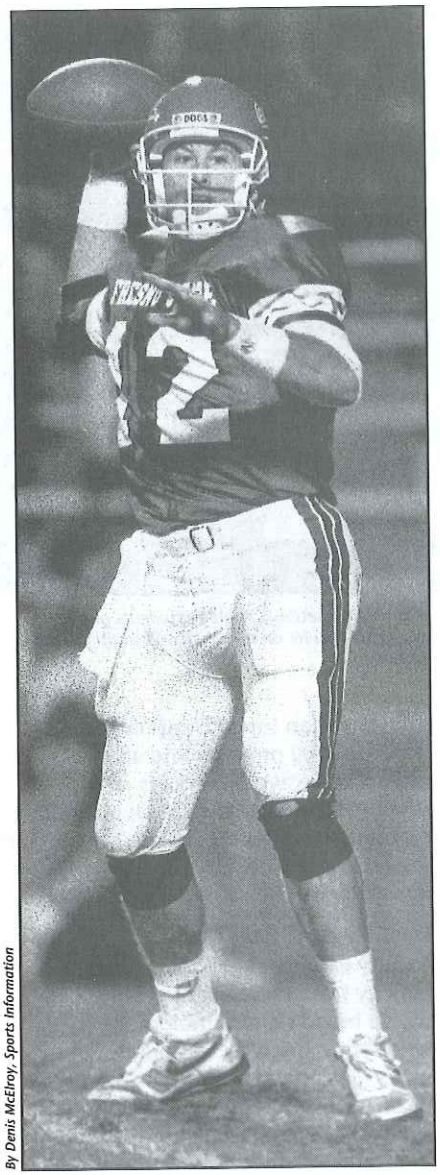
150. Asian American Expression (3)
The study of Asian and Asian American literature, art, music, and drama. Examines the role of creative expression as a way of understanding changing views of ethnicity and community identity.

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*. Approved for ***SP*** grading.

195. Diversity in the United States: Race and Gender Issues (3)
(See *CLS 195.*) (Former Eth S 195)



By Denis McElroy, Sports Information

Quarterback Trent Dilfer led the Bulldogs to a 6-2 conference record and a tri-championship with Brigham Young University and the University of Hawaii in the team's first season in the Western Athletic Conference. The Bulldogs completed 1992 with a 24-7 victory over USC in the Freedom Bowl.

California State University, Fresno is a Division 1-A member of the National Collegiate Athletic Association (NCAA), the Western Athletic Conference (WAC), and The Mountain Pacific Sports Federation. Participation in intercollegiate athletics in the sports of baseball, basketball, cross country, football, golf, soccer, swimming, tennis, track, and wrestling is offered for men, while basketball, cross country, softball, swimming, tennis, track and field, and volleyball are offered for women. Participation offers opportunities for student athletes to pursue and improve their athletic talent under a professional coaching staff, experience disciplined team membership, travel with their team to away contests, and excel to the height of their 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.

Faculty

Gary A. Cunningham, *Chair*

Bob G. Bennett
John R. Bluem
Gary W. Colson
Dennis A. DeLiddo
William E. Dole
John W. Easterbrook
Gene L. Estes
Edward L. Ferreira
Charles E. Fisher
Robert E. Fraley
Jethro F. Franklin
Irene H. Harris
Michael P. Hill
Robert C. Hofman
Daniella J. Irle
Robert G. Knudsen
John P. Margaritis
John D. Miklesh
Diane Milutinovich
Steve Mooshagian
Thomas J. Pagani
Roberto W. Parker
William J. Robinson
Michael L. Rupcich
Scott R. Sailor
Paul M. Schechter
Kelly D. Skipper
Peter L. Smith
Robert L. Spencer
Margaret Sutter
James J. Sweeney
Jeffrey R. Tedford
Linda L. Vivas
JoEllen M. Vrazel
L. Michael Watney
Brian A. Williams
Marjorie A. Wright

Office of the President
Department of Athletics
GARY A. CUNNINGHAM, *Chair*
North Gym, Room 146
(209) 278-2643

COURSES

Athletics (ATHL)

10. Strategies for Academic Success (3) Restricted to intercollegiate athletes. Designed to help entering students make a smooth transition into the university, as well as increase knowledge of policies, procedures, resources, and graduation requirements especially pertaining to student athletes. Introduces techniques to improve learning strategies and provides students with awareness about relevant drug and health issues. *CR/NC* grading only. (Former ATHL 1R)

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)

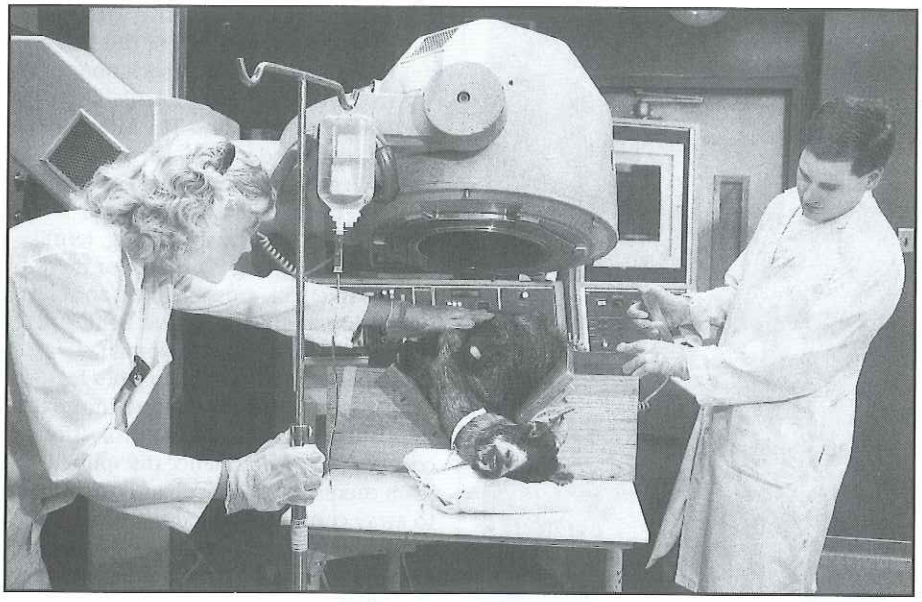
199. Wrestling (2)

* Prerequisite for Athletics 100: must be enrolled in a varsity team sport (Athletics 176-199).

Biology

School of Natural Sciences
Department of Biology
RONALD L. EVANS, *Chair*
Science Building, Room 106
(209) 278-2001

B.S. in Biology
Options:
Ecology
Molecular and Cellular Biology
Organismic and General Biology
Physiology
M.A. in Biology
M.S. in Marine Sciences
Minor in Biology
Biotechnology Certificate
Single Subject Teaching Credential in Life Science
Preprofessional advising in:
Clinical Laboratory Technology
Dentistry
Forestry
Medicine
Pharmacy
Veterinary Medicine



In the experimental nuclear imaging lab, a rare facility outside medical settings, biology students prepare a dwarf goat for a lung scan. Humans will hold still for this test; goats require an anesthetic. This subject will awake in half an hour and be back in the pasture in a day or two.

Biology is the scientific study of **life**: its properties, its complexity, and its incredible variety. Biological studies may focus on objects as small as molecules or as large as whales. They range from the inner workings of cells to the structure of whole ecosystems, and they lead biologists from the tops of mountains and the deepest ocean trenches into sophisticated modern laboratories.

The Department of Biology offers a diversified undergraduate program that matches the breadth and excitement of modern biology and prepares students for the hundreds of career opportunities that use biology as a foundation. The Bachelor of Science degree requires the successful completion of the core program and one of the following four options:

1. **Organismic and General Biology** allows students to develop a broad program that cuts across taxonomic lines or to specialize in a particular taxonomic group. This option is also appropriate for students planning to enter the field of clinical laboratory technology.
2. **Molecular and Cellular Biology** utilizes advanced technology to uncover the fundamental unifying processes of living things.
3. **Physiology** seeks to understand the mechanisms that operate within the individual organism.
4. **Ecology** focuses on the interrelationships between living organisms and their environments.

The biology major we offer has three programmatic goals:

1. To provide students with a solid foundation in all aspects of modern biology and also the intellectual skills that will serve as the basis for a lifetime of future achievement.
2. To provide students with the specialized educational opportunities that will allow them to compete successfully for careers in the biological sciences or for advanced studies in major doctoral programs.
3. To provide preprofessional students with the knowledge needed for advanced study in the many fields that build upon a biological foundation.

Our undergraduate biology major is excellent preparation for graduate programs in medicine, dentistry, pharmacy, forestry, veterinary medicine, optometry, doctoral programs, and many others.

The department offers a Master of Arts degree in Biology for qualified students who wish to explore biology in greater depth. It also participates in a postbaccalaureate certificate program in biotechnology.

Advising is an integral part of the departmental program and all biology majors are assigned advisers. This student/faculty collaboration on program planning is undoubtedly one of the main reasons for the postgraduate successes of our students.

Faculty and Facilities

Faculty expertise spans the range of biology from molecular to ecological, with a broad representation of taxonomic specialties. Laboratories in upper-division major courses are taught by faculty, and individualized student/faculty research participation through independent study is encouraged.

The department is housed in a well-equipped, modern science building. Excellent greenhouse and animal care facilities provide support to the instructional program. The new Geo-Information Processing Systems facility provides opportunities for students in the fields of remote sensing, digital image processing, and geographical information systems technology. Fresno's proximity to both the Sierra Nevada crest and the Pacific coast, provides an "outdoor laboratory" with numerous field trip opportunities that are rarely equalled at other institutions. Students with interests in marine biology can study at the Moss Landing Marine Laboratories (MLML).

Faculty

Ronald L. Evans, *Chair*

Coordinators:
Graduate: Ethelynda E. Harding
Moss Landing Marine Laboratories:
Keith H. Woodwick and Bert Tribbey
Credential Adviser: Fred E. Schreiber
Undergraduate advisers are assigned by the department chair.

Raymond Abhold
Gina Arce
David L. Chesemore
S. Fai Cheuk
William K. Collin
Stephen Ervin
David E. Grubbs
Wallace M. Harmon
Shirley A. Kovacs
Thomas E. Mallory
Jerrome Mangan
Jack F. Paris
Vivian A. Vidoli
Lorraine Wiley
In-Soon You
Lenore Yousef

Bachelor of Science Degree Requirements

Biology Major

The Bachelor of Science degree in Biology is a 124-unit program. In addition to General Education and other university requirements, biology majors must complete coursework consisting of three complementary parts: a common *core curriculum* of 21 units, required of all biology majors, that builds the foundation upon which all further learning in biology will be based; *additional requirements* from related fields, as specified by the option, to create the modern synthesis that characterizes biology; and one of four *options* to complete the degree. All four options are flexibly designed; as a result, virtually any career goal in the life sciences and related fields can be accommodated by judicious choice of specific courses within the option.

Academic advising is an important component of the biology major. All biology majors are required to come to the department office for assignment of an appropriate adviser. At least once each semester students must consult their adviser for program planning.

Students planning for graduate and professional schools should be aware that entrance requirements for those programs will often exceed the minimal requirements for a Biology B.S. degree, particularly in the ancillary fields of chemistry, physics, and mathematics. An adviser should be consulted for specific information on graduate and professional school requirements.

Biology Core

The biology core is required of all majors (see *Note 1* at end of Bachelor of Science description).

	Units
BioSc 1A-B, 130, 140A-B, 180	21

In addition to the core, all majors must complete major and additional requirements in one of the four options described as follows:

Organismic and General Biology Option

This versatile option is designed for students who wish to explore the breadth of modern biology and is highly recommended for students preparing for teaching careers. It is equally useful as preparation for a large variety of careers including clinical laboratory technology, and for additional studies in graduate and professional schools. By carefully selecting courses, students may use this option to obtain strong preparation for careers as botanists, zoologists, entomologists, microbiologists; or they may select courses that produce a broadly based program that does not emphasize a particular taxonomic group. Advising is critically important in this option. Students must consult a faculty adviser for help in determining the appropriate selection of courses and special requirements for their chosen fields.

	Units
Option requirements	42
Biology Core	(21)
A. Select one course from each of the following five lines	(16-20)
1. Bot 131, 132, 142, 144; Micro 140, 172, 181, 185; M Sci 131	
2. Micro 171; Zool 120, 141, 148, 150, 171, 174, 177; M Sci 112, 113, 114	
3. Bot 133, 137; PhyAn 133, 135, 158; M Sci 122; Zool 132	
4. Bot 130; Genet 172; Micro 161; PhyAn 141, 151, 160, 164	
5. Ecol 151, 152, 162; M Sci 103	
B. Biological Science Electives. Select one or more Biology Department courses to complete the option. Only one elective course may be lower division.	(1-5)
Additional requirements	25
1. Chem 3A, 8, and 150	(10)
2. Math 70 or 75	(4)
3. C Sci 101	(3)
4. Math 101 or Psych 42 or M Sci 104	(4)
5. One course selected from Phys 2A; M Sci 142, 143; Geol 1; SI 101	(4)
Remaining General Education requirements	42*
Electives and remaining degree requirements (see *Degree Requirements*); may include a minor	15
Total	124

*Nine units of General Education requirements are satisfied to the following extent by major and additional requirements: CORE, Category 3 by Math 70, 72, or 75; Psych 42; BREADTH, Division 1 by Chem 3A, Division 2 by BioSc 1A. Consult your major academic adviser for details.

Molecular and Cellular Biology Option

This degree option is intended for students who wish to study the molecular mechanisms underlying cellular structure and function as well as the molecular and cellular interactions occurring in the operation and development of organ systems. Molecular biology combines the knowledge and techniques of genetics, cell biology and biochemistry, forming a basis for in-depth inquiry into all aspects of biology. The option introduces students to molecular inquiry at several levels of organization and provides the requisite background for the many career opportunities in biotechnology. The option also provides a solid foundation for graduate and professional studies emphasizing cellular and molecular processes, including the postbaccalaureate certificate of advanced studies in biotechnology offered by this department. Students preparing for the biotechnology certificate program should select a general microbiology course with laboratory and a biochemistry laboratory course among their elective courses. Students planning to enter professional and graduate programs should elect Chem 1A-B and 128A-B rather than Chem 3A and 8, and should consult an adviser about additional mathematics requirements as well.

	Units
Option requirements	**40**
Biology Core	(21)
A. Select two courses from the following list	(7-8)
Bot 137; Genet 171; Micro 161, 185; PhyAn 160	
B. Select two additional courses from the following list or from other courses listed in Category A	(6-8)
Genet 172; PhyAn 140, 162, 165	
C. Biological Science Electives	(3-6)
Select sufficient Biology Department courses *other than* those listed in Categories A and B to complete the option. Only one elective course may be lower division.	
Additional requirements	**31-41**
1. Chem 3A or 1A-B, 8 or 128A-B, 109 or 129A, 150 or 155	(12-22)
2. Phys 2A-B	(8)
3. Math 70 or 75	(4)
4. C Sci 101	(3)
5. Math 101 or Psych 42	(4)
Remaining General Education requirements	**42***
Electives and remaining degree requirements	**1-11**
(see *Degree Requirements*); may include a minor	
Total	**124**

*Nine units of General Education requirements are satisfied to the following extent by major and additional requirements: CORE, Category 3 by Math 70, 72, or 75; Psych 42; BREADTH, Division 1 by Chem 3A, Division 2 by BioSc 1A. Consult your major academic adviser for details.

Physiology Option

This degree program is designed to help students understand basic cellular phenomena and to analyze complex multicellular biological systems in preparation for medical, clinical, academic or research careers that require physiology as a foundation. The ultimate goal of physiology is to understand, in physical and chemical terms, the mechanisms that operate in living organisms. This option encompasses three major branches of physiology: cellular; systemic; and whole organism. Physiology is one of the central disciplines in biology and is of particular importance in the health professions and agriculture. This option offers excellent preprofessional preparation for medicine, dentistry, pharmacy, various careers requiring physiology, and for advanced graduate study. Students planning to enter professional and graduate programs should elect Chem 1A-B and 128A-B rather than Chem 3A and 8, and should consult an adviser about additional mathematics requirements as well.

	Units
Option requirements	**41**
Biology Core	(21)
A. Select one course from each of these three lines	(9-12)
1. Bot 133; PhyAn 130, 133, 135; Zool 132	
2. Bot 137; Micro 161; PhyAn 160	
3. Bot 130; PhyAn 141, 151	
B. Select two additional courses from the following list or from other courses listed in category A	(6-8)
Genet 172; PhyAn 140, 162, 164, 165, 172	
C. Biological Science Electives	(0-5)
Select sufficient Biology Department courses to complete the option. Only one elective course may be lower division.	
Additional requirements	**32-41**
1. Chem 3A or 1A-B, 8 or 128A-B, 109, 150 or 155	(13-22)
2. Phys 2A-B	(8)
3. Math 70 or 75	(4)
4. C Sci 101	(3)
5. Math 101 or Psych 42	(4)
Remaining General Education requirements	**42***
Electives and remaining degree requirements	**0-9**
(see *Degree Requirements*); may include a minor	
Total	**124**

*Nine units of General Education requirements are satisfied to the following extent by major and additional requirements: CORE, Category 3 by Math 70, 72, or 75; Psych 42; BREADTH, Division 1 by Chem 3A, Division 2 by BioSc 1A. Consult your major academic adviser for details.

Ecology Option

This degree program is intended for students who wish to study the interrelationships between living things and their environments. This option has a strong field component that takes full advantage of the outstanding natural environments conveniently located near our campus. Students in this program gain an in-depth understanding of ecology and evolution, and acquire the skills to apply that understanding to important question in freshwater, marine, and terrestrial systems, in fisheries and wildlife management, or other branches of applied ecology. Students completing this option are well prepared for entry into a wide range of environmental careers with governmental field research agencies, in agriculture-related areas, environmental microbiology, environmental law and consulting firms, or for graduate programs leading to advanced degrees in ecology, management, and evolution. Students may obtain an emphasis in marine science by selecting electives offered at the Moss Landing Marine Laboratories. Faculty advising plays an important role in this program. Students must consult an adviser for help in selecting courses appropriate to their interests and career objectives.

	Units
Option requirements	**47**
Biology Core	(21)
A. Select one course from the following	(4)
Ecol 151, 152; M Sci 103	
B. Select one course from the following	(3-4)
Bot 130; Micro 161; PhyAn 141, 151	
At least one botany (Bot) or microbiology (Micro) course must be selected from categories C or D below. M Sci 131 is also acceptable.	
C. Select one course from the following	(3-4)
Bot 131, 132; Micro 140; Zool 120, 141, 150; M Sci 124, 131	
D. Biological Science Electives	(14-16)
Select sufficient Biology Department courses, including those listed in categories A, B, and C, to complete the option.	

Only one elective course may be lower division.

Additional requirements 24-25
1. Chem 3A, 8, and 150 ..... (10)
2. Math 70 or 75 ..... (4)
3. C Sci 101 ..... (3)
4. Math 101 or Psych 42 ..... (4)
5. One course selected from the following ..... (3-4)
   C Sci 20; Phys 2A; M Sci 142, 143; Geol 1, 105; SI 101

Remaining General Education requirements 42*

Electives and remaining degree requirements 10-11
(see *Degree Requirements*); may include a minor

Total 124

*Nine units of General Education requirements are satisfied to the following extent by major and additional requirements: CORE, Category 3 by Math 70, 72, or 75; Psych 42; BREADTH, Division 1 by Chem 3A, Division 2 by BioSc 1A. Consult your major academic adviser for details.

Advising Notes for all Options within the Bachelor of Science in Biology

1. B.S. biology majors who have taken introductory sequences other than BioSc 1A-B must consult with their faculty adviser or department chair for equivalency evaluation prior to beginning their upper-division coursework.
2. Chem 1A may be taken as a substitute for Chem 3A, and Chem 128A and 128B may substitute for Chem 8. The reverse substitutions are not permissible. Premedical students should take Chem 1A and 1B and 128A and 128B instead of Chem 3A and 8.
3. Math 71 plus 72 may be taken as a substitute for Math 70 or 75.
4. B.S. biology majors selecting options in Molecular and Cellular Biology or in Physiology can complete a Minor in Chemistry with the addition of Chem 105. Consult the chemistry department chair for details (see *Chemistry Minor*).
5. No course used to satisfy General Education CAPSTONE requirements may be used to satisfy biology major requirements.
6. *CR/NC* grading is not permitted in the biology major.
7. General Education, additional, and elective requirements may be used toward a dual major or minor (see *Dual Major* or departmental *minor*). Consult the appropriate department chair, program coordinator, or faculty adviser for additional information.

Upper-Division Course Numbers

Biology Department upper-division course numbers provide information on course level and scheduling. Courses with higher numbers have more prerequisites. Courses with numbers less than 120 are not intended for use on biology majors. Numbers in the range 120 to 149 are third year courses requiring only lower-division prerequisites; 150 to 169 courses require some part of the upper-division core as prerequisite; and course numbers 170 or greater are more specialized fourth year courses. For schedule planning, in general: odd numbered upper-division courses are offered in the Fall; even numbered courses are offered in the Spring; course numbers ending in zero are offered both Fall and Spring; and courses offered irregularly end with a nine.

Suggested Sequence of Courses for B.S. Degree in Biology

The following comments on timing and sequence are intended for full-time students who plan to complete the B.S. degree in four years. Students with extensive extracurricular obligations should make appropriate timing adjustments to avoid overloads. See your adviser for assistance.

A total of 124 units must be completed for all Biology B.S. degree options. In addition to courses required for the major, full-time students should add General Education requirements and electives to bring semester totals to 15-17 units. Electives may include minor and credential requirements. (See *Degrees and Credentials*.)

During the first two years, both resident and transfer students should complete most General Education requirements, BioSc 1A-B, all lower-division additional requirements for the option they have selected, and any lower-division electives that might be selected within that option. BioSc 130, 140A-B, C Sci 101, and statistics should be completed as early as possible after completing 56 total units, 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, General Education CAPSTONE courses, and electives in biology and other fields. BioSc 180 is a senior requirement and must be taken during the fourth year.

Biology Minor

A Minor in Biology may be earned by completing the 21-unit biology core: BioSc 1A-B, 130, 140A-B, 180.

Credential Program

The single subject waiver program for Life Science (Biology) consists of BioSc 1A-B, 130, 140A-B, 180; Micro 20 or 140; Chem 3A, 8, 150; Geol 1 or 2; Phys 2A-B; C Sci 101; and one course from each of the following three categories: (1) Bot 144; Ecol 151; (2) Ecol 152; Zool 120, 141, 150; (3) Bot 130; PhyAn 65, 151.

For program planning in science, consult the biology department coordinator for teacher education each semester.

Graduate Programs

The Biology Department offers the Master of Arts degree in Biology with the opportunity for specialization in several areas of study. Among these areas are: ecologically oriented field studies; molecular and cellular biology; physiology at both invertebrate and vertebrate levels; entomology; microbiology; parasitology; botany; systematics; animal behavior. The program also prepares candidates for teaching various biological disciplines at the primary and secondary education levels. A further objective of the master's program is to provide a foundation for those seeking advanced education at universities offering the doctorate or other professional degrees. The Biology Department has further informational materials available upon request.

The Biology Department and the university are located in a region uniquely suited to the pursuit of projects that are environmentally oriented. High Sierra, foothill, coastal, and forest environments are all within three hours drive of CSUF. Facilities are available at the campus for studies involving genetic recombination, electron microscopy, use of radioactive materials, and metabolic studies on all living forms. Cooperation with local physicians and hospital facilities provides additional opportunities to pursue medically oriented research.

The Biology Department is a member of a consortium that manages and operates the Moss Landing Marine Laboratory (MLML). MLML is located on the California coastline between Santa Cruz and Monterey. A master's candidate interested in pursuing marine science studies must meet CSUF Biology Department master's candidate requirements as well as those of MLML. Such candidates are encouraged to

consult the Biology Department's MLML coordinator for information and to read the MLML information presented at the end of this section.

Master of Arts Degree 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.

There are five steps that must be completed for the Master of Arts degree in Biology:

1. Admission to graduate standing (constitutes admission to the university)
2. Admission to classified graduate standing (constitutes admission to the department program)
3. Advancement to candidacy (formalizes thesis committee and project)
4. Completion of a thesis and associated requirements
5. Completion of all additional requirements for award of master's degree

Normal progress toward the Master of Arts degree in Biology requires that classified graduate standing be achieved in the first semester of graduate study and that advancement to candidacy be granted the following semester. Completion of the thesis and all other program requirements will normally require two additional semesters of study. Procedures for completing these steps are outlined in the following sections. Students are personally responsible for ensuring that all graduate degree requirements have been met in sequence; therefore, each student should read the procedures thoroughly to be sure all requirements are understood. Students should also meet with the departmental graduate adviser at the earliest possible date.

Admission to Graduate Standing

Admission to the university is handled through the Admissions Office of California State University, Fresno. For admission to postbaccalaureate/graduate standing, a student must have completed a four-year college program and hold an acceptable baccalaureate degree from an accredited institution with a grade point average of 2.5 in the last 60 units.

To be considered for classified standing in biology, the following additional steps are required of students planning to enter the biology graduate program.

1. Arrange to take the Aptitude and Advanced Biology sections of the Graduate Record Examination prior to application. Information about dates, fees, and application procedures may be obtained through the Division of Graduate Studies. The Biology Department requires that GRE advanced scores be current. Scores dating from five years previous to application are not considered valid.
2. Contact the graduate adviser in the Biology Department prior to registration for assignment of a temporary faculty adviser who will assist in the planning of initial courses. Students may request the assignment of any biology faculty member to serve in this capacity.
3. Meet with the temporary adviser prior to registration and develop an approved initial program of at least 9 units that is mutually agreeable to the student and the adviser. These courses are to be entered on the "Approved Preliminary Program" form (available from the graduate adviser) and signed by the student, temporary adviser, and departmental graduate adviser. This will constitute the Approved Initial Graduate Program. All students are required to have the "Approved Preliminary Program" form approved and on file prior to registration. When this form is submitted, the Graduate Committee will consider your request for classified standing.

Admission to Classified Graduate Standing

Admission to classified graduate standing constitutes official admission into the graduate program in the Department of Biology and requires the approval of the Biology Department. Classified standing must be attained no later than the semester in which a student completes 10 units, including transfer and postbaccalaureate credit, to be used toward the master's degree, so students should attempt to obtain classified graduate standing as early as possible in their graduate careers to avoid possible loss of units. Normal progress toward the degree requires that this be accomplished in the first semester of graduate work.

Students applying for classified standing should be sure they have submitted an "Approved Preliminary Program" form to the departmental graduate adviser.

Admission to classified graduate standing must be recommended by the graduate coordinator in consultation with the Graduate Committee of the Biology Department. To be recommended, the student must demonstrate competency in verbal or written communication, quantitative analytical skills and disciplinary knowledge.

Competencies may be demonstrated in the following manner:

1. For verbal or written communication, students must achieve either a verbal GRE score in the top 40th percentile or no less than a grade of ***B*** in an upper-division writing class. In exceptional cases the Graduate Committee may consider alternative evidence of verbal or writing skills.
2. For quantitative analytical skills, students must achieve either a quantitative GRE score in the top 40th percentile or no less than a grade of ***B*** in a mathematics class at least at the level of Math 70.
3. For disciplinary knowledge, students must achieve at least one of the following:
   a. A score on the Advanced Biology section of the GRE in the top 40th percentile. The Advanced Biochemistry, Cell and Molecular Biology section will fulfill this requirement *only in conjunction with coursework in ecology*.
   b. No less than a grade of ***B*** in each of the upper-division core courses or their equivalents. Equivalency will be determined by the graduate coordinator in consultation with faculty teaching the core courses at this university.
   c. No less than a grade of ***C*** in each of the upper-division core courses or their equivalents, as well as an overall GPA of 3.0 or better for at least 25 semester units of upper-division lecture or lecture/laboratory courses in natural science.

On recommendation, students will be assigned to one of the following three categories:

1. **Classified graduate standing** will be assigned to students meeting the standards in verbal written communication, quantitative analytical skills, and disciplinary knowledge.
2. **Conditional classified standing** will be assigned to students meeting a majority of the classification standards yet having specific identifiable deficiencies

that may be easily corrected within a single semester. While this classification gives students the opportunity to remedy identified deficiencies, those remedial courses taken to correct deficiencies may not be applied to the graduate program.

3. **Nonclassified standing** will be assigned to students who do not meet the classi fication standards or whose deficiencies will require more than one semester for remediation.

Students recommended for classified graduate standing may proceed with the completion of requirements for advancement to candidacy, the next step in the graduate program. Students granted conditional classified status or denied admission (remaining in postbaccalaureate unclassified standing) will not have been admitted to the graduate program in biology and must attempt to increase their classification score to gain classified standing. The graduate adviser will provide further information on how this may be accomplished.

When any requirements for a change in graduate standing have been completed, the student must see the graduate adviser and file appropriate forms with the graduate division.

Advancement to Candidacy

Acceptance to **classified graduate standing** indicates that the student's academic background and perceived ability are sufficiently high to merit admission into the biology graduate program. **Advancement to candidacy** signifies that the student has developed a coherent program of study for the Master of Arts degree that meets with the approval of the Biology Department. Advancement to candidacy requires the establishment of the Thesis Committee, identification of the thesis topic, and the approval of all coursework that must fit within the following framework:

	Units
Courses in 200-series	15
Electives (May be 100- or 200-series)	15
Total	30

No less than 18 units of the approved coursework must be in the biological sciences. Nine units must be completed prior to advancement to candidacy. The Biology Department also requires that at least 10 units of approved coursework be completed after advancement to candidacy.

Units completed during the semester that advancement is achieved will be considered to have been completed after advancement to candidacy. Students must also show competence in writing skills through an appropriate examination or course. Normal degree progress requires that advancement to candidacy be achieved in the semester following admission to classified standing. A student must be advanced to candidacy, possess a GPA of 3.0 or better, and file a Thesis Committee Assignment Form before enrolling in thesis (Biol 299).

A complete list of the steps required for advancement to candidacy is available from the departmental graduate adviser.

Completion of a Thesis

The Master of Arts in Biology requires completion of a research thesis (Biol 299). The thesis must show originality, appropriate organization, clarity of purpose, critical analysis, and accuracy and completeness of documentation where needed. Critical and independent thinking are required. The finished thesis must meet standards appropriate for publication in the scholarly journals of the field. A colloquium is required of all students before graduation. Additional information on the completion of the thesis is available from the departmental graduate adviser.

Completion of All Requirements for Award of Master of Arts Degree in Biology

In addition to the above requirements, in order to receive the Master of Arts degree in Biology the student must:

1. Maintain a GPA of 3.0 or better in all graduate coursework undertaken from the date of embarking on the first course of the approved program. Students wishing to explore other academic areas without jeopardizing this grade point average should attempt to use the *CR/NC* grade option for this purpose.
2. File an application for the granting of the Master of Arts degree and pay the diploma fee. Applications should be submitted during the first two weeks of the semester (or the first week of a summer session) in which the degree is to be completed and are available from the Evaluations Office in Joyal Administration, Room 115.

Master of Science Degree Requirements

Marine Sciences Major

This degree program — to be offered as an interdepartmental degree in cooperation with Moss Landing Marine Laboratories (MLML) — 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 CSU campuses.

The Master of Science in Marine Sciences degree program is administered through MLML and a consortium campus with emphasis on biology, geology, or other department, depending on the choice of the student. The prospective student must meet the entrance requirements for the home campus department and will be accepted into classified or conditionally classified status by normal procedures at that campus (see above for CSUF biology procedures summary). Conditionally classified students must become classified by home campus procedures. MLML may impose additional requirements for classification.

The Thesis Committee will be composed of at least three members, including one faculty member from MLML (who is ordinarily the thesis adviser) and, at the discretion of the home campus, a representative of that campus. The other member or members of the Thesis Committee may be from MLML, the home campus, or elsewhere with the approval of the thesis adviser. The final colloquium must be given at the home campus.

Additional MLML Degree Requirements Including Coursework. 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: M Sci 103, M Sci 141, M Sci 142, M Sci 143, M Sci 144)	12
Courses in 200-series (including 2 units of M Sci 285T, 286T or 287T, and 4 units of M Sci 299)	15
Electives (course(s) in the 100- and/or 200-series) approved by Thesis Committee	3
Total	30

Note: Quantitative Marine Science, M Sci 104, does not count toward the degree.

Biotechnology Certificate Program

California State University, Fresno offers a Certificate of Advanced Study Program in Biotechnology. This intensive one-year postbaccalaureate program emphasizes molecular biology and a wide range of laboratory skills at the forefront of modern biotechnology. The biotechnology field is growing rapidly and, as new products and applications are commercialized, there is increased need for highly skilled personnel capable of working in both research and production areas. Enrollment is limited to 12 to 15 students per year who work closely with faculty in a variety of lecture and laboratory courses. Among the techniques studied are purification of biological macromolecules, gene splicing, DNA sequencing, culturing of mammalian cells, hybridoma production, and plant cell culturing and cloning.

The certificate program can lead to potential careers in expanding fields, such as drug and hormone production in the pharmaceutical industry, monoclonal antibody production for medical diagnostics, crop improvement, industrial bioprocessing, and medical research. The program also provides a background for further postgraduate studies in fields such as biochemistry, molecular biology, and agricultural biotechnology. Some of the courses may also be used at CSUF as components of master's degree programs in biology, chemistry, plant science, and related departments.

Courses include: Molecular Biology (Biol/Chem 241A-B), Techniques in Protein Purification (Biol/Chem 242), Nucleic Acid Technology Lab (Biol/Chem 243), Cell Culture/Hybridoma Laboratory (Biol/Chem 244), Micropropagation (Plant Science 102), and Seminar in Molecular Biology/Biotechnology (Biol/Chem 248).

COURSES

Biology (Biol)

10. Life Science (3)
Not open to students with credit in BioSc 1A, Bot 1 or Zool 1. Principles of biology related to the cell, maintenance, and relation of living organisms, heredity and elementary processes of evolution, and basic principles of ecology. General Education BREADTH, Division 2. (2 lecture, 2 lab hours)

15. An Ecological Approach to Life Science (5)
Concurrent enrollment in Geol 15, N Sci 15, S Sci 15 required. Portion of *Man/Woman and the Natural Environment* Cluster. An introduction to biological concepts and investigational methods in the natural environment. Lecture, lab, and fieldwork. General Education BREADTH, Division 2. (Field trip fee required) (See *Man/Woman and the Natural Environment*, Natural Science — Interdisciplinary Courses section.)

100. Nature Study (3)
Not allowable for credit for biological or physical science majors or minors. Prerequisite: a college level biology course. 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) (Former Biol 101)

110. Human Ecology (3)
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. General Education CAPSTONE Cluster course. (Former Biol 105)

112W. The Scientific Paper (3)
No credit toward biological or physical science majors or minors permitted. 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. (Former Biol 102W)

"This is a whole lot of fun for me as a teacher ... to help students plan for their future or to be able to connect with them on the level of amazement, of being able to say 'WOW' together."

Fred E. Schreiber
Professor, Biology

121. Electron Microscopy (4)
Prerequisite: permission of instructor. Preparation and examination of biological specimens. Basics of electron microscopy and interpretation of electron micrographs. (1 lecture, 9 lab hours) (Former Biol 150)

172. 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) (Former Biol 162)

189T. 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) (Former Biol 185T; Micro 160T)

190. Independent Study (1-3; max see reference)
See *Academic Placement — Independent Study*. Approved for ***SP*** grading. (Former Bot 190, Ent 190, Micro 190, Phy 190, Zool 190)

Biological Science Core (BioSc)

1A-B. Introductory Biology (4-4)
Two-semester sequence required of all biology majors. Thematic introduction to the unifying concepts of life science: chemical basis of life; cellular processes; energy metabolism; genetics; evolution; diversity of life; ecology and environmental biology. BioSc 1A is prerequisite to BioSc 1B. BioSc 1A meets the criteria for General Education BREADTH, Division 2. (3 lecture, 3 lab hours)

130. General Ecology (3)
Prerequisite: BioSc 1A-B; Math 70 or equivalent recommended. Required of all biology majors. The structure, function, organization, and regulation of populations, communities, and ecosystems. The role of evolution in environmental relationships. (2 lecture, 3 lab or field hours)* (Former Biol 140)

140A-B. Genetics and Cellular Biology (3-4)
Prerequisite: BioSc 1A-B and Chem 8 or 128A; Chem 150 or 155 recommended.

* Late afternoon, Saturday and/or overnight field trips may be required.

Two-semester sequence required of all biology majors. Fundamentals of inheritance and cellular biology for both prokaryotic and eukaryotic systems, including an introduction to the underlying molecular mechanisms. BioSc 140A is prerequisite to BioSc 140B. (A: 3 lecture hours; B: 3 lecture, 3 lab hours) (Former Biol 130; Biol 135)

180. Evolution (3)
Prerequisite: senior standing or permission of instructor; BioSc 130, 140A-B. Required of all biology majors. Evolutionary processes and patterns. Satisfies the senior major requirement for the B.S. in Biology. (Former Biol 125)

Botany (Bot)

10. Plant Biology (3)
Not open to students with credit in BioSc 1B. Structure, function, and development of plants. General Education BREADTH, Division 2. (2 lecture, 2 lab hours)

130. Plant Physiology (4)
Prerequisite: BioSc 1A-B; Chem 1A or 3A; or permission of instructor; organic chemistry recommended. General metabolism and related processes. (2 lecture, 6 lab hours) (Former Bot 104)

131. Vascular Plants (4)
Prerequisite: BioSc 1A-B or permission of instructor. 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) (Former Bot 136)

132. Nonvascular Plants (3)
Prerequisite: BioSc 1A-B or permission of instructor. Comparative structure and phylogeny of the fungi, algae, mosses, and liverworts. (2 lecture, 3 lab hours) (Former Bot 135)

133. Plant Anatomy (3)
Prerequisite: BioSc 1A-B or permission of instructor. Structure and development of flowering plants at the cellular and tissue levels. (2 lecture, 3 lab hours) (Former Bot 134)

137. Plant Growth and Development (3)
Prerequisite: BioSc 1A-B or permission of instructor. Processes involved in plant growth with emphasis on the development of form in higher plants and the experimental approach. (2 lecture, 3 lab hours)

142. Algology (4)
Prerequisite: BioSc 1A-B or permission of instructor. Morphology, cytology, ecology, physiology, economic importance, and cultivation of the algae. (2 lecture, 6 lab or field hours)*

144. Plant Taxonomy (4)
Prerequisite: BioSc 1A-B or permission of instructor. Principles of plant classification; local flora. (1 lecture, 9 lab or field hours)* (Former Bot 106)

Ecology (Ecol)

135. Marine Biology (3)
Prerequisite: a college biology course. 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) (Former Biol 155)

151. Terrestrial Ecology (4)
Prerequisite: BioSc 130. The interaction of organisms and communities with the physical and biotic environment, with emphasis on the biotic communities of Central California. (3 lecture, 3 lab or field hours)* (Former Bot 107)

152. Aquatic Ecology (4)
Prerequisite: BioSc 130. Physical-chemical features of inland waters as related to their biology; community structure and function, ecological interactions, adaptations, and identification of aquatic organisms. (3 lecture, 3 lab or field hours)* (Former Biol 133)

162. Microbial Ecology (4)
Prerequisite: BioSc 130 and Micro 140. 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)* (Former Micro 125)

171. Fisheries Biology and Management (3)
Prerequisite: BioSc 130; statistics strongly recommended. Ecology and management of fisheries; 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)* (Former Zool 136)

172. Wildlife Biology and Management (4)
Prerequisite: BioSc 130. 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)* (Former Zool 134)

(See also *Bot, Micro, Zool courses.*)

Genetics (Genet)

120. Introduction to Genetics (3)
Not open to biology majors and students with credit in BioSc 140A. Prerequisite: BioSc 1A-B or equivalent. Principles of biological inheritance, including gene structure, gene function, statistical methods, problem solving, and human genetics. (Former Biol 120)

122. Fundamentals of Human Genetics (3)
Prerequisite: a college biology course. 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. (Former Biol 122)

123. Heredity and Society (3)
Prerequisite: a college biology course. 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. (Former Biol 107)

171. Experimental Molecular Genetics (4)
Prerequisite: BioSc 140A-B. The nature of genetic information, its mutation, transfer, and recombination in cells. (2 lecture, 6 lab hours) (Former Micro 189)

172. Developmental Biology (3)
Prerequisite: BioSc 140A-B. 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. (Former Biol 160)

Microbiology (Micro)

20. Introductory Microbiology (4)
Not open to students with credit in Micro 140. Prerequisite: Chem 3A; Chem 3B or 8; plus a college course in the biological sciences. Introduction to microbiology;

* Late afternoon, Saturday and/or overnight field trips may be required.

principles and selected applications. (3 lecture, 3 lab hours)

140. Microbiology (4)
Prerequisite: BioSc 1A-B; organic chemistry. Emphasis on prokaryotes (bacteria); microbial physiology, genetics, ecology, classification, and identification; applications of microbiology. Prerequisite to most upper-division microbiology courses. (2 lecture, 6 lab hours) (Former Micro 104)

161. Microbial Physiology (4)
Prerequisite: Micro 140. Structure, function, energy metabolism, growth, and regulatory mechanisms of microorganisms. (2 lecture, 6 lab hours)

171. Protozoology (3)
Prerequisite: BioSc 130, 140A-B. The biology of protozoan organisms. (2 lecture, 3 lab hours) (Former Zool 115)

172. Medical Mycology (4)
Prerequisite: Micro 140; PhyAn 160 recommended. Morphology, physiology, and principles of pathogenicity of selected fungal agents of human and animal disease. (2 lecture, 6 lab hours) (Former Micro 150)

181. Bacteriology of Human Disease (5)
Prerequisite: Micro 140; PhyAn 160 recommended. Bacterial, etiological agents of human disease. (3 lecture, 6 lab hours) (Former Micro 118)

185. Virology (4)
Prerequisite: Micro 140; PhyAn 160 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)

(See also *Bot 142; Ecol 162; Genet 171; PhyAn 160; Zool 147, 148.)*

Physiology/Anatomy/ Development (PhyAn)

33. Human Anatomy and Physiology (5)
Three units allowed for students with prior credit in human anatomy; 2 units allowed for students with prior credit in human physiology. An integrated study of the structure and function of the human body. (4 lecture, 3 lab hours) (Former Phy 33)

64. Functional Human Anatomy (3)
Not open to students with credit in PhyAn 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) (Former Phy 64)

65. Human Physiology (5)
Not open to students with credit in PhyAn 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) (Former Phy 65)

130. 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) (Former Phy 155)

133. Histology (4)
Prerequisite: BioSc 1A-B. Identification and study of vertebrate cells, tissues, and organs. (2 lecture, 6 lab hours) (Former Zool 157)

135. Vertebrate Embryology (4)
Prerequisite: BioSc 1A-B. 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) (Former Zool 160)

140. Neurophysiology (3)
Prerequisite: anatomy and physiology. Function of the nervous and muscular systems with emphasis on molecular mechanisms. (Former Phy 160)

141. Insect Physiology (3)
Prerequisite: Zool 120. Principles of physiology as applied to insects; functions of insect body, tissues, and organs. (2 lecture, 3 lab or demonstration hours) (Former Ent 110)

151. Comparative Animal Physiology (4)
Prerequisite: BioSc 140A-B. Evolution of physiological systems; functional adaptations to different environments; physiological principles as applied to animals. (3 lecture, 3 lab hours) (Former Phy 140)

158. Biological Membranes: Structure and Function (3)
Prerequisite: BioSc 140A-B or a biochemistry course. A study of the myriad of functions membranes perform with an emphasis on transport. General structural properties of membranes, including fluidity and asymmetry, and modification of structural building blocks which lead to membrane diversity. (Former Biol 238)

160. Immunology (4)
Prerequisite: BioSc 140A; BioSc 140B or Micro 140. Innate and acquired immunity, including both cell-mediated and humoral phenomena; illustration of principles and technique development in the laboratory. (2 lecture, 6 lab hours) (Former Micro 117)

162. Hematology (3)
Prerequisite: PhyAn 65; PhyAn 160 recommended. Development, structure, identification, and quantification of cellular blood elements; qualitative and quantitative considerations of hemoglobin, coagulation, and immuno-hematology. Procedural proficiency emphasized in the laboratory. (2 lecture, 3 lab hours) (Former Zool 158)

164. Integrative Human Physiology (3)
Prerequisite: BioSc 140A-B. Primarily for students in biology and the health professions. A functional approach to the integration of organs and organ systems.

165. Endocrinology (3)
Prerequisite: BioSc 140A-B. A systems approach to the study of hormone synthesis, secretion, function as intercellular signals, and their role in both controlling and integrating normal physiological processes. (Former Biol 185T section)

172. Pathophysiology (3)
Prerequisite: PhyAn 33 or 65 or 164. An application of anatomic and physiologic principles in the study of those disturbances that underlie the etiology and pathogenesis of human diseases. (Former Biol 185T section)

(See also *Biol 121; Bot 130, 133, 137; Genet 172; Micro 161.)*

Zoology (Zool)

10. Animal Biology (3)
Not open to students with credit in BioSc 1B. Structural and functional comparison of animals; principles and human implications of inheritance, evolution, and ecology; physiology as applied to man. General Education BREADTH, Division 2. (2 lecture, 2 lab hours)

120. General Entomology (3)
Prerequisite: BioSc 1A-B. Anatomy, physiology, life history, and classification of insects and other arthropods. (2 lecture, 3 lab or field hours)* (Former Ent 101)

122. Economic Entomology (3)
(See Pl Pr 103.) (Former Ent 106)

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* Late afternoon, Saturday and/or overnight field trips may be required.

132. Comparative Vertebrate Morphology (4)
Prerequisite: BioSc 1A-B. Comparative structure of vertebrate organ systems; laboratory study of representative vertebrates. (2 lecture, 6 lab hours) (Former Zool 103)

141. Invertebrate Zoology (3)
Prerequisite: BioSc 1A-B. 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)* (Former Zool 114)

147. Medical Parasitology (3)
Prerequisite: BioSc 1A-B. Epidemiology, pathogenesis, and identification of the parasites of man. (2 lecture, 3 lab hours) (Former Zool 107)

148. Parasitology (4)
Prerequisite: BioSc 1A-B; general chemistry. A study of the general biology of symbiotic organisms of animal hosts including man. Lecture topics include life histories, epidemiology, infection and disease processes, physiology, and treatment. Laboratory exercises include a study of biological processes as well as parasite identification and diagnosis. (3 lecture, 3 lab hours) (Former Zool 108)

150. Natural History of Vertebrates (4)
Prerequisite: BioSc 130. Systematics, distribution, morphology, behavior, and ecology of fish, amphibians, reptiles, birds, and mammals. Fieldwork 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 hours)* (Former Zool 113)

152. Animal Behavior (3)
Prerequisite: BioSc 130; one additional course in ecology or natural history recommended. Principles of ethology with emphasis on mechanisms of behavior. (2 lecture, 3 lab hours)* (Former Zool 130)

171. Ichthyology (3)
Prerequisite: BioSc 130. Ecology, evolution, and diversity of the fish of the world with emphasis on California fish, freshwater and marine. (2 lecture, 3 lab or field hours)* (Former Zool 140)

174. Biology of Reptiles and Birds (4)
Not open to students with credit in Zool 137 or Zool 172. Prerequisite: BioSc 130. Ecology, ethology, and evolution of the reptiles and birds of the world. Encompasses the traditional areas of herpetology and ornithology. (3 lecture, 3 lab or field hours)* (Former Zool 137; Zool 165; Zool 172)

177. Mammalogy (3)
Prerequisite: BioSc 130. Ecology, evolution, and diversity of the mammals of the world. (2 lecture, 3 lab or field hours)* (Former Zool 135)

(See also *Ecol 171, 172; Micro 171; and PhyAn courses.*)

GRADUATE COURSES

(See *Course Numbering System.*)

Biology (Biol)

204. Biology of Speciation (2)
Prerequisite: BioSc 140A-B and 180. 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.

207. Radiotracer Methodology in the Natural Sciences (3)
(Same as Chem 207 and Phys 207.) 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, radioimmunoassay, and biological applications in living systems. Team taught. (2 lecture, 3 lab hours)

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.* Approved for ***SP*** grading.

210. Parasitic Protozoa (3)
Prerequisite: Zool 148. A systematic survey of parasitic protozoa. (2 lecture, 3 lab hours)

212. Helminthology (3)
Prerequisite: Zool 148. A systematic survey of parasitic helminths. (2 lecture, 3 lab hours)

240. Systems Ecology (3)
Prerequisite: BioSc 130, 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) (Lab fee, $15)

241A-B. Molecular Biology I-II (3-3)
(Same as Chem 241A-B.) Prerequisite: BioSc 140A-B, Chem 150 or 155, and permission of instructor. Biol/Chem 241A is prerequisite for Biol/Chem 241B. Current topics in molecular biology, including protein and nucleic acid structure, DNA replication, transcription, translation, prokaryotic and eukaryotic regulation, mechanisms of exchange of genetic material, and recombinant DNA technology.

242. Techniques in Protein Purification and Analysis (3)
(Same as Chem 242.) Corequisite: Biol/Chem 241A. Deals with the technologies relevant to protein isolation, purification, analysis, immobilization, and modification in micro and macro quantities. (1 lecture, 6 lab hours)

243. Nucleic Acid Technology Lab (3)
(Same as Chem 243.) Prerequisite: Biol/Chem 241A and 242. Corequisite: Biol/Chem 241B. A lecture/laboratory course focusing on the technologies used in nucleic acid chemistry, specifically synthesis, translation, mutagenesis, and genetic engineering. (1 lecture, 6 lab hours)

244. Cell Culture and Hybridoma (3)
(Same as Chem 244.) Prerequisite: Micro 185 or PhyAn 160. The theory and practice of *in vitro* propagation of eukaryotic cells, including growth characteristics, metabolic requirements, and genetic analysis. Cloning, fusion, and generation of monoclonal antibody (hybridoma) are presented relative to cultured cell biology and application to biotechnology. (1 lecture, 6 lab hours)

248. Seminar in Molecular Biology and Biotechnology (1-2; max total 4)
(Same as Chem 248.) Prerequisite: admission into the Biotechnology Certificate Program. Reviews and reports on current literature in various aspects of biotechnology and molecular biology.

250. Scientific Research Reporting (2)
Prerequisite: permission of instructor. Techniques of scientific photography 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)

* Late afternoon, Saturday and/or overnight field trips may be required.

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)

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. Biogeography (3)
Prerequisite: permission of instructor. Seminar in descriptive and ecological geography of animal and plant groups.

281T. Seminar in Biological Science (1-2)
Prerequisite: permission of instructor. Reviews and reports on current literature in the various phases of biology.

290. Independent Study (1-3; max see reference)
See *Academic Placement — Independent Study*. Approved for ***SP*** grading.

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*. Preparation, completion, and submission of an acceptable thesis for the master's degree. Approved for ***SP*** grading.

IN-SERVICE COURSE

(See *Course Numbering System*.)

Biology (Biol)

302T. Topics in Biology (3; max total 6)
Prerequisite: graduate standing or permission of instructor. Relation of man to his surroundings; review of concepts, cell, physics and chemistry of life, energetics, inheritance, evolution.

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 coursework 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 at the CSU Fresno campus for a term of instruction at Moss Landing and earn resident credit for such coursework. See *Geology Department* for on-campus coursework 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 the space reservation form is received at Moss Landing Marine Laboratories. Since enrollment is limited, interested students should make early application.

COURSES

Note: The following courses are offered at the Moss Landing Marine Laboratories. M Sci 103 and 104 are usually recommended for first semesters of full-time students.

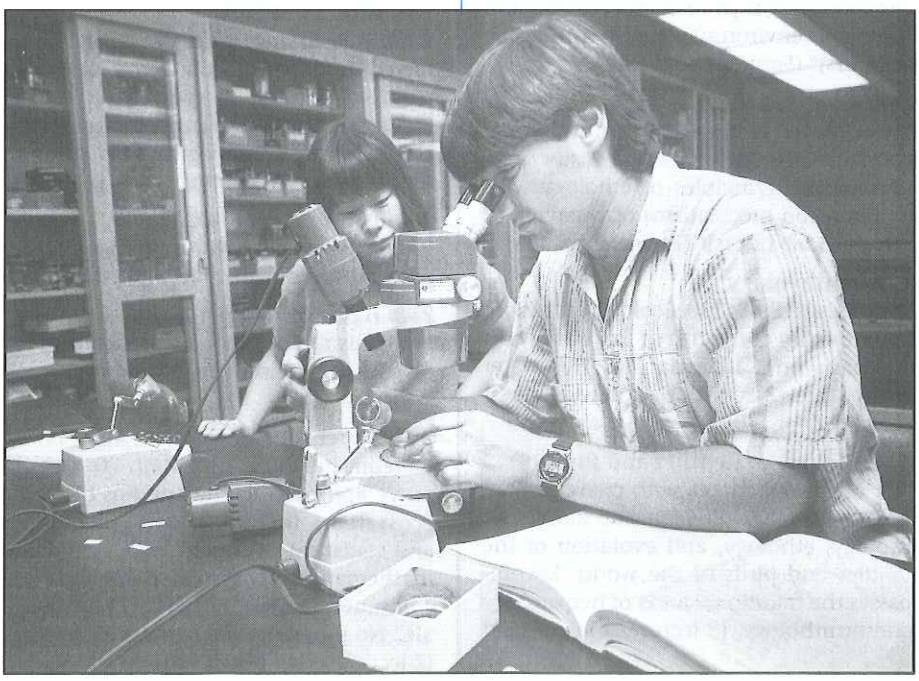
The Biology Department will accept only the following Moss Landing Marine Laboratories courses for major credit as indicated. Botany: M Sci 131, 144. Zoology: M Sci 112, 113, 122, 124, 125. Biology elective: M Sci 103, 104.

Marine Sciences (M Sci)

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 nonparametric 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 include diving physics, physiology, diving environments, night diving, and research diving. Successful completion gives NAUI and MLML certification. (1 lecture, 6 lab or field hours)

110. Introduction to Marine Behavior (4)
Prerequisite: M Sci 103 or permission of instructor. Basic theoretical concepts of animal behavior, stressing the causation, development, and evolution of behavior. Emphasis is on the marine environment. (3 lecture and 3 lab 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 cover the embryology of lower invertebrates, molluscs, crustacea, enchinoderms, and protochordates. (2 lecture, 6 lab or field 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 or concurrently. 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 is on the complexity of organismal-environmental interaction of the plankton, the transfer of organic matter between trophic levels and nutrient cycles. Laboratory includes 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 varies 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 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. Approved for ***SP*** grading.

GRADUATE COURSES

(See *Course Numbering System.*)

Marine Sciences (M Sci)

202. Marine Instrumental Analysis (4)
Prerequisite: M Sci 142, 143. Theory and use of advanced instrumentation; advanced field and laboratory techniques for the interpretation of data collected in marine science research. (2 lecture, 6 lab or field hours)

204. Sampling and Experimental Design (4)
Prerequisite: M Sci 103, 104. Basic design of experiments and field sampling, including random sampling, systemic sampling, subsampling, survey techniques, and design of single and multifactor experiments using randomized and block experimental designs. (Former M Sci 285T section)

211. Ecology of Marine Birds and Mammals (4)
Prerequisite: M Sci 103, 104, 112. Community approach to the ecology of marine birds and mammals using experimental and sampling methodology. Examines the distribution, abundance, trophic ecology, and behavior of birds and mammals in Elkhorn Slough and Monterey Bay. (2 lecture, 6 lab 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 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. Experimental techniques in biological oceanography with emphasis on problems important in plankton ecology. Lectures, labs, and discussions of current research problems. An individual research project involving analytical tools will be 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 redeposition 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 occurring 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)

262. Satellite Oceanography (4)
Prerequisite: M Sci 142, 144, or permission of instructor; M Sci 263 and computer literacy recommended. Physical principles of remote sensing of earth's oceans, including satellite systems, oceanographic applications of satellite imagery, and image processing methods. Labs involved use PC and Unix workstation image processing. (2 lecture, 2 lab hours) (Former M Sci 274T section)

263. Application of Computers in Oceanography (4)
Prerequisite: M Sci 104, college math, permission of instructor. Lecture, discussion, practical experience with a multi-user computer for marine science applications: use of existing programs and subroutine libraries; computer communications; scientific programming for data I/O and analysis. Semester project required. (2 lecture, 6 lab hours) (Former M Sci 274T section)

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: MLML 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; fieldwork 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. Subjects vary depending on student demand and availability of instructors. (Lecture and/or laboratory)

280W. Scientific Writing (2)
Prerequisite: graduate standing, permission of instructor. Techniques and strategies of scientific writing used for proposals, journal submissions, and abstracts of meetings. Students will develop their writing skills by preparing, editing and rewriting manuscripts. (Former M Sci 287T section)

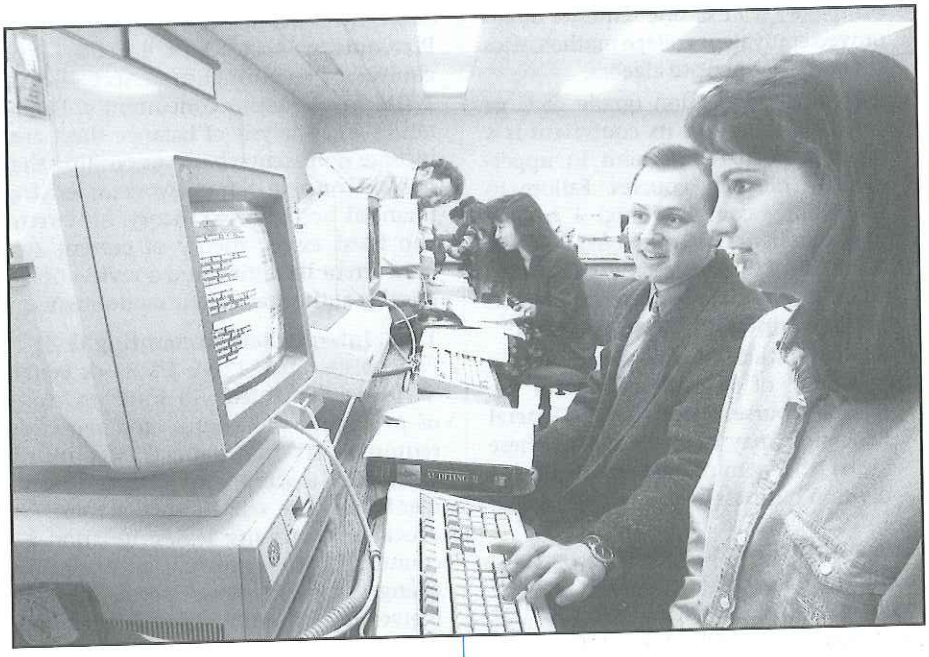
285T. Seminar in Marine Biology (2; max total 4)
Prerequisite: permission of instructor. Seminar will be held on topics changing each semester; each student will be required to give at least one seminar.

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.* Preparation, completion, and submission of an acceptable thesis for the master's degree. Approved for ***SP*** grading.



The Sid Craig School of Business and Administrative Sciences
Department of Accountancy
DENNIS M. BAKER, *Chair*
Peters Business Building, Room 284
(209) 278-2852

B.S. in Business Administration
Accountancy Option

The Department of Accountancy offers an option in accounting within the Bachelor of Science in the 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 (CPA), Certificate in Management Accounting, or Certificate in Internal Auditing.

Faculty and Facilities

The faculty of the Department of Accountancy is comprised of approximately 15 individuals of varied academic and business experience backgrounds. They are specialists in the areas of financial accounting, taxation, cost accounting, auditing, and accounting information systems. 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 CPA exam, and David Kalemkarian, a 1984 graduate of the department, received the second highest score in California on the CPA exam. Many of our students pass the entire CPA exam on the first sitting. In conjunction with the department, the University Business Center (located within the school) offers a CPA Review Course twice a year. This course is designed to meet the needs of the serious CPA 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

Dennis M. Baker, *Chair*

Rosita S. Chen
Leslie G. Eldenburg
Robert M. Harper
Gerald L. Johnston
Garo Kalfayan
W. Don McFerrin
John P. Osborn
Sheng-Der Pan
Ali A. Peyvandi
Benjamin Y. Tai
C. Torben Thomsen

Bachelor of Science Degree Requirements

Business Administration Major

A 40-43 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 (see *Advising Note 1*) Acct 4A, 4B; B A 18; DS 73, 173; Fin 120; IS 50 (or demonstration of computer literacy); IS 160; Mgt 110 or 104-106, 187; Mktg 100; PLM 124	40-43
General Education (see *Advising Notes 2 and 3*)	54
Accountancy Option	34-35
Required courses	(19)
Acct 120A, 120B, 132, 146; IS 105W	
Electives	(15-16)
Select four courses from the following: Acct 144, 145, 147, 148, 162, 165, 167, 189T; B A 150	
Electives (see *Advising Note 4*)	0
Total	128-132

Advising Notes

1. Every upper-division business course has writing requirements, 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 course, or passing the Upper-Division Writing Examination) is a prerequisite to enrollment in Mgt 187.
2. Business students must take Econ 40 (or Ag Ec 1) and Econ 50 in BREADTH, Division 8. Business students must also complete DS 71 or one semester of approved equivalent college mathematics beyond intermediate algebra.
3. Successful completion (grade of *C* or better) of Engl 1 or its equivalent is a prerequisite to enrollment in upper-division business courses. Failure to successfully complete Engl 1 by the time a student has completed 30 units at CSUF shall subject the student to administrative/academic probation and possible subsequent disqualification.
4. Business students must complete a minimum of 51 units outside of the school (courses selected for General Education may be included in these units) and a minimum of 40 upper-division business units.

General Business Minor

	Units
Acct 4A	3
Elect from: B A 18, DS 73, Fin 120, Mgt 104, 106, 110, Mktg 100	8
Elect from not more than two fields (8 upper division): Acct, B A, DS, Fin, HRM, IS, Mgt, Mktg, PLM	11
Total	22

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. Financial Accounting Principles and Systems (3)
Not open to freshmen; meets requirements for Acct 1A. Financial accounting; accounting statements, transaction analysis, and data accumulation; partnership and corporation accounting. (CAN BUS 2)

4B. Managerial Accounting Principles and Systems (3)
Not open to freshmen; meets requirements for Acct 1B. 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. (CAN BUS 4)

120A. Intermediate Accounting I (4)
Prerequisite: Acct 1A or 4A; DS 71 or equivalent recommended. Acct 4B and 120A may be taken concurrently. Preparation and analysis of balance sheet and income statements; basic accounting theory and conceptual framework underlying financial accounting; theory of current and fixed assets; theory of current and noncurrent liabilities; and a review of applicable authoritative pronouncements.

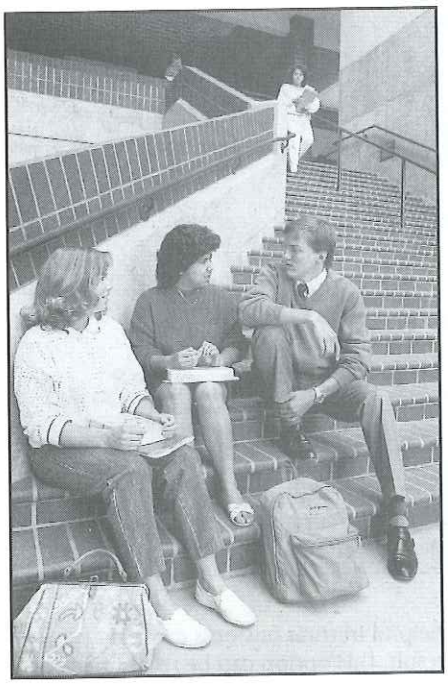
120B. Intermediate Accounting II (4)
Prerequisite: Acct 120A; DS 71 or equivalent recommended. An in-depth study of principles, procedures, and reporting requirements in financial accounting as applied to corporate entities; investments; revenue recognition; income tax allocation; pensions; leases; inflation accounting; error correction and principle changes; and cash flow. Special attention is given to authoritative pronouncements.

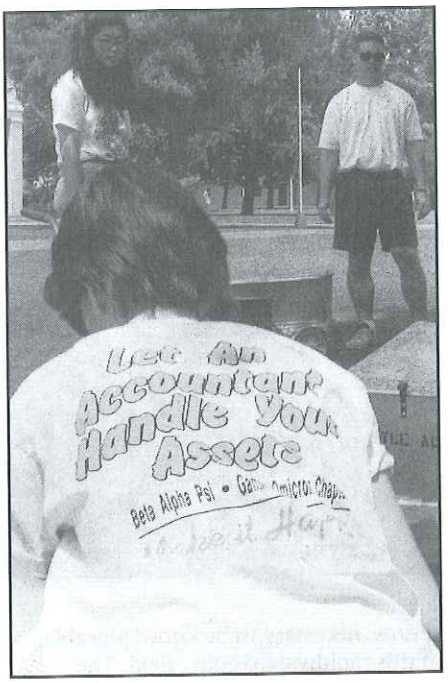
129. Accounting for Management and Taxation (3)
Not open to students with credit in Acct 120A, 132, and 144; not open for credit toward major in accounting. Prerequisite: Acct 1A and 1B or Acct 4A and 4B. Analysis and interpretation of financial statements. Use of accounting data by management for planning and control. Basic concepts of federal income taxes. Tax planning.

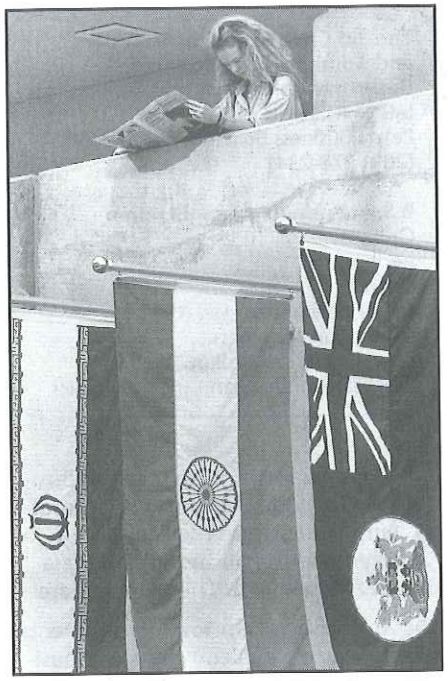
132. Cost Accounting (4)
Prerequisite: Acct 1A and 1B or 4A and 4B. DS 71 or equivalent and IS 50 recommended. Industrial cost accounting; general principles of product costing, standard costing, differential costing; master budgeting, flexible budgeting, and capital budgeting; emphasis on the three functions of management — decision making, planning, and control. (3 lecture, 2 lab hours) (Lab fee, $15)

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) (Lab fee, $15)

147. Advanced Accounting Information Systems (4)
Prerequisite: Acct 146. Analysis and design of expert systems in accounting and auditing; applications of database and telecommunications developments to accounting systems; control and audit implications of advances in computer technology. (3 lecture, 2 lab hours)

148. Accounting for Governmental and Nonprofit Organizations (4)
Prerequisite: Acct 120A, 132. Concepts, principles, and problems of accounting for governmental and nonprofit organizations. Budgeting, fund accounting, cost/benefit analysis, cash planning and control, and independent auditing are introduced in the context of making decisions in governmental and nonprofit organizations.

162. Auditing (4)
Prerequisite: Acct 120A, 120B, 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) (Lab fee, $15)

165. International Accounting (4)
Prerequisite: Acct 120A, 120B, 132. Accounting concepts, principles, and methods for multinational corporations. Currency for translation of financial statements, financial reporting, international accounting and auditing standards, and the managerial aspects of multinational transactions.

167. Advanced Accounting Problems (4)
Prerequisite: Acct 120B. Partnership, corporation, governmental, and institutional accounting.

189T. Topics in Accounting and Auditing (1-4)
Prerequisite: 18 units of accounting. Specialized study in a particular area of professional accountancy: accounting theory, auditing, accounting information systems, contemporary developments in financial and managerial accounting, and the practice of accountancy.

190. Independent Study (1-3; max see reference)
See *Academic Placement — Independent Study*. Approved for ***SP*** grading.

193. Supervised Work Experience (1)
Open only to business majors. Prerequisite: permission of instructor. Work-study: learning through on-the-job experience in a business. Written reports. ***CR/NC*** grading only.

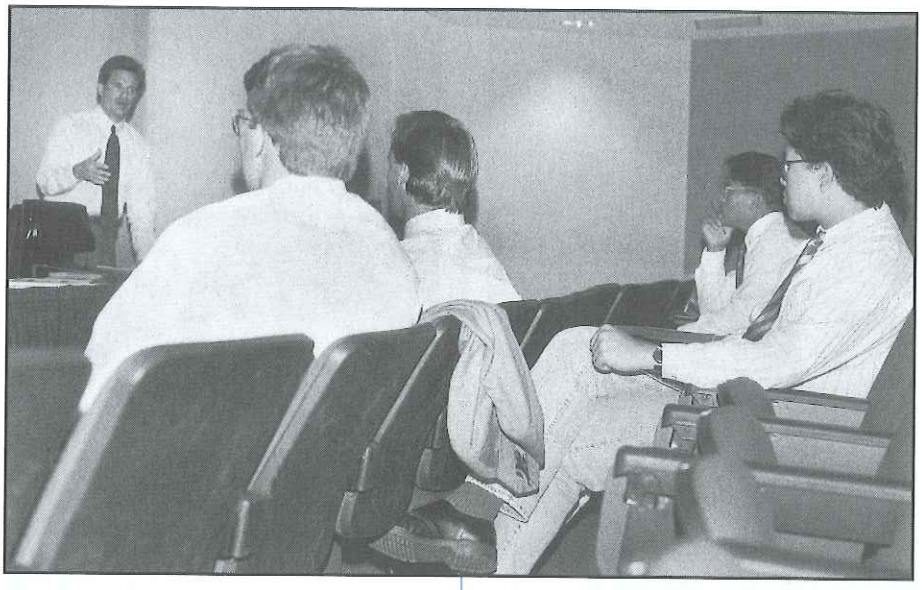
195. Internship (2-6; max total 6)
Open only to business majors. Prerequisite: permission of instructor. Work-study: student holds responsible position in business or government agency and reports on firm's operations and suggested improvements. *CR/NC* grading only.

200 Series Courses
Graduate courses are listed under *Business — Graduate Program.*

BUSINESS Finance and Business Law

The Sid Craig School of Business and Administrative Sciences
Department of Finance and Business Law
JAMES M. HIGHSMITH, *Chair*
Peters Business Building, Room 285
(209) 278-2341

B.S. in Business Administration
Options:
Agribusiness
Finance
Financial Services
International Business
Legal Environment of Business
Real Estate and Urban Land Economics



The Department of Finance and Business Law offers six options (areas of emphasis) within the Bachelor of Science in the 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 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 understanding the trade-off between risk and return, the time value of money, and 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 services 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, the *Financial Planning* track enables students to take the broad range of courses necessary to be knowledgeable in this rapidly expanding field. The *Risk Management and Insurance* track prepares students for careers not only within the insurance industry but also in business and government. More than half of all insurance employees hold professional, managerial, or technical jobs. Businesses and government seek insurance-trained employees to manage employee benefit plans and oversee risk management programs. Government also offers positions in insurance regulation and administration of social insurance programs.

The **International Business Option** introduces students to the fastest growing part of business today. The information and communications revolution — and declining travel costs — have made all businesses aware of global markets. The option stresses the role of global communications and the growth of entrepreneurial opportunities in worldwide markets, with special attention to California and the markets of the Pacific Basin.

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. For example, individuals working in the trust department of a bank or individuals working in areas of dispute resolution, such as arbitration, will benefit from a strong grounding in the legal environment. Many nonlawyers 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 have taken all courses necessary to qualify for taking the California Brokers License Examination.

Faculty and Facilities

The faculty of the Department of Finance and Business Law is comprised of more than 25 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, case studies, internships, and foreign studies programs. The broad background of the faculty and their strong commitment to business education assures students of a challenging and rewarding course of study.

Faculty

James M. Highsmith, *Chair*

Kuang C. Chen	Paul M. Lange
Tom Doyel	J. David Reitzel
Lynn M. Forsythe	Manuchehr Shahrokhi
Amir A. Jassim	Kuo-cheng Tseng
Ida M. Jones	Alan Rufus Waters
Deborah J. Kemp	Joseph W. Wilson
Barry P. Laiss	Rassoul Yazdipour

Bachelor of Science Degree Requirements

Business Administration Major

A 40-43 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 (see *Advising Note 1*) Acct 4A, 4B; B A 18; DS 73, 173; Fin 120; IS 50 (or demonstration of computer literacy); IS 160; Mgt 110 or 104-106, 187; Mktg 100; PLM 124	40-43
General Education (see *Advising Notes 2 and 3*)	54
Option requirements Business students all have one common major — business administration. Within the major, there are 13 options from which students can choose; each student is required to complete an option. The Department of Finance and Business Law offers six of these options.	24-31
Electives (see *Advising Note 4*)	0-6
Total	124-128

Advising Notes

1. Every upper-division business course has writing requirements, 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 course, or passing the Upper-Division Writing Examination) is a prerequisite to enrollment in Mgt 187.
2. Business students must take Econ 40 (or Ag Ec 1) and Econ 50 in BREADTH, Division 8. Business students must also complete DS 71 or one semester of approved equivalent college mathematics beyond intermediate algebra.
3. Successful completion (grade of *C* or better) of Engl 1 or its equivalent is a prerequisite to enrollment in upper-division business courses. Failure to successfully complete Engl 1 by the time a student has completed 30 units at CSUF shall subject the student to administrative/academic probation and possible subsequent disqualification.
4. Business students must complete a minimum of 51 units outside of the school (courses selected for G.E. may be included in these units) and a minimum of 40 upper-division business units.

Options

The six options available to students are outlined below. The completion of 24-31 units as required by the options, the General Education requirements, special course requirements, and the electives, which may include a minor, total the 124-128 units required for the Bachelor of Science in Business Administration.

Agribusiness Option	*Units*
Fin 121; B A 174; Ag Ec 110, 150, 160	15
Elect 4 from at least two areas: Fin 123, 128, 133, 137; B A 154, 175, 178; Ag Ec 153, 162, 163	12-13
Total	27-28

Finance Option	
B A 100; Fin 121, 122, 123, 128, 139	19
Elect 3 from Fin 131, 133, 137, 138, 143, 180; B A 150, 178	9
Total	28

Financial Services Option	
Fin 122, 128, 143, 150, 180; B A 100, 160	21*
Track (select one)	9-10
*Financial Planning Track***	(10)
Acct 144	(4)
Elect 2 from Fin 131, 133, 138, 146; B A 150, 151	(6)
Risk Management and Insurance Track	(9)
Fin 144, 146; B A 151	(9)
Total	30-31

* These courses should be taken in a different order. Consult the department adviser.

**Ask adviser about eligibility for Certified Financial Planner Comprehensive Exam.

*International Business Option**	
B A 174, 175, 176, 178	12
Mktg 176	3
Mgt 131	3
Electives**	9
Total	27

* Students selecting the International Business Option must successfully demonstrate conversational proficiency in a language other than English.

** Requires prior approval of faculty adviser.

Legal Environment of Business Option	
B A 150, 151, 155	9
Elect 2 from B A 101, 154, 156, 158, 160; HRM 157	6
Elect from approved upper-division courses in accountancy, business administration (including international business), finance, human resource management, management, marketing, logistics, decision science, information systems, production and operations management	9
Total	24

Real Estate and Urban Land Economics Option	
B A 100, 154	6
Fin 122, 180, 181, 182, 183	15
Elect 1 from Fin 123, 185, 186	3-4
Total	24-25

General Business Minor

	Units
Acct 4A	3
Elect from: B A 18, DS 73, Fin 120, Mgt 104, 106, 110, Mktg 100	8
Elect from not more than two fields (8 upper division): Acct, B A, DS, Fin, HRM, IS, Mgt, Mktg, PLM	11
Total	22

COURSES

Business Administration (B A)

18. Business and the Legal Environment (4)
Prerequisite: sophomore standing. Introduction to legal system; relation of ethics to law; administrative, criminal, tort, and labor law; and legal aspects of international trade. A more extensive study of the law of contracts and agency. Case studies; discussion and analysis.

50. Introduction to Business (1)
Various viewpoints on current business problems and developments presented by a different guest business executive each class meeting.

88. Public Law Environment of Business (1)
Not open to students who completed B A 18 at CSU Fresno. Relationship of ethics to law. Administrative law and government regulation framework, labor and employment law framework, and legal aspects of international trade.

100. Business and Real Estate Economics (3)
Prerequisite: Econ 40, 50. Applications of economic principles in business and real estate management; measure of profit, analysis of demand, cost analysis; price, wage, and public policies; case studies, analysis.

101. Business Ethics (3)
(A Eth 102A may be substituted for B A 101.) Ethical principles and their relevance to business practice. Managerial treatment of contemporary business problems from an ethical perspective. Areas examined include employee rights, workplace discrimination, environmental protection, consumer protection, and multinational business transactions. Case studies; discussion and analysis.

120. Business and Society (3)
Examination of dynamic societal pressures affecting business. Review of governmental, public and labor pressures on business in a changing environment; business' impact upon various segments of society. Ethical principles and their relationship to business. General Education CAPSTONE Cluster course.

150. Law and Business Activity (3)
Prerequisite: B A 18. Examination of the law of bailments, shipments, sales, commercial paper, and secured transactions. Nature of property; and the relation of the legal, ethical, and regulatory environment to commercial transactions. Case studies; discussion and analysis.

151. Law of Business Organizations (3)
Prerequisite: B A 18. Sole proprietorships, partnerships, limited partnerships, and corporations; advantages and limitations; social responsibilities. Effect of form on taxation and liability. Includes securities regulation, bankruptcy and insurance. Case studies; discussion and analysis.

154. Real Estate Law (3)
Meets California statutory course requirement for real estate broker's license. Prerequisite: B A 18. Legal aspects of acquisition and ownership of real estate; conveyances, mortgages, evidences of title; planning and zoning.

155. Government Regulation and Control of Business (3)
Prerequisite: B A 18. 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. Case studies; discussion and analysis.

156. Labor Law (3)
Prerequisite: Econ 40, 50; B A 18, Mgt 104, 106 recommended. Law of industrial relations; historical and current principles for legal settlement of labor-management disputes; statutes, court decisions, administrative rulings; case studies; individual presentations.

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.

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)
Prerequisite: for business majors, Fin 120; for others, permission of instructor. Competing in world marketplace. Impact of differing cultural, political, legal systems. Multinational corporations, importing, exporting, international contracts, investment across national borders. Forecasting government policies and changing market forces on world business conditions.

175. Management of Multinational Enterprises (3)
Prerequisite: B A 174 or permission of instructor. The rise of the multinational corporation. Global corporate management perspective. Managing legal, social, political, financial, and taxation interfaces. Personnel, production, and logistical tactics in a global strategy. Corporate negotiations with national government and private national interests.

176. World Commerce and Development (3)
Prerequisite: B A 174 or permission of instructor. World commerce, international investment, economic growth. Tools and techniques of international investment. Discovering and selecting international projects. Taxation, legal systems, government regulations; effect on foreign investment. International accounting practices.

178. International Finance (3)
Prerequisite: Fin 120. Evolution of international monetary system; balance of payment accounting; foreign exchange; forecasting exchange rates; management of foreign exchange risk; political risk analysis; foreign direct investment; international money and capital markets; Eurocurrency markets; international banking; international monetary and banking organizations.

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*. Approved for ***SP*** grading.

193. Supervised Work Experience (1)
Open only to business majors. Prerequisite: permission of instructor. Work-study: learning through on-the-job experience in a business. Written reports. ***CR/NC*** grading only.

195. Internship (3; max total 6)
Open only to business majors. Prerequisite: permission of instructor. Work-study: student holds responsible position in business or government agency and reports on firm's operations and suggested improvements. ***CR/NC*** grading only.

200 Series Courses
Graduate courses are listed under *Business — Graduate Program.*

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. Not recommended for business administration majors.

120. Principles of Finance (4)
Prerequisite: Acct 4A. Introduction to corporate financial management, investments, and financial institutions. Focus on financial policy, analysis, and valuation in a global environment. Topics include capital markets, risk and return, financial planning, capital budgeting, cost of capital, and working capital management. (3 lecture, 2 lab hours) (Lab fee, $15) (Former Fin 130)

121. Intermediate Financial Management (3)
Prerequisite: Fin 120. Modern theories of corporate finance; financial decision making under uncertainty; efficient allocation of financial resources; advanced financial planning and control strategies.

122. Financial Institutions and Financial Markets (3)
Prerequisite: Fin 120. Role of the Federal Reserve in monetary policy; interaction of fiscal and monetary policy; analysis of depository and nondepository financial institutions; regulatory issues in financial markets; public policy toward financial institutions. (Former Fin 135)

123. Business Forecasting (4)
Prerequisite: Fin 120; 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) (Lab fee, $15) (Former Fin 136)

128. Security Analysis (3)
Prerequisite: Fin 120. Analysis of securities markets; debt and equity instruments; options and futures; fundamental analysis; technical analysis. (Former Fin 134)

131. Entrepreneurial Finance (3)
Prerequisite: Fin 120. Using financial and entrepreneurial perspectives to make better decisions at each stage of the entrepreneurial process, from identification of opportunity to harvest. Issues: venture capital markets, deal structuring, valuations, later stage financing, going public and other harvesting methods. (Former Fin 189T section)

133. Futures Markets (3)
Prerequisite: Fin 120. Use of futures contracts as speculative investments and as hedging devices to reduce risk in securities portfolios and in domestic and international business operations. Topics: financial futures, commodity futures, futures markets, fundamental and technical analyses, hedging strategies. (Former Fin 189T section)

137. Credit Management (3)
Prerequisite: Fin 120, 122. Structure of consumer and commercial credit markets; credit management policies and strategies; risk management for interest and exchange rate variability; financial asset and liability management policies; technical and legal problems of credit management.

138. Portfolio Management and Theory (3)
Prerequisite: Fin 120, 128. Methods of determining the most desirable group of securities to build in an investment portfolio; portfolio performance evaluation; managing and hedging risk; program trading and portfolio insurance.

139. Financial Management (3)
Prerequisite: senior level standing. Finance majors must have completed (or take concurrently) all other required courses in the Finance Option. Nonfinance majors need permission of the instructor. Integration of analysis and policy for business organizations; decisions under uncertainty; analyzing and solving cases.

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.

146. Risk Management (3)
Property, liability, and personnel pure-loss exposures. Risk management programs effectively treating the costs of pure risk, including loss control and loss financing techniques. Analysis of various types of commercial property and liability insurance contracts.

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 120; Fin 180 or permission of instructor. Theory and determinants of real property value. Methods used in urban and rural property appraisals. Statistical techniques and the appraisal process; special purpose appraisals. Fieldwork 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 120; Fin 180 or permission of instructor. 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*. Approved for ***SP*** grading.

193. Supervised Work Experience (1)
Open only to business majors. Prerequisite: permission of instructor. Work-study: learning through on-the-job experience in a business. Written reports. ***CR/NC*** grading only.

195. Internship (3; max total 6)
Open only to business majors. Prerequisite: permission of instructor. Work-study: student holds responsible position in business or government agency and reports on firm's operations and suggested improvements. ***CR/NC*** grading only.

200 Series Courses
Graduate courses are listed under *Business — Graduate Program.*

BUSINESS Information Systems and Decision Sciences

The Sid Craig School of Business and Administrative Sciences
Department of Information Systems and Decision Sciences
KELLY J. BLACK, *Acting Chair*
Peters Business Building, Room 287
(209) 278-2823

B.S. in Business Administration
Options:
Information Systems
Decision Systems

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. Two options (areas of concentration) within the Bachelor of Science in the Business Administration degree program, plus a certificate program are offered.

The **Information Systems Option** offers an introduction to the vast area of computer technology and provides students with the knowledge and skills needed to identify, analyze, and understand managerial problems, design solutions to these problems utilizing the computer, and implement the technology into an organization. Included are courses in systems analysis, data communication, end-user computing, database systems, as well as traditional programming classes.

There are three technical tracks within the IS option. These allow some degree of specialization beyond the option core courses. These tracks are:

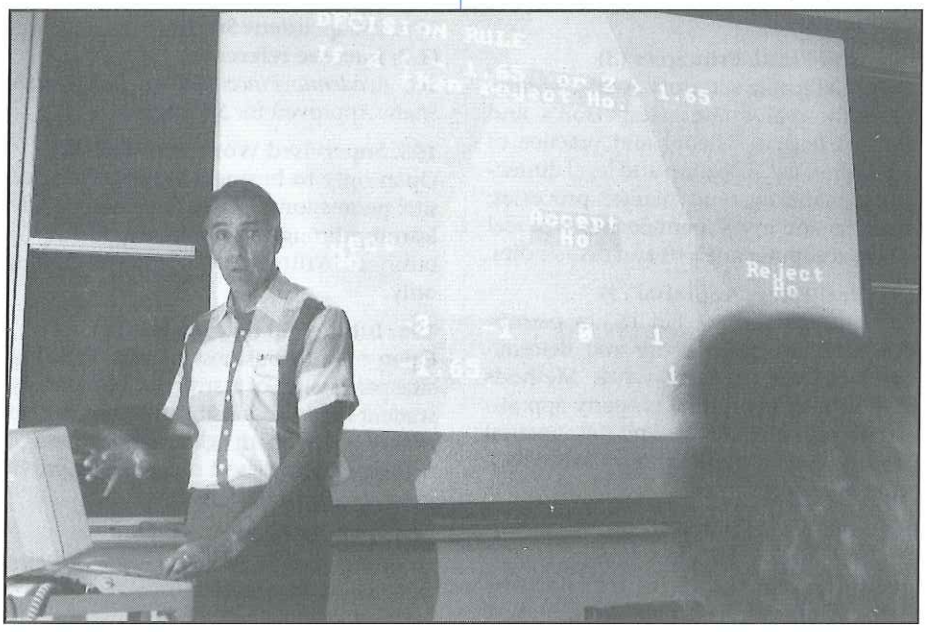
Information Resource Management. The IRM specialist will be able to take on jobs such as network administrator in a firm using local area networks. The training emphasizes management skills needed in a technical area and provides knowledge in hardware evaluation and acquisition.

End-User Support. Helping others use the computer to get their job done is the role of the EUS person. This person knows how to get the most from personal productivity software, such as word processors, as well as how to design and implement systems. This person can function in an environment of stand-alone microcomputers and in a company with mainframes and many networks.

Systems Design and Programming. Skilled in both traditional and newer computer languages, the SDP person is the one who analyzes and develops the larger systems that drive most business enterprises. Using a database orientation, the SDP graduate can use fourth-generation language development skills to provide speedy and effective solutions to business problems.

The **Decision Systems Option** students study quantitative analysis of business data to support management decisions. The 18 units in the option include applied mathematics, applied statistics, operations research, and systems analysis. Skilled analysis of problems and data is critical for competitive upper-level management. Students learn to use powerful computer software to minimize computation effort. Entering students need good mathematical and reasoning talents.

The **Certificate in Business Data Processing** is directed toward enhancing the knowledge of candidates for entry level data processing related positions. After candidates have demonstrated that they have met prerequisites for the certificate program, the approval of the program coordinator or of the department chair must be obtained before students may enter the program. Each student's individually designed program consists 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 two 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. Ten laboratory rooms with 220 microcomputers are the busiest rooms in the Leon S. Peters Business Building.

Faculty and Facilities

The Department of Information Systems and Decision Sciences employs more than 20 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 database 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 students a unique opportunity to become acquainted with the developments in the field of computer technology and applications.

Faculty

Kelly J. Black, *Acting Chair*

Randy J. Anderson
Donald L. Beringson
Priscilla M. Chaffe-Stengel
Harry G. Costis
Mostafa Elhag
Myron E. Hatcher
Charlotte J. Hiatt
Richard C. Lacy
Eric F. Lane
Patricia A. LaRosa
Wallace C. Liu
William S. Mallios
Kathleen E. Moffitt
Arlene A. Motz
Sasan Rahmatian
Peter Simis
Gayle A. Sobolik
Rafael Solis
Donald N. Stengel
Uthai Tanlamai
Tomasz Wielicki

Bachelor of Science Degree Requirements

Business Administration Major

A 40-43 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 (see *Advising Note 1*) Acct 4A, 4B; B A 18; DS 73, 173; Fin 120; IS 50 (or demonstration of computer literacy); IS 160; Mgt 110 or 104-106, 187; Mktg 100; PLM 124	40-43
General Education (see *Advising Notes 2 and 3*)	54
Option requirements Business students all have one common major — business administration. Within the major, there are 13 option areas from which students can choose; each student is required to complete an option. The Department of Information Systems and Decision Sciences offers two of these options.	18-27
Electives (see *Advising Note 4*)	3-12
Total	124

Advising Notes

1. Every upper-division business course has writing requirements, 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 course, or passing the Upper-Division Writing Examination) is a prerequisite to enrollment in Mgt 187.
2. Business students must take Econ 40 (or Ag Ec 1) and Econ 50 in BREADTH, Division 8. Business students must also complete DS 71 or one semester of approved equivalent college mathematics beyond intermediate algebra.
3. Successful completion (grade of *C* or better) of Engl 1 or its equivalent is a prerequisite to enrollment in upper-division business courses. Failure to successfully complete Engl 1 by the time a student has completed 30 units at CSUF shall subject the student to administrative/academic probation and possible subsequent disqualification.
4. Business students must complete a minimum of 51 units outside of the school (courses selected for G.E. may be included in these units) and a minimum of 40 upper-division business units.

Options

The two options available to students are outlined below. The completion of the 18-27 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 in Business Administration.

Information Systems Option	Units
IS core IS 105W, 109, 150, 161, 165	15
Technical Track (select one)	12
Information Resource Management	
IS 116, 117, 164, or 168	(9)
Approved elective (see below)	(3)
End-User Support	
IS 117, 164, 166	(9)
Approved elective (see below)	(3)
Systems Design and Programming	
IS 54, 151 or 152, 166	(9)
Approved elective (see below)	(3)
Approved electives Elect from Acct 132; DS 163, 181; IS 108, 116, 117, 151, 152, 164, 168, 189T, 190; Mgt 126 or any other approved upper-division IS elective.	
Total	27

Decision Systems Option	Units
DS 180	3
DS 181	3
DS 183	4
DS 187	4
DS 188	4
Total	18

It is recommended that students take IS 105W to satisfy the upper-division writing skills requirement. Students who plan to continue with graduate work in this area should take calculus.

Certificate in Business Data Processing Requirements

Before entering the program, students will need to demonstrate that they have completed at least 6 units of elementary accounting and are conversant in two computer languages (preferably BASIC and COBOL). Approval of the certificate program coordinator or the department chair is necessary. Students 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.

	Units
Required Courses IS 161, 165, 166	9
Elective Courses Select minimum of 6 units: IS 108, 109, 151, 152, 164, 168, 190, 195	6

Both IS 190 and 195 cannot be counted for credit toward certificate.

General Business Minor

	Units
Acct 4A	3
Elect from: B A 18, DS 73, Fin 120, Mgt 104, 106, 110, Mktg 100	8
Elect from not more than two fields (8 upper division): Acct, B A, DS, Fin, HRM, IS, Mgt, Mktg, PLM	11
Total	22

COURSES

Decision Sciences (DS)

71. Quantitative Analysis I (3)
Prerequisite: Students must meet the CSB ELM requirement; one year of high school geometry. Quantitative formulation and solution of problems of modern management, including linear programming and introductions to mathematics of finance, probability, and differential calculus. General Education CORE, Quantitative Reasoning.

72. Quantitative Analysis II (3)
Prerequisite: DS 71. Applications of selected tools of mathematical analysis in the quantitative formulation and solution of problems of modern management.

73. Statistical Analysis I (3)
Prerequisite: ELM Exam, DS 71 or equivalent; Econ 40, 50 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.

129. Technology Assessment (3)
Prerequisite: Core math, Engl 1. Assessment of impacts of emerging technologies, dynamics of technological change, commercialization issues, technology forecasting, risk assessment, environmental impacts, regulatory issues, technology planning and management, examination of key technologies. (Former DS 189T section)

163. Business Models and Simulation (3)
Prerequisite: IS 150. Computer modeling of inventory, queuing, network, financial, and planning problems. (2 lecture, 2 lab hours) (Former IS 163)

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, nonparametric methods, Bayesian decision theory. (2 lecture, 2 lab hours) (Lab fee, $15)

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 nonprobability 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 173. Linear and nonlinear regression models including analysis of 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) (Lab fee, $15)

180. Microcomputer Tools for Information Analysis (3)
Prerequisite: DS 73, IS 160. Extensive use of microcomputer packages. Spreadsheet, database, statistical, graphic, and communication software for business modeling and management support. Database files creation and transferring data and statistical analysis results to spreadsheet. (2 lecture, 2 lab hours) (Lab fee, $15)

181. Business Modeling Using Micros (3)
Prerequisite: DS 73. Building business models using microcomputers. Applications in accounting, finance, marketing, production. Linear programming, sensitivity analysis, simulation, queuing methods, PERT/CPM. (2 lecture, 2 lab hours) (Lab fee, $15)

183. Time Series and Business Forecasting (4)
Prerequisite: DS 73. Computer and software tools for forecasting, classical time series models. Linear regression as a forecasting tool. Serial correlation and generalized least sequences. The Box-Jenkins Model; case studies. (3 lecture, 2 lab hours) (Lab fee, $15)

187. Advanced Information Analysis (4)
Prerequisite: DS 183. Regression and other multivariable statistical methods. Applications in accounting, finance, marketing, and production. Analysis of variance, covariance, factor analysis, discriminant analysis, log linear models, cluster analysis, and multidimensional scaling. (3 lecture, 2 lab hours) (Lab fee, $15)

188. Decision Support and Expert Systems (4)
Prerequisite: DS 180, 181. Overview of the basic topics in decision support and expert systems. Methodological foundation for integration of quantitative and expert knowledge with the computer for improving the decision-making process. Integrating databases, DSS models, and business analysis. Introduction to artificial intelligence and expert systems. (3 lecture, 2 lab hours) (Lab fee, $15)

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*. Approved for *SP* grading.

193. Supervised Work Experience (1)
Open only to business majors. Prerequisite: permission of instructor. Work-study: learning through on-the-job experience in a business. Written reports. *CR/NC* grading only.

195. Internship (3; max total 6)
Open only to business majors. Prerequisite: permission of instructor. Work-study: student holds responsible position in business or a government agency and reports on firm's operations and suggested improvements. *CR/NC* grading only.

200 Series Courses
Graduate courses are listed under *Business — Graduate Program.*

Information Systems (IS)

1L. 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) (Lab fee, $15)

2L. Word Processing Applications (2)*
Prerequisite: IS 1L or equivalent. Introduction to word processing applications on microcomputers. Refinement of keyboarding techniques for personal and business applications. (4 lab hours) (Lab fee, $15) (Former IS 2)

50. Computer Concepts (3)
Introduction to computer hardware and software systems, impact of computers on society, ethical issues, application of computer technology in many career fields, hands-on laboratory experience with personal productivity software and programming. (2 lecture, 2 lab hours) (Lab fee, $15)

54. Programming Languages — COBOL (3)
Prerequisite: ELM Exam, IS 50. Programming in COBOL, using batch and on-line systems. (2 lecture, 2 lab hours) (Lab fee, $15)

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. Advanced Word/Information Processing Applications (3)
Prerequisite: IS 2L or equivalent. Advanced word/information processing applications, including additional desktop publishing applications. Also meets the needs of students working toward a standard secondary teaching credential in business subjects. (2 lecture, 2 lab hours) (Lab fee, $15)

* Not more than 6 units of credit in typewriting/keyboarding will be allowed toward any degree.

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. Database 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 Information Systems (3)
Prerequisite: IS 1L or equivalent. The study of automated information systems used to improve the efficiency and effectiveness of today's office. Emphasis is given to major technologies and procedures used to support the creation, processing, reproduction, storage, and distribution of information. Attention is also given to environmental factors, human issues, and training and developmental procedures. (2 lecture, 2 lab hours) (Lab fee, $15)

116. Office Systems Management (3)
The study of the management and administration of the office support function, including management of facilities, workstations, office support services, and productivity. Attention is also given to evaluation and acquisition of hardware and software as well as to personnel management and career development.

117. Data and Records Control (3)
Management of creation, use, maintenance, and disposition of data/records. Examines management of data/records stored on paper, microforms, and computers. Emphasis placed on ways of introducing, maintaining, and updating a data records program.

122. Office Services and Procedures (3)
Duties and responsibilities of executive secretarial positions. (2 lecture, 2 lab hours) (Lab fee, $15)

150. End-User Computing (3)
Prerequisite: IS 50. Use of data resources in business problem solving. Integration of microcomputer packages with systems development concepts to implement information systems. Topics include information centers, 4GLs, and decision support tools. (2 lecture, 2 lab hours) (Lab fee, $15) (Former IS 189T section)

151. Advanced Applications Software — BASIC (3)
Prerequisite: IS 50, 54, or other programming language; Acct 4A, 4B; IS 161 recommended. Advanced software development using the QuickBASIC language and libraries of standard procedures on microcomputers. Emphasis on structure and style, using interactive screens, input validation, and graphics. Program planning, logic structures, sorts and searches, variable passing, and sequential, random, and indexed file access. (2 lecture, 2 lab hours) (Lab fee, $15)

152. Advanced Applications Software — COBOL (3)
Prerequisite: IS 54, Acct 4A, 4B, 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) (Lab fee, $15)

160. Management Information Systems (3)
Prerequisite: IS 50 or demonstration of computer literacy, and upper-division standing. Management concepts in the role/administration of information/information system functions in organizations; enhancement of management with computers; management of systems development: planning and budgeting, analysis, design, implementation and operation of computer-based systems; measurement of operating performance.

161. Information Systems Analysis (3)
Prerequisite: IS 50, Acct 4A, 4B, and upper-division standing. To develop a basic understanding of the systems approach to problem solving, systems development life cycle and system analysis. Furnishes students with classical and structured documentation tools and techniques, logical systems specification and methods for analyzing systems.

164. Systems Configurations (3)
Prerequisite: IS 160. In-depth study of computer hardware and software technology: processors, storage devices, I/O devices; distributed processing LANs and WANs; sources; selection, installation, and implementation processes.

165. Database Systems (3)
Prerequisite: IS 150, 160, 161. Data structures; file design; database design concepts emphasizing the relational model; data administration; application of database management system software. (2 lecture, 2 lab hours) (Lab fee, $15)

166. Information Systems Design (3)
Prerequisite: IS 54, 161 and 165. Logical design of information systems, including the design of system-user interfaces, database, program structure, program logic, and controls. Requires students to integrate these elements in designing a real-world system as a term project. (2 lecture, 2 lab hours) (Former IS 162) (Lab fee, $15)

168. Information Systems Management (3)
Prerequisite: Acct 4A, 4B, IS 160, 161. Theories, costs, and problems associated with the operation of information systems. Organizational environments, security and legal issues, information center operations, end-user support, strategic information system planning, policy development, control and integration of information systems.

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*. Approved for ***SP*** grading.

193. Supervised Work Experience (1)
Open only to business majors. Prerequisite: permission of instructor. Work-study: learning through on-the-job experience in a business. Written reports. ***CR/NC*** grading only.

195. Internship (3; max total 6)
Open only to business majors. Prerequisite: permission of instructor. Work-study: student holds responsible position in business or a government agency and reports on firm's operations and suggested improvements. ***CR/NC*** grading only.

200 Series Courses
Graduate courses are listed under *Business — Graduate Program.*

BUSINESS Management

The Sid Craig School of Business and Administrative Sciences
Department of Management
GERALD L. JONES, *Chair*
Peters Business Building, Room 289
(209) 278-2851

B.S. in Business Administration
Options:
Human Resource Management
Management
Production and Logistics Management

The Department of Management offers three options (areas of emphasis) within the Bachelor of Science in the Business Administration degree program. These options are:

The **Human Resource Management Option** focuses upon the people who 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 **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 **Production and Logistics Management Option** is designed to provide students with integrated knowledge of production and operations management, transportation and physical distribution management, and purchasing and materials management. This option prepares individuals to become professionals in a rapidly expanding field that has exciting career opportunities.

Faculty and Facilities

The faculty of the Department of Management is comprised of 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.

Faculty

Gerald L. Jones, *Chair*
David C. Anderson
Karen D. Bowerman
Luis Ma. R. Calingo
Diana L. Gilbertson
Susan M. Halfhill
Harry G. Harris
Dewey E. Johnson
Mark J. Keppler
Jahanguir M. Moghaddam
Julie B. Olson
Victor G. Panico
Joseph J. Penbera
Douglas B. Simpson
Richard D. Tellier
Manab Thakur
Jia Wang

Bachelor of Science Degree Requirements

Business Administration Major

A 40-43 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 (see *Advising Note 1*) Acct 4A, 4B; B A 18; DS 73, 173; Fin 120; IS 50 (or demonstration of computer literacy); IS 160; Mgt 110 or 104-106, 187; Mktg 100; PLM 124	40-43
General Education (see *Advising Notes 2 and 3*)	54
Option requirements Business students all have one common major — business administration. Within the major, there are 13 option areas from which students can choose; each student is required to complete an option. The Department of Management offers three of these options.	24-30
Electives (see *Advising Note 4*)	0-9
Total	124-127

Advising Notes

1. Every upper-division business course has writing requirements, 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 course, or passing the Upper-Division Writing Examination) is a prerequisite to enrollment in Mgt 187.
2. Business students must take Econ 40 (or Ag Ec 1) and Econ 50 in BREADTH, Division 8. Business students must also complete DS 71 or one semester of approved equivalent college mathematics beyond intermediate algebra.
3. Successful completion (grade of *C* or better) of Engl 1 or its equivalent is a prerequisite to enrollment in upper-division business courses. Failure to successfully complete Engl 1 by the time a student has completed 30 units at CSUF shall subject the student to administrative/academic probation and possible subsequent disqualification.
4. Business students must complete a minimum of 51 units outside of the school (courses selected for General Education may be included in these units) and a minimum of 40 upper-division business units.

Options

The three options available to students are outlined below. The completion of the 24-30 units as required by the option, the General Education requirements, special course requirements, and the electives, which may include a minor, total the 124-127 units required for the Bachelor of Science in Business Administration.

Human Resource Management Option	*Units*
HRM 150, 152, 153, 154, 157, 159	18
Elect from: B A 156; Econ 150, 152; HRM 189T; Mgt 127, 189T; Spch 167 (by permission of HRM faculty); approved Independent Study or Internship (3 units maximum)	6
Total	24

Management Option	*Units*
Mgt 180, 182	8
HRM 150	3
Mgt 131 or an international HRM 189T, Mgt 189T or PLM 189T, as approved by the Department of Management	3
Select four courses from one of the following tracks (or the 12-unit Advanced Management Block Program, Mgt 102A-B-C-D)	12-16
1. Decision Making: DS 178 or 181; Fin 123; Mktg 120 or 125; PLM 114, 136, 160	
2. Organizational Behavior: HRM 152, 153, 154, 157; Mgt 126, 127; Psych 149 or Spch 167 or Soc 149	
3. Entrepreneurship: Fin 131; Mgt 129, 130, and 3 additional units by permission of department chair	
4. Management of Nonprofit Organizations: Acct 148; B A 101 or 120; Mgt 130, 133; Pl Si 182	
Total	26-30

Management Option Advising Notes

1. The following courses may be applied to any category above with prior Department of Management approval (6 units maximum): HRM 189T; Mgt 189T, 190, 193, 195; PLM 189T.
2. B A 120 and Soc 149 cannot be double counted as fulfilling both the General Education requirement and an elective within the option.

Production and Logistics Management Option	*Units*
PLM 114, 136, 160, 177	16
Elect three courses from the following areas, but no more than two courses per area	9-12
1. Logistics/Management: HRM 150; I E 114; Mktg 115; PLM 119	
2. System/Control: Acct 132; I E 111; I T 117, 119	
3. Analytical: DS 181; Fin 123; Mgt 130	
Total	25-28

PLM Option Advising Note

1. With the approval of a PLM adviser, one of the following courses may be substituted under any of the above three areas: PLM 189T, 190, 193, 195.

General Business Minor

	Units
Acct 4A	3
Elect from: B A 18, DS 73, Fin 120, Mgt 104, 106, 110, Mktg 100	8
Elect from not more than two fields (8 upper division): Acct, B A, DS, Fin, HRM, IS, Mgt, Mktg, PLM	11
Total	22

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; recruitment; selection; performance appraisal; motivation; compensation; communications; social issues and government influence. Individual and group projects; written and oral reports.

152. Labor Relations and Collective Bargaining (3)
Prerequisite: HRM 150 or instructor's permission. Relations between employers and organized employee groups; organization, election, and certification procedures; techniques of collective bargaining; labor agreements; grievance handling; settlement of industrial disputes. Class discussion, student presentations.

153. The Staffing of Organizations (3)
Prerequisite: HRM 150 or instructor's permission. In-depth study of major staffing issues such as recruitment and selection of employees. Emphasis on practical application of issues for future managers and

HRM professionals. Group projects, class discussion, guest lecturers, and experimental exercises.

154. Compensation Administration (3)
Prerequisite: HRM 150. Analysis of compensation programs for 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.

157. Legal Aspects of Human Resource Management (3)
Prerequisite: HRM 150 or instructor's permission. Survey of law related to employment, including discrimination, wrongful discharge, safety and health requirements, and other government regulations. Attention given to prevention and resolution of legal complaints and to emerging public policy issues. Oral presentations, discussion.

159. Seminar in Human Resource Management (3)
Prerequisite: last-semester senior, HRM 152, 153, 154 (may be taken concurrently), 157 and completion of upper-division writing skills requirement. Integration 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.

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.

190. Independent Study (1-3; max see reference)
See *Academic Placement — Independent Study*. Approved for ***SP*** grading.

193. Supervised Work Experience (1)
Open only to business majors. Prerequisite: permission of instructor. Work-study: learning through on-the-job experience in a business. Written reports. ***CR/NC*** grading only.

195. Internship (3; max total 6)
Open only to business majors. Prerequisite: permission of instructor. Work-study: student holds responsible position in business or government agency and reports on firm's operations and suggested improvements. ***CR/NC*** grading only.

200 Series Courses
Graduate courses are listed under *Business — Graduate Program*.

Management (Mgt)

101. Basic Management Block (13)
Meets CSB requirements for IS 105W; Mgt 104, 106, 110; Mktg 100. Not open to students with credit in IS 105W; Mgt 104, 106, 110; Mktg 100. Prerequisite: first-semester junior standing, Econ 40, 50; Acct 4A; DS 73; application, and permission of instructor. Special integrative undergraduate seminar: 13 hours weekly; marketing, business communication, administration, organizational behavior. Small group projects; case studies; 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. Focus on planning techniques, organization theory, and ethical control processes in domestic and international business. Case analysis, management simulations, and written projects.

106. Behavioral Principles of Management (3)
Not open to students with credit in Mgt 110. Focus upon the human dimensions and interpersonal skills of management, including motivation, job design, leadership, conflict, communication networks, and organizational change. Case analysis, written projects, small group exercises, development of communication and interpersonal skills.

110. Administration and Organizational Behavior (6)
Not open to students with credit in Mgt 104 or Mgt 106. Development of administrative, interpersonal, and organizational skills of management; with emphasis on planning, organizing, controlling, learning, perception, communication networks, job design, leadership, group dynamics reward systems, managing conflict, change, ethics, and stress. Case analysis, written projects, small group exercises.

126. Total Quality Management (3)
Prerequisite: Mgt 104 and 106 or 110, or permission of instructor. Total Quality Management (TQM) philosophy; examination and analysis of the process and content issues involved in implementing TQM in organizations; general systems theory; managing change; quality improvement teams; problem solving processes. Lecture, discussion, case analysis, guest speakers, field trips.

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. Introduction to Entrepreneurship (3)
An introduction to the entrepreneurship process. Covers all phases from conception of the venture to its birth. The focus is on searching for and recognizing opportunities, networking, gathering resources and converting opportunities into new businesses.

130. Venture Lab (4)
The main objective is to provide students with the opportunity to apply their previously acquired knowledge to real venture situations. Through "lab-style" formats featuring real entrepreneurs and cases, students will get a chance to take an interactive and creative role in analyzing ventures.

131. International Management (3)
Prerequisite: Mgt 104 and 106 or 110; or permission of 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. Seminar discussion and cases.

133. Managing Nonprofit Organizations (3)
Prerequisite: Mgt 104 and 106 or 110, or permission of instructor. Examination and analysis of the critical features of nonprofit organizations. Topics include board selection, needs assessment, grant writing, issues analysis, managing volunteers, service delivery systems, liaison functions, fund raising, and strategic planning. Lecture, case studies, field experience, and research.

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 CSB core requirements and the upper-division writing skills 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. Satisfies the senior major requirement for the B.S. in Business Administration.

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*. Approved for ***SP*** grading.

193. Supervised Work Experience (1)
Open only to business majors. Prerequisite: permission of instructor. Work-study: learning through on-the-job experience in a business. Written reports. ***CR/NC*** grading only.

195. Internship (3; max total 6)
Open only to business majors. Prerequisite: permission of instructor. Work-study: student holds responsible position in business or a government agency and reports on firm's operations and suggested improvements. ***CR/NC*** grading only.

200 Series Courses
Graduate courses are listed under *Business — Graduate Program.*

Production and Logistics Management (PLM)

114. Logistics Management (4)
Prerequisite: Mktg 100. Systems approach to supply and distribution activities aimed at minimizing cost and maximizing customer service. Emphasis on role of transportation, warehousing, inventory control, order processing, materials handling, packaging, procurement, and information in logistics management. (Former LOM 114; LOG 114)

119. Transportation Management (3)
Prerequisite: PLM 114. Current tools and techniques in transportation and physical distribution management including carrier-shipper cooperation, intracarrier and intercarrier competition, computer usage, carrier costing and pricing, and customer service. (Former LOM 119; LOG 119)

124. Production/ Operations Management (4)
Prerequisite: DS 173 (may be taken concurrently), Mgt 104 or 110. Production/ operations systems and problems in manufacturing and service organizations, including product development and process selection; facility location and design; operations planning and control; materials handling; inventory control; quality control; project management; just-in-time philosophy. Lecture discussion; computer simulation. (Former LOM 124; POM 124)

136. Purchasing and Materials Management (4)
Prerequisite: PLM 124. 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. (Former LOM 136; LOG 136)

160. Manufacturing Planning and Control (4)
Prerequisite: PLM 124. Material requirements planning; capacity management; production activity control; just-in-time philosophy; master planning; inventory management; distribution requirements planning; computer applications of manufacturing planning and control; database development and maintenance. (Former LOM 160; POM 160)

177. Problems in Production and Logistics Management (4)
Prerequisite: PLM 114, 136, 160. Integration of production and logistics management with other functional areas of a business system. Emphasis upon American and worldwide productivity and competitiveness, integrated production and logistics management goals and strategies, multiplan and international production and logistics management. (Former LOM 177; POM 177)

189T. Topics in Production and Logistics Management (1-3; max total 3 if no topic repeated)
Prerequisite: senior standing or permission of instructor. Topics in production and logistics management. (Former LOM 189T; POM 189T; LOG 189T)

190. Independent Study (1-3; max see reference)
See *Academic Placement — Independent Study*. Approved for ***SP*** grading. (Former LOM 190; POM 190; LOG 190)

193. Supervised Work Experience (1)
Open only to business majors. Prerequisite: permission of instructor. Work-study: learning through on-the-job experience in a business. Written reports. ***CR/NC*** grading only. (Former LOM 193; POM 193; LOG 193)

195. Internship (3; max total 6)
Open only to business majors. Prerequisite: permission of instructor. Work-study: student holds responsible position in business or a government agency, and reports on firm's operations and suggested improvements. ***CR/NC*** grading only. (Former LOM 195; POM 195; LOG 195)

BUSINESS Marketing and Logistics

The Sid Craig School of Business and Administrative Sciences
Department of Marketing and Logistics
GERALD O. BRYAN, *Chair*
Peters Business Building, Room 388
(209) 278-7830

B.S. in Business Administration
Marketing Option

The Department of Marketing and Logistics offers an option (area of emphasis) in marketing and assists in offering the Production and Logistics Management (PLM) Option. PLM is listed under the Department of Management.

The **Marketing Option** permits a student to explore national and international applications 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 Marketing and Logistics is comprised of individuals who have studied and pursued business careers throughout the world. 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 marketing.

Faculty

Gerald O. Bryan, *Chair*

Douglas A. Cords
David S. Halfhill
Reza Motameni
Richard D. Nordstrom
Beng S. Ong
Richard L. Pinkerton
William E. Rice
Charles S. Sherwood

Bachelor of Science Degree Requirements

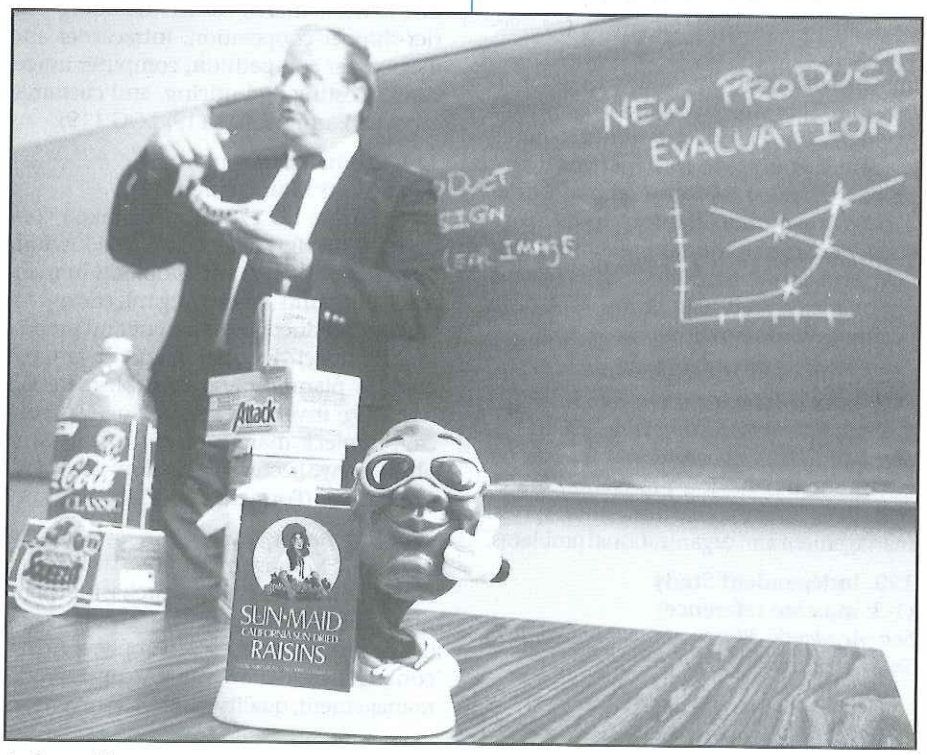
Business Administration Major

A 40-43 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 (see *Advising Note 1*) Acct 4A, 4B; B A 18; DS 73, 173; Fin 120; IS 50 (or demonstration of computer literacy); IS 160; Mgt 110 or 104-106, 187; Mktg 100; PLM 124	**40-43**
General Education (see *Advising Notes 2 and 3*)	**54**
Marketing Option	**23-24**
Mktg 102; Mktg 115 or PLM 114; Mktg 120 or 125; Mktg 188	(16)
Elect two of the following: Mktg 130, 132, 134; 136 or 138; 176 or 195	(7-8)
Electives (see *Advising Note 4*)	**0-10**
Total	**124**

Advising Notes

1. Every upper-division business course has writing requirements, 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 course, or passing the Upper-Division Writing Examination) is a prerequisite to enrollment in Mgt 187.
2. Business students must take Econ 40 (or Ag Ec 1) and Econ 50 in BREADTH, Division 8. Business students must also complete DS 71 or one semester of approved equivalent college mathematics beyond intermediate algebra.
3. Successful completion (grade of *C* or better) of Engl 1 or its equivalent is a prerequisite to enrollment in upper-division business courses. Failure to successfully complete Engl 1 by the time a student has completed 30 units at CSUF shall subject the student to administrative/academic probation and possible subsequent disqualification.
4. Business students must complete a minimum of 51 units outside of the school (courses selected for General Education may be included in these units) and a minimum of 40 upper-division business units.



Professor Bill Rice shows students how marketers apply creative thinking.

5. 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.
6. Students desiring more depth may also take Mktg 189T, 190, or 193. This would count as free electives outside the requirements of the Marketing Option.
7. For PLM (Production and Logistics Management) courses and degree requirements, see listing under Department of Management.

General Business Minor

	Units
Acct 4A	3
Elect from: B A 18, DS 73, Fin 120, Mgt 104, 106, 110, Mktg 100	8
Elect from not more than two fields (8 upper division): Acct, B A, DS, Fin, HRM, IS, Mgt, Mktg, PLM	11
Total	22

COURSES

Logistics courses are listed under Production and Logistics Management (PLM) in the Department of Management.

Marketing (Mktg)

100. Marketing Concepts (4)
Prerequisite: Econ 40, 50. Study/analysis of the challenges and problems faced by individuals, organizations (profit and nonprofit) who attempt to expedite and facilitate exchange in a dynamic environment. Emphasis on strategic marketing planning and the decision-making process in the marketplace.

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)

115. Marketing Channels (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 100. Fundamentals of market and marketing analysis, research procedure, methods of analysis; individual or group projects are conducted, data is analyzed and results are presented. (3 lecture, 2 lab hours) (Lab fee, $15)

125. Analysis of Marketing Operations (4)
Prerequisite: DS 173; PLM 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.

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. Students examine what makes promotions work, when and where to promote, and how promotions utilize data from the Marketing Information System.

134. Product Marketing and Management (4)
Prerequisite: DS 173; Mktg 102. 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.

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.

138. Psychology of Personal Persuasion (4)
Prerequisite: Mktg 100 or permission of instructor. Students learn to use communication and persuasion skills in selling and negotiating settings involving consumer and industrial goods or services. Videotaped presentations, guest lectures, role playing, and skill development. (3 lecture, 2 lab hours)

176. International Marketing (3)
Prerequisite: Mktg 100; B A 174. Examination and evaluation of business policies and practices of firms engaged in world trade; the marketing area; organization, product, channels of distribution, marketing research, demand creation and other management problems. General Education CAPSTONE Cluster course.

188. Marketing Strategy (4)
Prerequisite: Mktg 115 or PLM 114; Mktg 102; Mktg 120 or 125. Last semester senior standing recommended. 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.

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*. Approved for ***SP*** grading.

193. Supervised Work Experience (1)
Open only to business majors. Prerequisite: permission of instructor. Work-study: learning through on-the-job experience in a business. Written reports. ***CR/NC*** grading only.

195. Internship (3; max total 6)
Open only to business majors. Prerequisite: permission of instructor. Work-study: student holds responsible position in business or a government agency and reports on firm's operations and suggested improvements. ***CR/NC*** grading only.

200 Series Courses
Graduate courses are listed under *Business — Graduate Program*.

BUSINESS Graduate Program

The Sid Craig School of Business and Administrative Sciences
Graduate Business Program
DONALD N. STENGEL, *Director*
Peters Business Building, Room 183
(209) 278-2107

Master of Business Administration (M.B.A.)
M.S. in Accountancy (M.S.A.)

Master of Business Administration

The Master of Business Administration degree program is designed as a graduate, professional education for managers of business, agriculture, education, government, and nonprofit organizations. The program prepares students broadly in the essential business concepts and tools, and in their application to problems that managers face. The program offers elective area courses that provide advanced preparation in special areas of professional practice.

Admission. The program is open to college graduates without regard to the area of undergraduate study. Applicants are expected to show intellectual promise sufficient to perform satisfactorily in the program, and upon graduation, to perform effectively as professional managers. Applicants must submit the following to be considered for admission:

1. a completed CSUF Graduate Application form
2. a completed M.B.A. Program Application form
3. complete university or college transcripts
4. official record of the Graduate Management Admission Test
5. two letters of recommendation appropriate for evaluation of professional promise
6. description of work experience.

Program Requirements

The M.B.A. is awarded to students upon completion of requirements in three groups of courses. These groups are generally completed in sequence. Students may not take Group II or Group III courses prior to the semester they complete their Group I requirements.

Group I
The following five courses or equivalent knowledge are required: MBA 200, 201, 203, 204, 205.

Equivalent knowledge may be demonstrated through examinations offered two times each year before the beginning of fall and spring semesters.

M.B.A. Degree Requirements

	Units
Group II	18
MBA 210, 211, 212, 213, 214, and 215	
Group III	15-21
Select one of the following elective areas	(9-12)
Accounting	(9)
MBA 220, 221, 222	
Finance	(9)
Select from MBA 230*, 231, 232, 233	
Human Resource Management	(12)
MBA 240, 241, 242, 243	
Management Information Systems	(9)
Select from MBA 250, 251, 252, 253	
Marketing Management	(9)
Select from MBA 260*, 261, 262, 263	
International Business	(9)
Select from MBA 221, 231, 241, 251, 261	
General M.B.A.	(9)
Select from MBA 220, 230, 240, 250, 260, 270	
Additional approved elective**	(0-3)
MBA 279	(3)
Select one of the following culminating experiences	(0-6)
A management project MBA 216 and 298	(6)
A thesis MBA 216 and 299	(6)
A comprehensive examination	(0)
Total	33-39

* Required course in elective area.
** Not required for students completing Human Resource Management elective area or students doing a thesis or project. A list of approved electives is available in the Graduate Business Program Office.

Master of Science in Accountancy

The M.S.A. 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 (accountancy major) 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.

The M.S.A. degree requires the following specific prerequisite courses or their equivalents: MBA 200, 201, 203, 204, 205; Acct 120A, 120B, 132, 144, 146, 162, 167.

M.S.A. Degree Requirements

	Units
Financial Accounting Option	
Core: MBA 220, 222, 251, and MSA 223	12
Other required courses: MBA 212, 221; MSA 224, 225	12
Electives from: MBA 210 and 216	3
One approved elective*	3
Total	30
Taxation Option	
Core: MBA 220, 222, 251, and MSA 223	12
Other required courses: MSA 226, 227, 228	9
Electives from: MSA 225, 229, Acct 145, or another approved graduate business course numbered between MBA 220 and 299*	9-10
Total	30-31

* Lists of approved electives are available in the Graduate Business Program Office.

GRADUATE COURSES

(See *Course Numbering System.*)

Master of Business Administration (MBA)

200. Managerial Economics (3)
Prerequisite: differential calculus, admission to graduate business program or permission of director. Logic and methods of economic analysis for business decisions. Multivariate, constrained optimization; production, cost, supply; buyer behavior, consumer demand, derived demand; forecasting; market structure, pricing, negotiation; government regulation; risk, uncertainty; linear programming. (Former Bus 202)

201. Accounting and Information Systems (3)
Prerequisites: electronic spreadsheet literacy, and either admission to graduate program in business or permission of director. Concepts and terminology of financial and managerial accounting and information systems. Transaction processing systems and planning and control systems integrated with data capture, data classification, information storage and organization, information access and display/reporting. (Former Bus 205; Bus 209)

203. Methods of Decision Sciences (3)
Prerequisites: linear functions, familiarity with PC-based microcomputing and spreadsheets, and either admission to the graduate business program or permission of director. Statistical concepts, inferential statistical methods, management science techniques. Descriptive statistics; discrete random variables; expected value decision theory; continuous distributions; sampling distributions; estimation; hypothesis testing; analysis of variance; linear regression and correlation; chi-square tests; time series analysis and forecasting; simulation. (2 seminar, 2 lab hours) (Lab fee, $15) (Former Bus 208; Bus 243)

204. Global Environment of Business (3)
Admission to the graduate business program or permission of director. Introduction to global business environment. Cultural, economic, political, and legal systems. Advances in global trade, marketing, production, accounting, taxation, financial and payment systems. Impact of technological advances, multinational corporations, and nation-states on the performance and competitiveness of businesses. Lecture and case. (Former Bus 247)

205. Production and Operations Management (3)
Prerequisites: MBA 203 or concurrently, admission to the program or permission of director. Production and operations systems; product development; process selection; facility location and design; transportation management; method analysis; job design; work measurement; planning and control; project management; inventory control; just-in-time philosophy; total quality management. (Former Bus 216; Bus 255)

206. Seminar in Business Communication (3)
Investigation and analysis of the communication process as it relates to managerial effectiveness. Business communication theory; analysis of communication alternatives; effective business writing and speaking; case studies. (Former Bus 257)

210. Seminar in Organization Theory and Development (3)
A seminar that applies advanced management concepts, both micro-level and macro-level, to the solution of complex organizational problems in a rapidly changing and increasingly competitive environment. (Former Bus 241)

211. Seminar in Management Information Systems (3)
Prerequisites: MBA 200 and 201. Managerial and technical issues in computer-based information systems. Decision support; artificial intelligence, expert, and strategic information systems; system analysis, design, and implementation; financial, human resource, marketing, and production information systems. (Former Bus 246)

212. Seminar in Financial Management (3)
Prerequisites: MBA 200, 201, and 203. Theories, concepts, and techniques in financial management; financial analysis, planning, forecasting, and working capital; risk and return analysis, valuation models, cost of capital and capital budgeting; capital structure, dividend policy and long-term financing. Special contemporary topics in financial management. (Former Bus 218; Bus 244)

213. Seminar in Managerial Accounting (3)
Prerequisites: MBA 200 and 201. In-depth consideration of several topical areas in accounting analysis related to both profit and not-for-profit organizations, with emphasis on currently controversial issues. Analysis includes budgetary planning, cost analysis, internal control and case studies. (Former Bus 245)

214. Seminar in Marketing Management (3)
Prerequisites: MBA 200-204; 203 or concurrently. Strategic and operational planning of the marketing operation and marketing management process: market measurement and forecasting; segmentation and positioning; product, price, service, and distribution; advertising, sales management, and sales promotion; and introduction to implementation and control in marketing. (Former Bus 217; Bus 242)

215. Seminar in Regulatory and Ethical Environment of Business (3)
Prerequisites: MBA 210-214 or concurrently. Relationships among personal ethics, corporate social responsibility, and regulatory policy on business decision-making. Evaluation of business decisions, corporate goals, and regulatory statutes and process in terms of their ethical quality and adherence to sound policy. (Former Bus 248)

216. Seminar in Business Research (3)
Prerequisites: MBA 200-205. Logic and methods of survey and experimental research methods for business. Multivariate analytical methods for interpretation of survey and experimental results. Research using secondary data for business decisions. Preparation of a plan for thesis, project, or other business research. (Former Bus 221)

220. Seminar in Cost Accounting (3)
(See MSA 220.)

221. Seminar in International and Nonprofit Accounting (3)
(See MSA 221.)

222. Seminar in Accounting Theory (3)
(See MSA 222.)

230. Seminar in Advanced Financial Management (3)
Prerequisite: MBA 212. An applied case-method analysis of theories, concepts, and analytical techniques of financial management, financial analysis and planning, capital budgeting, leasing, refunding, mergers and acquisitions, corporate restructuring, financial engineering, derivative securities. Lecture and cases. (Former Bus 244)

231. Seminar in International Finance (3)
Prerequisite: MBA 212. An advanced study of theories and techniques in global finance and investment. The international

financial system; currency markets; risks and exposure management; balance of payments; political risks; international banking and capital markets; eurocurrencies; portfolio and foreign direct investment. (Former Bus 272)

232. Seminar in Investments and Portfolio Management (3)
Prerequisite: MBA 212. Advanced analysis of equity, fixed-income, and derivative securities; operation of financial markets and investment environment. Strategic and tactical decisions related to institutional and individual portfolio management. Lecture and cases. (Former Bus 232)

233. Seminar in Management of Financial Institutions (3)
Prerequisite: MBA 212. Comprehensive analysis of the role of financial institutions and markets in allocating capital. Application of economic and financial analytical techniques to the managerial problems of financial institutions. Lecture and cases. (Former Bus 236)

240. Seminar in Human Resource Management: Theory, Policy, and Practice (3)
Prerequisite: MBA 210. Analysis of the theories behind, and practical application of, human resource management policies of private and public organizations. Particular emphasis on government employment policy. Lecture and cases. (Former Bus 250)

241. Seminar in Comparative Human Resource and Industrial Relations Systems (3)
Prerequisite: MBA 210. Analysis of human resource and industrial relations practices of transnational and multinational corporations operating in the global environment. Particular emphasis on the emergence, evaluation, structures, functions and challenges of labor movements in developed and less developed countries. Lecture and cases.

242. Seminar in Compensation and Benefits Administration (3)
Prerequisite: MBA 210. Analysis of the behavioral and social issues involved in designing and administering of employee compensation systems and benefit programs. Particular emphasis on the psychological relationship between pay and performance and the micro and macro forces that affect pay. Lecture and cases. (Former Bus 252)

243. Seminar in Organizational Staffing (3)
Prerequisite: MBA 210. Analysis of the techniques for recruiting, selecting, evaluating, and allocating employees to meet organizational goals with emphasis on sociological, psychological, and cultural factors effecting work attitude and behavior.

250. Seminar in End User Computing (3)
Prerequisite: MBA 211. Use of data resources in business problem solving. Analysis, formulation and implementation of business models using microcomputer packages; managerial topics and decision support tools. Lecture, case, and lab. (Former Bus 262)

251. Seminar in Information Systems in a Global Environment (3)
Analysis of systems through study and application of systems theory; special emphasis on information systems. Application of systems theory in national and international environments; lecture and case analysis.

252. Seminar in Information Systems Management (3)
Prerequisite: MBA 211. Study of hardware, software, and behavioral issues related to the design, acquisition, implementation, and management of contemporary data processing systems underlying global information systems. Lecture and cases. (Former Bus 265)

253. Seminar in Information Technology (3)
In-depth analysis of a selected information technology with application to business problem solving and decision making. Topics from database; telecommunications; decision support systems; expert systems; artificial intelligence. Lecture and cases. (Former Bus 266)

260. Seminar in Market Analysis and Forecasting (3)
Prerequisite: MBA 214. Analysis of buyer and seller components of markets. Emphasis on design and evaluation of marketing plans. Primary and secondary data in measuring market response. Application of extrapolation and programmatic forecasting methods. Cases, projects, and industry analysis. (Former Bus 240)

261. Seminar in Global Marketing Management (3)
Prerequisite: MBA 214. Analysis of problems of product design, channel structure, promotion, logistics, and inter-organization cooperation and control in international marketing. Negotiation, bargaining, and contracting across national boundaries. Legal issues affecting global marketing operations, cases, projects, and special studies.

262. Seminar in Marketing Organization and Operations Management (3)
Prerequisites: MBA 210, 214, and 260. Organization for marketing operations: design of strategic business units, functional and matrix structures, and incentive systems. Implementation of marketing plans: sales force, advertising, channel, logistics management. Information systems for support of operation and control of the marketing operation.

263. Seminar in Marketing Management Issues (3)
Prerequisites: MBA 214 and 260. With approval of instructor, each student selects a marketing management problem or issue, and prepares a major investigative paper. Student will present results to seminar for professional critique.

270. Seminar in Business Ventures (3)
Prerequisite: second-year MBA standing or permission of instructor. Designed for effective decision-making at each stage of an entrepreneurial process. Such process starts with identification of opportunities and ends with final stages of deal structuring and harvest. (Former MBA 289T section)

279. Seminar in Business Policy and Strategy (3)
Prerequisite: completion of Group II or concurrently. Evolution of strategic management, globalization of strategy, role of multinationals, competitive advantage strategy formulation; implementation; control issues; role of top and middle management; ethics; and culture.

289T. Seminar in Business Topics (3)
Prerequisite: completion of 9 units of 200-level courses. Theory and developments in accounting, administration and organization, business education, communication, consumer economics, finance, industrial and regional studies, real estate and urban economics, information systems, decision sciences, resource economics, risk and insurance, or transportation. (Former Bus 289T section)

290. Independent Study (1-3)
Prerequisite: Advanced to Candidacy; permission of director and instructor. Approved for ***SP*** grading. (Former Bus 290)

292. Readings in Business (2-3)
Prerequisite: Advanced to Candidacy; permission of director. Approved for ***SP*** grading. (Former Bus 292)

298. Management Project (3)
Prerequisites: MBA 216, Advanced to Candidacy and permission of director. See *Criteria for Thesis and Project.* Examination of the work and problems general managers of business units face as chief strategists and organization builders. Independent analysis of an operating industry, business, or a principals functional area of an organization. Case studies and field research project. Approved for ***SP*** grading. (Former Bus 298)

299. Thesis (3)
Prerequisites: MBA 216, Advanced to Candidacy and permission of director. See *Criteria for Thesis and Project.* Preparation, completion, and submission of an acceptable thesis for the master's degree. Approved for SP grading. (Former Bus 299)

Master of Science in Accountancy (MSA)

220. Seminar in Cost Accounting (3)
(Same as MBA 220.) Prerequisites: MBA 200-205 and 213 or M.S.A. prerequisites. The development, interpretation, and uses of accounting reports for management planning, control, and decision-making. Cost-volume-profit analysis; linear programming, capital budgeting; inventory models; standards, budgets, and analysis variance for planning and control purposes; divisional performance; and transfer pricing issues. (Former Bus 263)

221. Seminar in International and Nonprofit Accounting (3)
(Same as MBA 221.) Prerequisites: MBA 200-205 and 213 or M.S.A. prerequisites. Accounting for various types of funds as applied to governmental and other not-for-profit organizations. Global practices and accounting standards. Managerial problems of multinational enterprises. International auditing standards and taxation issues.

222. Seminar in Accounting Theory (3)
(Same as MBA 222.) Prerequisites: MBA 200-205 and MBA 213 or M.S.A. prerequisites. 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. (Former Bus 260)

223. 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 computer, usage and reliance on internal control; operational auditing. Lecture and cases. (Former Bus 264)

224. Seminar in Current Accounting and Reporting Issues (3)
Prerequisites: Acct 120A and 120B. 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. Lecture and cases. (Former Bus 276)

225. Seminar in Comparative Tax Planning and Decision Making for Business Transactions (3)
Prerequisite: Acct 144. An examination of comparative income tax planning and decision making with respect to business transactions; review income tax consequences of transactions on different business forms, i.e., partnerships, corporations and S Corporations. Tax research and tax preparer ethics are integrated into the decision-making process. (Former Bus 269T)

226. Seminar in Estate Planning (3)
Prerequisites: Acct 144 and 145. Estate planning techniques to maximize wealth and minimize taxes. In-depth discussion of federal and state systems for taxing transfers. Theory, practice, and legal requirements for reporting by fiduciaries of estates and trusts. (Former Bus 270)

227. Seminar in 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. Lecture and cases. (Former Bus 277)

228. Seminar in Taxation of Partnerships and Subchapter S Corporations (3)
Prerequisites: Acct 144; 145 or concurrently. An examination of fundamental legal concepts, technical rules, and computational procedures relating to federal taxation of partnerships and Subchapter S Corporations. Areas of emphasis include partnership formation, operations, and termination. (Former Bus 278)

229. Seminar in Taxation of Property Transactions and Accounting Methods (3)
Prerequisites: Acct 144; 145 or concurrently. A comprehensive coverage of property transactions and tax accounting methods including definition, realization, recognitions, and computation of capital gains and losses, various tax accounting methods and planning opportunities relative to individuals and corporations. Lecture and cases. (Former Bus 279)

Business and Administrative Sciences (Bus)

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, colleges, and universities; evaluation and trends of current programs.

IN-SERVICE COURSES

(See *Course Numbering System.*)

Business (Bus)

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)

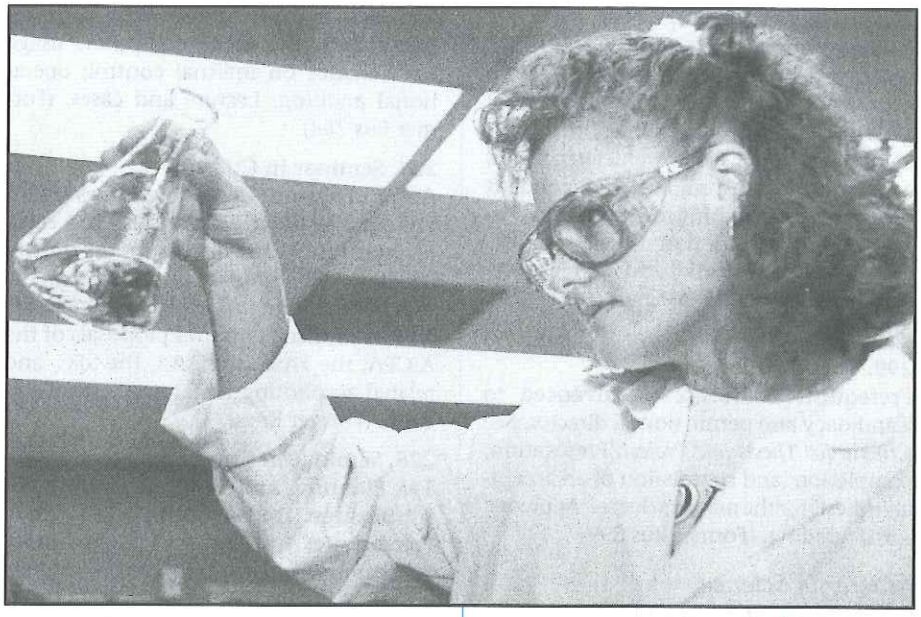
389. Workshop in Business Education (1-6; max total 6)
Credit may not exceed 1 unit per week of workshop activity. Open only to experienced teachers. Study and critical analysis of problems in content and teaching in secondary school business education.

398. Business Internship (1-6; max total 6)
Designed for graduate students who need or desire supervised work experience. ***CR/NC*** grading only.

Chemistry

School of Natural Sciences
Department of Chemistry
DAVID L. ZELLMER, *Chair*
Science Building, Room 380
(209) 278-2103

B.A. in Chemistry
B.S. in Chemistry
M.S. in Chemistry
Minor 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 in Chemistry is accredited by the American Chemical Society. Students who satisfactorily complete the program are recommended by the department for certification as graduate chemists by the American Chemical Society. Students completing the Bachelor of Arts degree may be recommended for certification by completing additional requirements of the American Chemical Society.

Faculty

Twenty-one 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, USDA 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, GC-MS, atomic absorption spectrometers, Fourier Transform IR (FTIR), liquid scintillation counter, Pye-Unicam, Lambda 6 and Cary 17D UV-VIS spectrophotometers, spectrofluorometer, radiation equipment, liquid chromatographs, high speed refrigerated centrifuges, and several gas chromatographs. Facilities include several Macintosh and IBM computers 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

David L. Zellmer, *Chair*

Sydney Bluestone
Dale C. Burtner
Richard P. Ciula
David L. Frank
Joseph R. Gandler
Helen J. Gigliotti
Barry H. Gump
Donald K. Kunimitsu
Ronald L. Marhenke
Barbara J. Mayer
C. Dean Mitchell
Kin C. Ng
Howard K. Ono
Stephen A. Rodemeyer
Kenneth H. Russell
Jose Sy
Joe D. Toney
Alexander Vavoulis
Kin-Ping Wong
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 37-39 units of chemistry. The Bachelor of Science degree with a major in chemistry consists of a total of 124 units including a minimum of 45 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.

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.

Bachelor of Arts Degree Requirements

The Bachelor of Arts degree in Chemistry is intended primarily for those students who plan to take extensive coursework in other areas in addition to chemistry. This degree is suitable for prehealth professional students (premedical, predental, etc.), secondary school teaching credential students, and biochemistry students oriented toward biotechnology and the health professions. This degree is *NOT* intended for students who anticipate a career in chemistry, or who expect to continue their education in pursuit of graduate degrees.

Note: Chemistry majors may not take courses listed in category A or B below for ***CR/NC*** grades.

The Bachelor of Arts degree in Chemistry requires the student to complete the courses listed under either:

I. Biochemistry/Prehealth Professional Emphasis, or
II. Teaching Credential Emphasis.

I. Biochemistry/Prehealth Professional Emphasis

	Units
A. The B.A. Chemistry Major	**37-39**
Core Program	
Chem 1A, 1B, 102, 108, 128A, 128B, 129A, 155	(30)
Emphasis	
Chem 156	(3)
Elect two courses from Chem 129B, 142, 153, 241A, 241B, 250T	(4-6)
B. Additional requirements	**31-34**
BioSc 1A-B	(8)
Elect two courses from BioSc 140A, BioSc 140B, Micro 140 or other approved courses	(7)
Math 75, 76 (Math 77 strongly recommended)	(8)
Phys 2A, 2B (or Phys 4A, 4AL, 4B, 4BL, 4C strongly recommended)	(8-11)
C. Remaining General Education requirements	**42***
D. Electives	**9-14**
Total	**124**

* Of the 51 required General Education units, 9 are satisfied by Phys 2A, 2B (or 4A, 4AL, 4B, 4BL) (Division 1) BioSc 1A (Division 2) and Math 75 (CORE).

The following is an example of a program for the B.A. in Chemistry, Biochemistry/Prehealth Professional Emphasis:

1st Semester — Fall	Units
Chem 1A	5
Math 75	4
Engl 1	3
Hist 11 or 12 or Pl Si 2	3
	15

2nd Semester — Spring	
Chem 1B	5
Math 76	4
Phys 2A or 4A, 4AL	4
Hist 11 or 12 or Pl Si 2	3
	16

3rd Semester — Fall	
Chem 128A	3
Chem 129A	2
Phys 2B or 4B, 4BL	4
General Education	7
	16

4th Semester — Spring	
Chem 128B	3
Chem 102	5
Phys 4C	3
Electives or General Education	5
	16

5th Semester — Fall	
Chem 108	4
*Chem 155	3
Electives or General Education	9
	16

6th Semester — Spring	
**Chem 156	3
Electives or General Education	12
	15

7th Semester — Fall	
Electives or General Education	15

8th Semester — Spring	
Electives or General Education	15
Total	**124**

* Offered fall semester only.
** Offered spring semester only.

II. Teaching Credential Emphasis

The Single Subject Waiver Program for Physical Science leading to the B.A. in Chemistry enables one to teach chemistry, physics, and earth science at the secondary school level. The waiver program includes the following:

	Units
A. The B.A. Chemistry Major	**36**
Core Program	
Chem 1A, 1B, 102, 108, 128A, 128B, 129A, 155	(30)
Emphasis	
Chem 111, 139	(6)
B. Additional requirements	**30**
C Sci 20 or 40	
Geol 1	
Math 75, 76 (Math 77 strongly recommended)	
P Sci 168	
Phys 2A, 2B (or Phys 4A, 4AL, 4B, 4BL, 4C strongly recommended), Phys 102	
C. Remaining General Education requirements	**45***
D. Electives (you may satisfy some education requirements here; see information below on *Clear Teaching Credential*)	**13**
Total	**124**

* Of the 51 required General Education units, 6 are satisfied by the B.A. core and additional requirements.

To receive the Clear Teaching Credential, students must complete a 5th year program of 30 units beyond the baccalaureate degree. Normally, most credential candidates complete the Single Subject Waiver Program in Physical Science for the B.A. degree, and satisfy the education requirements as their 5th year program.

Education courses can be taken during baccalaureate studies, but only those taken during the *second semester of the senior year* can be used to satisfy the 5th-year, 30-unit requirement for the Clear Teaching Credential (as long as those units are not being used to satisfy unit requirements for the B.A. degree).

The following is an example of a program leading to a B.A. in Chemistry and a teaching credential in physical science at the secondary level. This sample program emphasizes the need to take course sequences in mathematics and physics prior to Chem 108. In addition, it specifies certain semesters for some courses offered only once a year.

1st Semester — Fall	*Units*
Chem 1A	5
Math 75	4
Engl 1	3
Hist 11 or 12 or Pl Si 2	3
	15

2nd Semester — Spring	
Chem 1B	5
Math 76	4
Phys 2A or 4A, 4AL	4
Hist 11 or 12 or Pl Si 2	3
	16

3rd Semester — Fall	
Chem 128A	3
Chem 129A	2
Phys 2B or 4B, 4BL	4
General Education	7
	16

4th Semester — Spring	
Chem 128B	3
Chem 102	5
Phys 4C	3
**Phys 102	3
Electives or General Education	2
	16

5th Semester — Fall	
Chem 108	4
*Chem 155	3
C Sci 20 or 40	4
Electives or General Education	5
	16

6th Semester — Spring	
**Chem 139	3
Chem 111	3
Electives or General Education	9
	15

7th Semester — Fall	
**P Sci 168	3
Electives or General Education	12
	15

8th Semester — Spring	
Electives or General Education	15
Total	**124**

Bachelor of Science Degree Requirements

The Bachelor of Science degree in Chemistry is intended for students who plan a career in chemistry. The B.S. degree is accredited by the American Chemical Society. Students who satisfactorily complete this program are recommended by the department for certification as graduate chemists by the American Chemical Society. The B.S. degree prepares students to enter the job market or for graduate study leading to an advanced degree, such as a Master of Science or Doctor of Philosophy.

Note: Chemistry majors may not take courses listed in category A or B below for *CR/NC* grades.

	Units
A. The B.S. Chemistry Major	**46**
Chem 1A, 1B, 102, 106, 110A, 110B, 111, 123, 124, 128A, 128B, 129A, 129B, 155	
B. Additional requirements	**23**
Math 75, 76, 77; Phys 4A, 4AL, 4B, 4BL, 4C	
C. Remaining General Education requirements	**45***
D. Electives	**10**
Recommended: Chem 130, 140T, 142, 153, 156, 160, 190	
Total	**124**

* Of the 51 required General Education units, 6 are satisfied by Phys 4A, 4AL, 4B, 4BL (Division 1) and Math 75 (CORE).

Transfer students are strongly urged to consult their adviser.

Many of the courses listed above have chemistry or other prerequisites. For that reason, the following sample program leading to a B.S. in Chemistry is provided. This sample program emphasizes the need to take course sequences in mathematics and physics prior to Chem 110A. In addition, it specifies certain semesters for some courses that are offered only once a year (Chem 123 and Chem 155 in the fall; Chem 124 in the spring). Finally, this program is constructed in such a way as to leave adequate time for independent study experience (Chem 190) in the senior year.

If a student wishes to deviate significantly from this sample program, particularly in regard to chemistry, physics, and mathematics requirements, it is very important that an alternate program be developed in consultation with a departmental adviser. Any course substitutions or other changes to degree requirements can only be initiated by submitting a written request to the chair of the Chemistry Department.

1st Semester — Fall	*Units*
Chem 1A	5
Math 75	4
Engl 1	3
Hist 11 or 12 or Pl Si 2	3
	15

2nd Semester — Spring	
Chem 1B	5
Math 76	4
Phys 4A, 4AL	4
Hist 11 or 12 or Pl Si 2	3
	16

3rd Semester — Fall	
Chem 128A	3
Chem 129A	2
Math 77	4
Phys 4B, 4BL	4
General Education	3
	16

4th Semester — Spring	
Chem 128B	3
Chem 129B	2
Chem 102	5
Phys 4C	3
General Education	3
	16

5th Semester — Fall	
Chem 110A	3
*Chem 155	3
*Chem 123	3
Chem or other elective	2
General Education	5
	16

6th Semester — Spring	
Chem 110B	3
Chem 111	3
**Chem 124	2
General Education	8
	16

7th Semester — Fall	
Chem 106	4
Chemistry or other elective	3
Chem 190 (recommended) or other elective	3
General Education	4
	14

* Offered fall semester only.
** Offered spring semester only.

8th Semester — Spring

Chem 190 (recommended) or other elective	3
Chemistry or other elective	3
General Education	9
	15
Total	**124**

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 and 1B or 3A and 4), Organic Chemistry (8 and 109), Quantitative Analysis (105), and one or more upper-division chemistry courses, such as 125, 150, 151, 153, 156.

Physical Science Minor

The Physical Science Minor offers an opportunity for both nonscience and science majors to diversify into important and interesting fields. It consists of 21 units of courses selected according to one of the patterns below:

	Units
A. Chem 3A and 3B*	7
Phys 2A and 2B*	8
Upper-division electives**	6
	21
B. Chem 1	3
Phys 2A and 2B*	8
Geol 1	4
Upper-division electives**	6
	21
C. Chem 3A and 3B*	7
Phys 10	4
Geol 1	4
Upper-division electives**	6
	21

For chemistry, geology or physics majors, all courses must be outside the major department. The revised program must be approved by the chair of the major department.

* Chem 1A may be substituted for Chem 3A, and Chem 1B may be substituted for Chem 3B. Phys 4A and 4AL may be substituted for Phys 2A, and Phys 4B and 4BL may be substituted for Phys 2B.

** The upper-division electives may be any upper-division courses for which the student is qualified, from the three departments. Courses with very few prerequisites are Chem 139; Geol 105, 114, 151, 168, 169; Phys 145; P Sci 106, 168.

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 is 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-one of the 30 units required for the degree must be in chemistry. An option in agricultural chemistry is available in the School of Agricultural Sciences and Technology. For specific requirements, consult the departmental graduate adviser; for general requirements, see *Division of Graduate Studies.*

(See also *Admission to Graduate Standing, Advancement to Candidacy, Program Requirements,* and *Criteria for Thesis and Project.)*

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 24 units in 200 series (see *specific requirements*)	24
Approved electives in chemistry or related fields	6
Total	**30**

Specific requirements: Chem 201 (1 unit); 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 or 222, (iii) 225, 226, or 227, (iv) 230 or 235, (v) 241A or 242. Chem 260 recommended.

Other courses may be specified after examination of the student's record and his or her performance on the departmental diagnostic examinations.

Plan B

M.S. Degree with Comprehensive Examination	***Units***
Courses in chemistry, including at least 24 units in 200 series (see *specific requirements*)	24
Approved courses in chemistry or related fields may include biology, engineering, geology, mathematics, physics, etc.) according to the student's objective	6
Total	**30**

Specific requirements: Chem 201 (1 unit); 280 (at least 2 units); 295 (2 units); and 3 units each from 4 of the 5 following groupings: (i) 211 or 215, (ii) 220 or 222, (iii) 225, 226, or 227, (iv) 230 or 235, (v) 241A or 242.

Other courses may be specified after examination of the student's record and his or her performance on the departmental diagnostic examinations.

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.*

Biotechnology Certificate Program

California State University, Fresno offers a Certificate of Advanced Study Program in Biotechnology. This intensive one-year postbaccalaureate program emphasizes molecular biology and a wide range of laboratory skills at the forefront of modern biotechnology. The biotechnology field is growing rapidly, and as new products and applications are commercialized, there is increased need for highly skilled personnel capable of working in both research and production areas. Enrollment is limited to 12 to 15 students per year, who work closely with faculty in a variety of lecture and laboratory courses. Among the techniques studied are purification of biological macromolecules, gene splicing, DNA sequencing, culturing of mammalian cells, hybridoma production, and plant cell culturing and cloning.

The Certificate Program can lead to potential careers in expanding fields, such as

drug and hormone production in the pharmaceutical industry, monoclonal antibody production for medical diagnostics, crop improvement, industrial bioprocessing and medical research. The program also provides a background for further postgraduate studies in fields such as biochemistry, molecular biology and agricultural biotechnology. Some of the courses may also be used at CSUF as components of master's degree programs in biology, chemistry, plant science, and related departments.

Courses include: Molecular Biology (Biol/Chem 241A-B), Techniques in Protein Purification (Biol/Chem 242), Nucleic Acid Technology Lab (Biol/Chem 243), Cell Culture/Hybridoma Laboratory (Biol/Chem 244), Micropropagation (Plant Science 102), and Seminar in Molecular Biology/Biotechnology (Biol/Chem 248).

COURSES

Chemistry (Chem)

AR. Elementary Chemistry (2)
For students without high school chemistry or those requiring a slower paced introduction to basic chemistry concepts. Emphasis on beginning concepts of chemistry and problem-solving skills. Dimensional analysis, atoms, atomic structure, bonding, formula writing, equation writing, moles, stoichiometry, chemical calculations, etc. *CR/NC* grading only; not applicable toward baccalaureate degree requirements.

1. Chemistry: Its Impact on Society (3)
Not open to students with credit in college chemistry; for nonscience majors. Prerequisite: high school algebra. The significance of chemical principles in contemporary society; benefits and hazards relative to areas such as energy, health, diet, environment, and agriculture. General Education BREADTH, Division 1. (2 lecture, 3 lab hours)*

1A. General Chemistry (5)
Chem 1A not open to students with credit in Chem 1B. Students with credit in Chem 3A receive only 1 unit of credit. Prerequisite: high school chemistry or physics, two years of high school algebra or Math 4R. Fundamental principles of chemistry, including the wave mechanical model of the atom, chemical bonding and structure, valence bond, VSEPR and molecular orbital theory; stoichiometry, thermochemistry, oxidation-reductions, and states of matter. General Education BREADTH, Division 1. (3 lecture, 6 lab hours)* (CAN CHEM 2)

1B. General Chemistry and Qualitative Analysis (5)
Prerequisite: Chem 1A or Chem 4 with a grade of *C* or better. Acid-base theory; chemical kinetics; equilibrium (acid-base, hydrolysis, and solubility); thermodynamics, electrochemistry; selected topics in nuclear chemistry, coordination chemistry, and/or chemistry of selected groups. General Education BREADTH, Division 1. (3 lecture, 6 lab hours)* (CAN CHEM 4)

3A. Introductory General Chemistry (4)
No credit for Chem 3A after 1A. Prerequisite: Math 4R. For nonscience majors. Composition of matter and physical and chemical changes; fundamental laws and principles; atomic and molecular structure; acid-base theory, redox and equilibria; qualitative and quantitative theory and techniques. General Education BREADTH, Division 1. (3 lecture, 3 lab hours) (Former Chem 2A)

3B. Introductory Organic and Biochemistry (3)
Not open to students with credit in 2A. No credit for Chem 3B to students with credit in 1B. Primarily for students in health-oriented professions; not a substitute for Chem 8. Prerequisite: Chem 3A, Math 4R. Introduction to the basic concepts of organic and biochemistry. Structure and behavior of organic and biological compounds, metabolism, and regulation. General Education BREADTH, Division 1. (2 lecture, 3 lab hours) (Former Chem 2C)

4. Introduction to Chemical Theory (2)
One unit of credit after Chem 1A. Not recommended for the health-oriented professions. Prerequisite: Chem 3A or Chem 1A. Chem 3A and Chem 4 are equivalent to Chem 1A. Intermediate development of the concepts of chemistry; fundamental laws and principles of atomic and molecular structure, stoichiometry, ionic equilibria, and energy relationships.

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 3A. Lectures, discussions, and demonstrations of fundamental principles; structure and chemical behavior of organic compounds.

102. Analytical Chemistry (5)
For chemistry majors; recommended for other science majors. Prerequisite: Chem 1B (with a grade of *C* or better), 128A, and Math 76. 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 4 (Chem 1B recommended), Chem 8 (or concurrently). Laboratory study of principles and methods of quantitative analysis. (2 lecture, 6 lab hours)*

106. Analytical Measurements Laboratory (4)
Prerequisite: Chem 102 (with a grade of *C* or better), Chem 110A and Phys 4C, or permission of instructor. Principles and methods of analytical measurements of organic and inorganic substances by instrumental and non-instrumental techniques. (2 lecture, 6 lab hours)*

108. Introductory Physical Chemistry (4)
Prerequisite: Math 76 (Math 77 strongly recommended), Chem 8 or 128A and Phys 2A, 2B (Phys 4A, 4AL, 4B, 4BL, and 4C strongly recommended). Basic treatment of gas laws, thermodynamics, phase equilibria, properties of solutions, kinetics, and spectroscopy. Meets the physical chemistry requirement for the B.A. degree in Chemistry.

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; Chem 110A requires Phys 4B; Chem 110B requires Phys 4C 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

* For safety reasons, "soft" contact lenses may not be worn in chemistry labs. In all lab courses, the wearing of approved safety glasses is mandatory.

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)*

123. Advanced Inorganic Chemistry (3)
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, special topics.

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. (6 lab hours)*

125. Laboratory Instrumentation (3)
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. Designed to review organic chemistry, in particular for those students who have taken only a brief course in organic chemistry. *CR/NC* grading only; 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 1B or Chem 4 with a grade of *C* or better; for Chem 128B: Chem 128A with a grade of *C* or better. Introduction to structure and reactivity of principal classes of organic compounds with emphasis on theory and mechanism.

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)

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)*

139. Chemistry and the Consumer (3)
Prerequisite: Chem 3B, 8, or 128A. The impact of chemistry on society and individual lives. Topics selected from: foods as chemicals, food additives, drugs and medication, petrochemistry and the source of chemicals, pesticides and agricultural chemicals, chemical ethics, and current topics of interest.

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: analytical, biochemistry, inorganic, organic, physical. Some topics may have a laboratory.

142. Introduction to Biotechnology (3)
Prerequisite: Chem 150 or permission of instructor. This course emphasizes the principles and industrial utilization of recombinant DNA, monoclonal antibodies, enzyme and cell immobilization, fermentation technology, and downstream processing.

150. General Biochemistry (3)
Prerequisite: Chem 8. (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.

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: senior standing or permission of instructor; Chem 150 or 155 (or concurrently). Provides the student with a range of techniques and methodology appropriate to the study or phenomena at the biochemical, cellular, and organismic levels. Satisfies the senior major requirement for the B.A. in Chemistry. (1 lecture, 6 lab hours)*

160. Research Techniques (3)
Prerequisite: senior standing or permission of instructor. Concepts in the design of experiments. Development of practical research skills through the planning and undertaking of a short laboratory project. Satisfies the senior major requirement for the B.S. in Chemistry. (1 lecture, 6 lab hours)

190. Independent Study (1-3; max see reference)
Prerequisite: Chem 160 or permission of instructor. See *Academic Placement — Independent Study*. Approved for ***SP*** grading.

GRADUATE COURSES

(See *Course Numbering System.*)

Chemistry (Chem)

201. Chemistry Laboratory Teaching Techniques (1)
Laboratory safety, lab lecture techniques, equipment setups, grading, etc. Primarily for teaching assistants in chemistry.

207. Radiotracer Methodology in the Natural Sciences (3)
(Same as Biol 207 and Phys 207.) See Biol 207 for course description. (2 lecture, 3 lab hours)

211. Chemical Thermodynamics (3)
Prerequisite: Chem 110A, 110B, 111. Principles of thermodynamics; application to chemical problems; introduction to statistical methods, calculation of thermodynamic functions from spectroscopic data.

* For safety reasons, "soft" contact lenses may not be worn in chemistry labs. In all lab courses, the wearing of approved safety glasses is mandatory.

212. Chemical Applications of Group Theory (1-2)
Prerequisite: Chem 110A, 110B. 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, 110B. 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.

222. Advances in Inorganic Chemistry (3)
Prerequisite: Chem 110A, 110B, 128B. Seminar on recent advances in inorganic chemistry. Special emphasis in organometallic chemistry, solid-state chemistry, nonmetallic complexes, and the chemistry of rare-earth compounds. The basic structural and bonding properties of each class of compounds will be reviewed.

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, 110B, 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, 110B, 128B. Seminar in application 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 Biol 241A-B.) Prerequisite: BioSc 140A-B, Chem 150 or 155, and permission of instructor. Biol/Chem 241A is prerequisite for Biol/Chem 241B. 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.

242. Techniques in Protein Purification and Analysis (3)
(Same as Biol 242.) Corequisite: Biol/Chem 241A. This course will deal with the technologies relevant to protein isolation, purification, analysis, immobilization, and modification in micro and macro quantities. (1 lecture, 6 lab hours)

243. Nucleic Acid Technology Lab (3)
(Same as Biol 243.) Prerequisite: Biol/Chem 241A and 242. Corequisite: Biol/Chem 241B. A lecture/laboratory course focusing on the technologies used in nucleic acid chemistry; specifically, synthesis, translation, mutagenesis, and genetic engineering. (1 lecture, 6 lab hours)

244. Cell Culture and Hybridoma (3)
(Same as Biol 244.) Prerequisite: Micro 185; PhyAn 160. The theory and practice of in vitro propagation of eukaryotic cells, including growth characteristics, metabolic requirements and genetic analysis. Cloning, fusion and generation of monoclonal antibody (hybridoma) are presented relative to cultured cell biology and application to biotechnology. (1 lecture, 6 lab hours)

248. Seminar in Molecular Biology and Biotechnology (1-2, max 4)
(Same as Biol 248.) Prerequisite: admission into the Biotechnology Certificate Program. Reviews and reports on current literature in various aspects of biotechnology and molecular biology.

250T. Topics in Advanced Biochemistry (1-4)
Prerequisite: Chem 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 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)
Approved for ***SP*** grading.

290. Independent Study (1-3; max see reference)
See *Academic Placement — Independent Study*. Approved for ***SP*** grading.

295. Research (2)
Prerequisite: permission of instructor. Independent investigations of an advanced character for the graduate student with adequate preparation. Approved for ***SP*** grading. (May include conferences, laboratory, library.)

299. Thesis (4)
Prerequisite: See *Criteria for Thesis and Project*. Preparation, completion, and submission of an acceptable thesis for the master's degree. Approved for ***SP*** grading.

Chicano and Latin American Studies

Chicano and Latin American Studies (CLS) is an interdisciplinary department that has been successful in presenting a highly informed, active, and challenging view of the Chicano/Latino experience in the United States and in U.S./Latin American relations. Chicano and Latin American Studies provides an opportunity for a pluralistic exchange of ideas in an interdisciplinary academic setting, where faculty, students, and visiting Chicano and Latin American scholars can share experiences and create a dynamic, intellectual environment.

The Chicano and Latin American Studies Department is designed to meet the following objectives:

1. to promote an awareness of the historical and cultural roots of Chicanos/Latinos in the United States
2. to enhance an understanding of Latin America
3. to cultivate an appreciation of ethnic and national differences among all people
4. to critically analyze the Chicano and the Latin American experience in terms of significant issues, theories, current problems, and solutions, and
5. to provide students with a set of important professional skills to be utilized as they interact creatively and constructively with Chicano/Latino communities.

The department emphasizes an interdisciplinary approach to the study of family life, history, politics, culture, and the arts of Chicano and Latin American communities. The courses reflect an integrated approach in providing students with greater knowledge and understanding of the essence and diversity of Chicanos and Latin Americans.

Faculty and Facilities

The Chicano and Latin American Studies Department consists of faculty whose teaching and research expertise cover a broad spectrum, including anthropology, education, history, sociology, political science, and the arts. The department administers the Chicano Research Center that is engaged in research and community development and serves as a training center for students. The offices of the department also serve as a resource center for many of the Chicano/Latino student organizations and as an information center for the community.

Career Opportunities

Chicanos and other Latinos will soon be the largest ethnic group in California. Demographers estimate that in California 40 percent of the population will be of Mexican or Latino ancestry by the year 2030. 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 decisions 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.

Chicano Studies majors are trained to analyze social issues, to think critically, and to conduct research. All majors receive applied as well as theoretical training, by serving an internship with a school or community agency to observe firsthand the social issues and theories which they study. These skills are useful in professional life and are valued in the public and private sectors.

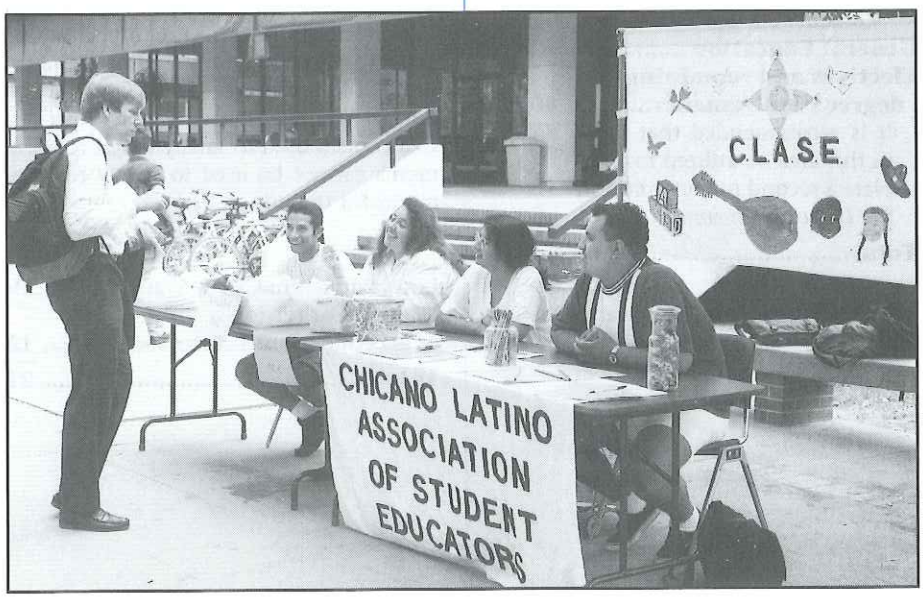
Students of non-Latino origin find that Chicano and Latin American Studies courses are personally rewarding because they enable them to understand and relate to persons of different social and cultural backgrounds. Chicano and other Latino students find these courses highly conducive to strengthening their sense of identity and pride in their heritage.

School of Social Sciences
Department of Chicano and Latin American Studies
MANUEL FIGUEROA, *Chair*
Social Science Building, Room 211
(209) 278-2848

B.A. in Chicano Studies
Minor in Chicano/Latino Studies
Minor in Latin American Studies

Students who graduate with a B.A. in Chicano Studies or minor in Chicano/Latino Studies or Latin American Studies work in such fields as education, public administration, psychology, marketing, journalism, social services, and throughout the public and private sectors. Physicians, educators, lawyers, counselors, civil service employees, and other professionals have found that training in Chicano and Latin American studies improves their abilities to serve their clients and enhance their employment and advancement opportunities.

Students with a B.A. in Chicano Studies can enter master's or doctoral programs in the humanities and social sciences and in professional schools in such areas as Chicano studies, ethnic studies, anthropology, political science, history, public administration, social work and education. Students with questions related to their future careers or seeking advising assistance should consult with the major and minor advisers of the Chicano and Latin American Studies Department.



Faculty

Manuel Figueroa, *Chair*

Bill Flores
Hisauro Garza
Luz Gonzalez
Juan Felipe Herrera
Ernesto A. Martinez
Manuel Peña
Lea Ybarra

Bachelor of Arts Degree Requirements

Students are strongly encouraged to pursue a dual major and can take the Chicano Studies either as a primary or secondary major. Students are required to see a CLS adviser for assistance in planning the major.

Chicano Studies Major	***Units***
Major requirements	**33**
Lower-division requirements	(6)
Basic Content:	
CLS 3 or 5 (see *Note 1*)	(3)
Latin America:	
CLS 70 or 72	(3)
Upper-division requirements	(21)
History:	
CLS 114 or 115	(3)
Political and Economic Issues:	
CLS 126 or 128	(3)
Arts and Humanities:	
CLS 100, 101, 106 or 108	(3)
Research Methods:	
CLS 142	(3)
Family and Gender:	
CLS 152, 160 (see *Note 1*) or 162	(3)
Education:	
CLS 141 or 143	(3)
Community Service/ Senior Project:	
CLS 145	(3)
Approved electives	(6)
Consult your adviser.	
General Education	**51**
Electives and remaining degree requirements	**40-43***
It is recommended that units in this area be utilized to complete a second major or minor. See *Degree Requirements*.	
Total	**124**

*This figure takes into consideration the fact that 3 units of CLS 3, 5, or 160 may also be applied toward General Education BREADTH, Division 9.

Advising Notes

1. CLS 3, 5, or 160 may be used to fulfill General Education BREADTH, Division 9 requirements. CLS 160 may be used to fulfill upper-division BREADTH requirements provided it is taken after the student has completed 56 units or is taken in the semester in which 60 units are completed.
2. If the Chicano studies major is taken as a second major, CLS courses taken to complete CAPSTONE requirements also can be used to satisfy major requirements.
3. Chicano studies majors are not permitted to take CLS courses by *CR/NC* grading (unless the courses are only offered on that basis).
4. General Education and elective units may be used toward a dual major or minor (see *Dual Major* or other 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 Chicano or Latin American studies are advised to study Spanish and/or Portuguese.

Minors

The Chicano and Latin American Studies Department offers two minors — one in Chicano/Latino Studies and one in Latin American Studies. Students intending to pursue a minor in either area must see a CLS adviser who will assist students in planning their course of study.

Chicano/Latino Studies

Students are encouraged to focus on an area of interest in Chicano/Latino studies or on a social issue affecting the Chicano/Latino population in the United States. General Education or CAPSTONE can be double-counted for the minor. However, CLS courses used to satisfy major requirements cannot be used to satisfy requirements for the minor.

	Units
Lower division: CLS 3, 5, and 7 or 9	9
CLS upper-division or acceptable substitutes	**12**
Total	**21**

Latin American Studies

Students are encouraged to focus on an area of interest in Latin America, such as a country, region, or social issue affecting a particular region. The Latin American Studies Minor is an interdisciplinary program consisting of courses dealing with Latin America and the Caribbean with course offerings from several departments.

	Units
Lower division: CLS 3, 70, 72	9
Acceptable substitutes approved by a CLS adviser include Hist 3 or 8, Hum 14	
Upper-division courses	**12**
Select from CLS 112, 114, 115, 180T*, 190*; Af Am 130T*; Art H 173, 175; Econ 114, 178, 179, 181, 188T*; Eth S 130T*; F L 125, 143, 145, 147, 148T*, 240T*; Geog 170T, 172, 188T*; Hist 145, 160, 162, 165, 166, 169T, 183, 198*; IntD 130; Phil 132; Pl Si 121, 126, 146T; W S 135	
Total	**21**

Advising Notes

*1. Special topics or directed reading courses must have subject matter dealing with Latin America, the Caribbean, or must focus on issues affecting those areas.
2. Courses taken to complete major requirements *cannot* be double-counted for the minor.
3. Courses taken to complete General Education or CAPSTONE requirements *can* be double-counted for the minor.
4. Other acceptable courses can be substituted to satisfy minor requirements with approval of your CLS adviser.

Credential Program for Liberal Studies Students

CLS requirements for liberal studies students who wish to complete a credential program are listed below:

The Bilingual Cross-Cultural Language and Academic Development (BCLAD) Credential — expected approval 1993-94 academic year — will replace the Bilingual/Cross-Cultural Emphasis in Liberal Studies. The BCLAD will authorize teachers to provide academic instruction to limited-English proficient students in the primary language. See a CLS adviser for specific details.

COURSES

Chicano and Latin American Studies (CLS)

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 United States and their current economic, political, and social status are discussed. General Education BREADTH, Division 9.

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. General Education BREADTH, Division 9.

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. General Education BREADTH, Division 5.

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. General Education BREADTH, Division 5.

20. Freshman Seminar for Minority Students (3)
Open to freshmen and transfer students. Designed to further student development in such areas as study skills, writing, oral presentations, and interaction with other students and faculty. Students are assigned a faculty mentor. (Former CLS 180T section)

70. Introduction to Latin American Studies (3)
A basic overview of Latin America; its nations, history, problems, and realities. Theoretical paradigms utilized to analyze Latin American issues are discussed.

72. Latin American Creative Expression (3)
Provides students with an understanding of the cultural history and contributions of Latin American nations. The art and writings of individuals such as Diego Rivera, Pablo Neruda, Gabriel Garcia Marquez, and Isabel Allende are explored.

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.

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.

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. General Education CAPSTONE Cluster course.

106. Folkloric Dance (3; repeatable up to 12 units)
History and performance of Mexican folk music and dance; Indian, African, Spanish, and European influences; contemporary relationships to Chicano culture. (Former CLS 106A-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. ***CR/NC*** grading only.

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*.

> *"Chicano studies courses provide students with a way of understanding the past and the present, while preparing for the future — for a changing society and a rapidly changing world."*
>
> **Bill Flores**
> Professor, Chicano and Latin American Studies

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.

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 United States after the Treaty of Guadalupe Hidalgo. General Education CAPSTONE Cluster course.

115. Mexico-U.S. Relations Since 1910 (3)
Historical perspective of the changing relationship between Mexico and the United States during the 20th century. Analysis of the Mexican Revolution, the Great Depression, World War II, immigration, and their impact on Mexico-U.S. relations. Special emphasis on status of Mexicanos/Chicanos in the United States. General Education CAPSTONE Cluster course.

116. Cultural Change and the Chicano (3)
Prerequisite: CLS 5 for Bilingual/Cross-Cultural Emphasis students only. 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. General Education CAPSTONE Cluster course.

123. Business Development in Minority Communities (3)
Business and economic development in minority communities and their relationship to the wider economic and social systems.

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.

128. Contemporary Political Issues (3)
Political philosophies, goals, and strategies of Chicanos and Latinos as reflected in their attempts to gain political power.

129. Chicano/Latino Leadership (2)
Provides students with important leadership skills, organizational and decision-making abilities. It includes an internship with a campus or community agency and enables students to take a more active role in the community. (Former CLS 180T section)

141. The Chicano and the Educational System (3)
Exploration of the sociohistorical development of public education in the southwest, with special emphasis on the Chicano experience. Topics include segregation/desegregation, institutional racism, and equality of opportunity.

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. Field application of research plans, techniques including methods of observation, gathering, and analyzing data.

143. Bilingual/Bicultural Education (3)
Prerequisite: CLS 116; for Bilingual/Cross Cultural Emphasis students only. 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 department chair for further prerequisites.)

145. Fieldwork in Community Settings (3; max total 6)
Prerequisite: CLS 3; for Bilingual/Cross Cultural Emphasis students only. Supervised placement in community and educational settings. Provides a variety of learning experiences in community agencies, organizations, or educational institutions. (Bilingual Emphasis majors, see adviser.)

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. General Education CAPSTONE Cluster course.

154. The Chicano Child (3)
General psychological principles and theories of growth and development and their applicability to the Chicano child.

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.

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.

160. Sex, Race, and Class in American Society (3)
Focuses on ethnic identity and gender and their interrelationship with socioeconomic class structure in American society. Sexism, racism, and class inequities, particularly as they impact Chicanos and other minorities, are analyzed. General Education BREADTH, Division 9. (Former CLS 1)

162. Chicana Women in a Changing Society (3)
Focuses on current issues relevant to Chicana women in the workforce, the family, the health care system, and the educational system. The intersection of race, class, and gender will be the analytical context for examining both their historical and contemporary roles. (Former CLS 180T section)

180T. Topics of Chicano Society (1-3; repeatable with different topics)
Culture, art forms, economy, and societal organization. Certain CLS 180T classes are *CR/NC* grading only. See department for further information.

190. Independent Study (1-3; max see reference)
See *Academic Placement — Independent Study*. Approved for ***SP*** grading.

195. Diversity in the United States: Race and Gender Issues (3)
(Same as A I S 195, Af Am 195, AsAm 195, W S 195.) This interdisciplinary course introduces students to theoretical perspectives concerning the historical development of class, race, and gender within the United States and the impact of these issues on contemporary U.S. society. Participation in a special class project is required. (Former Eth S 195)

Classical Studies Interdisciplinary Minor

School of Arts and Humanities
Department of
Foreign Languages and Literatures
PAMELA L. VAUGHN, *Coordinator*
San Ramon 4, Room 131
(209) 278-2386

Minor in 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 campuswide 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.*) Second, the university offers a classical studies minor with three areas of interest.

Classical Studies Minor

The Classical Studies Minor is designed for students 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	***Units***
History 112 or IntD 110	3
Latin 1A, 1B	6
Latin 131T (2)	6
Electives	9
Total	24

Greek	***Units***
History 111 or IntD 108	3
Greek 1A, 1B	6
Greek 131T (2)	6
Electives	9
Total	24

Classics	***Units***
History 111 or IntD 108, History 112 or IntD 110	6
Latin 1A, 1B	6
Greek 1A, 1B	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 classical studies coordinator, Dr. Pamela L. Vaughn, San Ramon 4, Room 143.

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)
Humanities:		
	IntD 108	Humanities in Classical Athens (3)
	IntD 110	Humanities in Republican and Imperial Rome (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, 1B	Elementary Greek (3, 3)
	10	Fifth Century Athens (3)
	131T	Greek Literature (3; max total 12 if no topic repeated)
	148	Masterpieces of Classical Greek Literature (3)
	190	Independent Study (1-3)
Latin	1A, 1B	Elementary Latin (3, 3)
	31	Latin and Greek for English Vocabulary (3)
	131T	Latin Literature (3; repeatable with different topic)
	132	Classical Mythology (3)
	148	Masterpieces of Latin Literature (3)
	190	Independent Study (1-3)
History	1	Western Civilization I (3)
	103	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)
	108	Roman 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)

Communicative Disorders

School of Health and Social Work
Department of Communicative Disorders
KENNETH G. SHIPLEY, *Chair*
Laboratory School, Room 125
(209) 278-2423
(209) 278-2856 TDD

B.A. in Communicative Disorders
M.A. in Communicative Disorders
Minor 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. Three professional option areas are available to the student:

Audiology. Our audiology program provides 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. The program is nationally accredited by the Educational Standards Board (ESB) of the American Speech-Language-Hearing Association.

Education of the Deaf. Our education of the deaf program gives 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. The program is nationally accredited by the Council on Education of the Deaf (CED).

Speech-Language Pathology. Our speech and language pathology program provides you with a broad professional background in normal speech and language development, language disorders, voice disorders, articulation disorders, and fluency disorders. The program is nationally accredited by the Educational Standards Board (ESB) of the American Speech-Language-Hearing Association.

The undergraduate curriculum plus a master's degree in communicative disorders prepares you for one or more of the following: state licensure as a speech-language pathologist or audiologist, national certification in speech-language pathology or audiology by the American Speech-Language-Hearing Association, provisional certification in education of the deaf by the Council on Education of the Deaf, public school special education specialist or clinical rehabilitation credentials, and/or school multiple subject credentials.

Communicative Disorders 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 are given the opportunity to work in a well-equipped speech and hearing clinic. 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 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 valuable community resource, the clinic serves thousands of clients each year from the Fresno metropolitan area. The clinic is accredited by the Professional Services Board (PSB) of the American Speech-Language-Hearing Association.

Career Opportunities

The Department of Communicative Disorders prepares 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 very good.

Faculty

Kenneth G. Shipley, *Chair*

Bette J. Baldis	Paul W. Ogden
M. N. Hegde	Ron M. Parker
Karen M. Jensen	Susan J. Shanks
Ben R. Kelly	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: Deborah J. Davis

Bachelor of Arts Degree Requirements

Communicative Disorders Major	***Units***
Major requirements	**41-46**
Core: C D 80, 95, 102, 116, 128, 131	(16)
Concentration (select one)	(25-30)
Audiology	
C D 101, 103, 105, 107, 109, 110, 133, 141, 172	(25)
Education of the Deaf	
C D 106, 114, 133, 134, 135, 139, 141, 162, 163, 164	(30)
Speech and Language Pathology	
C D 101, 103, 105, 107, 109, 110, 112, 115, 171, 172	(28)
General Education	**51**
Electives and remaining degree requirements (See *Degree Requirements*); may be courses used to satisfy credential requirements or a minor in another field	**27-32**
Total	**124**

Advising Notes

1. Contact the departmental chair or faculty advisers for a list of approved elective courses.
2. *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* 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, 95, 101, 102, 114, and 133	18
Total	**18**

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 (GRE), completing the Verbal and Quantitative Sections, and
- three letters of recommendation.

Students with a bachelor's degree in a field other than communicative disorders 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* and *B* in the CSU application booklet)
   - Official transcripts from all universities and colleges other than CSU Fresno
   - Official GRE 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 GRE scores. (Educational Testing Services lists the departments of Audiology and Speech Pathology. Your scores are 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 GRE *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.*

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.

Master of Arts Degree Requirements

Communicative Disorders Major ***Units***

Thesis or Project

Core: C D 200, 201, 202 9
Specialization (select one) 21
Audiology
C D 203, 231, 232, 233, 234, 235, 240 ..... (21)
Education of the Deaf
C D 232, 261, 262, 263, 264, 268 ..... (21)
Speech-Language Pathology
C D 204, 206, 207, 210, 213, 214, 215 ..... (21)
Thesis or project 6
Total 36

Comprehensive Examination

Core: C D 200, 201, 202 9
Specialization (select one) 21
Audiology
C D 203, 231, 232, 233, 234, 235, 240 ..... (21)
Education of the Deaf
C D 232, 261, 262, 263, 264, 268 ..... (21)
Speech-Language Pathology
C D 204, 206, 207, 210, 213, 214, 215 ..... (21)
Written examination 0
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.*) 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 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 examination 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 subject matter of their work and within the field. 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 (CCC) in Speech Pathology or Audiology. A Clinical Fellowship Year (CFY) of paid, professional supervised experience is required along with passing the National Examination in Speech Pathology or Audiology (NESPA) 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 (RPE) is necessary along with passing the NESPA 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 CFY and RPE can be completed concurrently when graduates accept their first professional position.

Certification by Council on Education of the Deaf. For students specializing in education of the deaf, completion of the master's degree fulfills all the academic and clinical practicum requirements for Provisional Certification by the Council on Education of the Deaf, the national organization responsible for certifying teachers of the deaf. Professional level certification is available following three years of successful teaching under the supervision of a professionally certified educator of hearing impaired children. All students are encouraged to acquire national certification.

Credentials

There are two major school credentials for employment available through the Department of Communicative Disorders. They are Special Education Specialist: Communication Handicapped Credential (Deaf and Severely Hard of Hearing Option) and the Clinical Rehabilitation Services Credential, which has options in audiology; language, speech, and hearing services; and language, speech, and hearing services with severe oral language handicapped

authorization. Information regarding these credentials and options is available from departmental credential advisers and the School of Education and Human Development.

Special Education Specialist: Communication Handicapped Credentials

Deaf and Severely Hard of Hearing Option	*Units*
Core: C D 80, 95, 102, 106, 114, 116, 128 and 131 (concurrently)	22
Ed Deaf core: C D 133, 134, 135, 139, 141, 162, 163, 164, 202, 261, 262, 263, 264	39
Clinical core: C D 160 or 260 (1-6 units); C D 164B (4-9 units); C D 268 (6 units)	11-21
Generic core: ERF 130, 140; LEE 156M; EHD 160 (6 units)*	15
Education core: CTET 150; EHD 160 (6 units)*	9
	96-106

Clinical Rehabilitative Services Credentials

Audiology Option	*Units*
Generic courses: C D 80, 95, 101, 102, 103, 105; 107 and 110 (concurrently), 109, 116; 128 and 131 (concurrently), 133, 141, 172; Phys 2B; Psych 101	48
Advanced Specialization in Audiology: C D 200, 201, 202, 231, 233, 234, 235, 240	24
Clinical core: C D 164C (4-9 units) or 269 (6 units), C D 130 or 230 (5 units), 150 or 250 (5-15 units)	14-29
	86-101

Language, Speech, and Hearing Services Option	*Units*
Generic courses: C D 80, 95, 101, 102, 103, 105; 107 and 110 (concurrently), 109, 112, 115, 116; 128 and 131 (concurrently), 171, 172; Psych 101	47
Advanced Specialization in Language, Speech, and Hearing: C D 200, 201, 202, 204, 206, 207, 210, 213, 214, 215	30
Clinical core: C D 164A (4-9 units), 209 (1 unit), 130 or 230 (10-15 units), 150 or 250 (5 units)	20-30
	97-107

*See requirements for the Student Teaching Multiple Subject Credential — School of Education and Human Development.

Language, Speech, and Hearing Services with Severe Oral Language Handicapped Authorization Option	*Units*
Generic courses: C D 80, 95, 101, 102, 103, 105; 107 and 110 (concurrently), 109, 112, 115, 116; 128 and 131 (concurrently), 171, 172 Psych 101	47
Advanced Specialization in Language, Speech, and Hearing: C D 200, 201, 202, 204, 206, 207, 210, 213, 214	27
Advanced Specialization in Severe Oral Language Handicapped: C D 232, 264; CTET 121, 150; LEE 120, 156M; P E 146	19-21
Clinical core: C D 164A (4-9 units), 209 (1 unit), 130 or 230 (10-15 units), 250 (5 units)	20-30
	113-125

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)
An overview of speech, language and hearing, and disorders of communication; interrelations among audiology, education of the deaf, and speech-language pathology.

95. Introduction to Verbal Development (3)
Study of normal verbal development; compilation of developmental milestones in speech and language acquisition.

101. 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. (2 lecture, 2 lab hours) (Former C D 90)

102. Anatomy and Physiology of the Speech Hearing Mechanisms (3)
Anatomic and physiologic bases of the speech and hearing mechanisms.

103. Speech and Hearing Science (3)
Physiological acoustics, psychoacoustics, acoustic phonetics, and perception of speech. (2 lecture, 2 lab hours)

105. Disorders of Articulation (3)
Prerequisite: C D 80, 95, 101, 102. Seminar on the assessment and treatment of articulation and phonological disorders. (2 lecture, 2 lab hours)

106. Written Language Skills for Teaching the Deaf and Hard of Hearing (3)
Prerequisite: Engl 1. Comparative analysis of the structure of written language of normally developing and language handicapped children. (Former C D 106W)

107. Observation in Communicative Disorders: Speech-Language Pathology (1-3; max total 3)
Prerequisite: C D 80, 95, 101, 102, 103, 105; corequisite: C D 110. Observation of assessment, treatment, parent counseling, and other clinical services in the CSUF Hearing and Speech Clinic or at other professional settings.

109. Disorders of Language (3)
Prerequisite: C D 80, 95, 101, 102. Seminar on language disorders in children; description of clinical subgroups; assessment and management procedures. (2 lecture, 2 lab hours)

110. Diagnostic Procedures (3)
Prerequisite: C D 80, 95, 101, 102, 103, 105; corequisite: C D 107 (1 unit). Seminar in principles and procedures of diagnostic evaluation of communicative disorders. (2 lecture, 2 lab hours)

112. Voice Disorders (3)
Prerequisite: C D 80, 95, 101, 102. Seminar on normal and deviant vocal productions; assessment and treatment of voice disorders in children and adults. (2 lecture, 2 lab hours)

113. Introduction to Birth Defects (3)
A study of genetic and non-genetic syndromes and their implications for the health professional; newborn and carrier screening, prenatal diagnosis, genetic counseling, and ethical considerations.

114. Education of Exceptional Children (3)
Characteristics of exceptional children; diagnostic and instructional programs; legal and certification issues; observation. (2 lecture, 2 lab hours)

115. Disorders of Fluency (3)
Prerequisite: C D 80, 95, 101, 102. Seminar in analysis, measurement, and management of fluency disorders in children and adults.

116. Prescriptive and Individualized Instruction (3)
Prerequisite: C D 80, 95. Principles and procedures of developing individualized clinical and educational programs for communicatively handicapped children. (2 seminar, 2 lab hours)

128. Observation in Communicative Disorders: Audiology (1-3; max total 3)
Corequisite: C D 131. Observation of audiologic testing.

130. Clinical Practice in Speech and Hearing Therapy (1-6; max total 24)
Prerequisite: C D 80, 95, 101, 102, 103, 105, 107, 110. Supervised clinical practice; diagnosis and management of speech and language disorders; referral procedures, parent counseling, and maintenance of case records. (Lab fee, $10)

131. Principles of Audiology (3)
Prerequisite: C D 102; corequisite: C D 128. Hearing loss and its medical aspects; introduction to hearing conservation; assessment of hearing loss; interpretation of diagnostic test results.

133. American Sign Language I (3)
Principles of American Sign Language; basic skills for communicating with deaf children and adults. General Education BREADTH, Division 7.

134. American Sign Language II (3)
Prerequisite: C D 133. Advanced study of grammatical structures and the lexicon of American Sign Language. Emphasis on conversational skills, fluency for communicating with deaf children and adults, and aspects of deaf culture.

135. Sign Language for Classroom Use (3)
Prerequisite: C D 133. Signing skills necessary to teach and communicate with the deaf in a classroom. (Former C D 136)

139. Deaf Culture (3)
Experiences faced by deaf people, and their varying degrees of participation in deaf culture/deaf community; social, emotional, vocational, intellectual, and linguistic aspects of deaf culture; historical and current struggles to overcome problems experienced by deaf people. (Former C D 108; C D 137)

141. Education of Deaf Children and Their Parents (3)
Study of deaf children in general, parent education, and various educational programs and services for deaf children and their parents. Emphasis on methods of instruction, education of deaf children, and families. (Former C D 108; C D 137)

150. Clinical Practice in Audiology (1-6; max total 24)
Prerequisite: C D 80, 95, 101, 102, 103, 128, 131. Supervised clinical practice in the diagnosis and management of hearing problems. (Lab fee, $10)

160. Clinical Practice in Education of the Deaf (1-6; max total 12)
Prerequisite: C D 135, 162, 163, 164. Supervised clinical participation and practice in the teaching of persons who are deaf and severely hard of hearing; parent counseling; on- or off-campus clinical sites. (Lab fee, $10)

162. Speech for the Deaf (3)
Prerequisite: C D 80, 95, 106. Seminar on techniques to develop speech in deaf children; observation, demonstration, and practice with deaf children.

163. Language for the Deaf (3)
Prerequisite: C D 80, 95, 106. Seminar on techniques to develop language in deaf children; construction of English sentences and grammar; comparative studies of various language curricula.

164. Elementary School Subjects for the Deaf (3)
Prerequisite: C D 80, 95, 106 and permission of instructor. Seminar in the process of teaching reading to deaf children; observation and demonstration. (2 lecture, 2 lab hours)

164A. Student Teaching: Speech and Hearing Handicapped (4-9; max total 9)
Prerequisite: 5-15 units of C D 130 or 230, including 150 supervised clinical hours; admission to the credential program; corequisite: C D 209. Directed observation, participation, and clinical practice (100 hours minimum) under supervision. (Lab fee, $10) (Former AS 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. (Lab fee, $10)

164C. Student Teaching: Audiology (5-15; max total 15)
Prerequisite: permission of instructor and admission to the credential program. Directed observation, participation, and supervised clinical practice (100 hours minimum) in the school setting. Conferences with university supervisor as arranged. (Lab fee, $10)

171. Professional Writing in Communicative Disorders (3)
Principles of clinical and scientific writing in communicative disorders; exercises in writing professional and scientific reports.

172. Neural Bases of Speech, Language, and Hearing (3)
Neuroanatomical and neurophysiological bases of speech, language, and hearing; clinical implications of neuropathology. Field trip may be required.

188T. Topics in Communicative Disorders (1-3; max total 6)
Special courses offered on various topics not included in the regular curricula in speech, language and hearing sciences and disorders.

190. Independent Study (1-3; max total 6)
See *Academic Placement — Independent Study*.

GRADUATE COURSES

(See *Course Numbering System.*)

Communicative Disorders (C D)

200. Graduate Studies and Research in Communicative Disorders (3)
Introduction to graduate studies and methods of research in communicative disorders; concepts and methods of science and clinical research designs; graduate level professional and scientific writing skills.

201. Interviewing and Counseling in Communicative Disorders (3)
Theory and practice in interviewing and counseling clients and families related to specific speech, language and hearing disorders. Techniques for altering and modifying behaviors that affect maximum growth and potential of the client and families.

202. Aural Rehabilitation (3)
Prerequisite: C D 128, 131. Habilitative and rehabilitative procedures to assist the hearing impaired: amplification, speechreading, auditory training, speech and language training; psycho-socio-educational issues. (2 lecture, 2 lab hours)

203. Hearing Aids I (3)
Prerequisite: C D 202. Electroacoustic analysis of amplification systems; identification, evaluation, and management of the candidate for amplification. (2 lecture, 2 lab hours)

Communicative Disorders Professor Paul Ogden communicates with Kim Creighton of University Computer Services using American Sign Language. The Department of Communicative Disorders offers several sign language courses.

204. Seminar in Stuttering (3)
Prerequisite: permission of instructor. Research on stuttering in children and adults; assessment and treatment procedures.

206. Seminar in Phonological Disorders (3)
Prerequisite: C D 95, 101, 105, 107, 110. Phonological and articulatory processes and disorders in first and second language production; assessment and treatment procedures.

207. Seminar in Aphasia in Adults (3)
Prerequisite: permission of instructor. Aphasia and its neurological, linguistic, and behavioral correlates; assessment and treatment procedures.

209. Speech-Hearing in Public School Environment (1)
Corequisite: C D 164A. Seminar in selecting assessment and remediation procedures for public school children with communicative disorders; demonstration and application of therapeutic procedures; organization and administration of school speech and hearing program.

210. Seminar in Structural Speech Disorders (3)
Prerequisite: permission of instructor. Theories and etiologies of orofacial growth and clefts; diagnostic and habilitative processes.

213. Seminar in Neurological Speech Disorders (3)
Prerequisite: C D 102. Symptomatology and etiology of neurogenic speech disorders; habilitation and rehabilitation processes.

214. Seminar in Language Disorders of Infants and Children (3)
Prerequisite: C D 95, 109. Etiology, symptomatology, assessment, and habilitation of language disorders in infants, toddlers, and children.

215. Augmentative Communication Systems (3)
Principles, analysis, assessment techniques, and implementation procedures for developing augmentative communication systems with speech and language impaired children and adults. (2 lecture, 2 lab hours)

230. Advanced Clinical Practice in Speech and Hearing Therapy (1-6; max total 24)
Prerequisite: C D 80, 95, 101, 102, 103, 105, 107, 110. Supervised clinical practice in the diagnosis and treatment of communicative disorders; development of treatment programs, parent counseling; referrals; on- and off-campus clinical sites. (Lab fee, $10)

231. Audiology II (3)
Prerequisite: C D 103, 128, 131, 172, and 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 Pediatric Audiology (3)
Evaluation and management of children with auditory disorders.

233. Seminar in Amplification II (3)
Prerequisite: C D 203 and permission of instructor. Advanced topics and special considerations related to rehabilitation through amplification.

234. Seminar in Hearing Conservation (3)
Prerequisite: permission of instructor. Principles of hearing conservation; implementation of hearing conservation programs in the community and industry. (2 lecture, 2 lab hours)

235. Seminar in Instrumentation in Communicative Disorders (3)
Prerequisite: Phys 2B. Calibration equipment and procedures, signal generation, recording, storage and analysis; instrumentation for clinical and research use in communicative disorders. (2 lecture, 2 lab hours)

240. Assessment (3)
Prerequisite: C D 172 and permission of instructor. Electrocochleography, auditory brainstem response, middle latency response, and electronystamography.

250. Advanced Clinical Practice: Audiology (1-6; max total 24)
Prerequisite: C D 103, 128, 131, graduate standing and permission of instructor. Supervised clinical practice in diagnosis and management of hearing problems. (Lab fee, $10)

260. Advanced Clinical Practice: Education of the Deaf (1-6; max total 12)
Prerequisite: C D 135, 162, 163, 164, 202 or concurrently. Supervised clinical participation and practice in teaching people who are deaf and severely hard of hearing; parent counseling; on- and off-campus clinical sites. (Lab fee, $10)

261. Instructional Technology with the Deaf (3)
Principles, analysis, assessment techniques, and implementation of instructional technology for teaching deaf students. Includes computer-based approaches for teaching deaf and hearing impaired individuals. (2 lecture, 2 lab hours)

262. Seminar in Speech for the Deaf (3)
Prerequisite: C D 162, 202, permission of instructor, and successful completion of the NTE (General Knowledge — Core Battery) or a Single or Multiple Subject Credential. Methods to develop oral communication for deaf children; demonstration and off-campus practicum. (2 lecture, 2 lab hours)

263. Seminar in Language for the Deaf (3)
Prerequisite: C D 163, permission of instructor, and successful completion of the NTE (General Knowledge — Core Battery) or a Single or Multiple Subject Credential. Language problems of the deaf; techniques of remediation; use of specialized equipment and development of teaching materials. (2 lecture, 2 lab hours)

264. Seminar in Elementary School Subjects for the Deaf (3)
Prerequisite: C D 164 and successful completion of the NTE (General Knowledge — Core Battery) or a Single or Multiple Subject Credential. Special problems and techniques of adapting elementary school curriculum to the needs of deaf children; demonstration and practice. Project required.

267. Internship in Speech-Language Pathology (1-6; max total 24)
Prerequisite: 5-15 units of C D 130 or 230 and permission of instructor. Supervised internship in speech-language pathology; diagnosis and management of communicative disorders. ***CR/NC*** grading only. (Lab fee, $10)

268. Internship with the Deaf (6)
Prerequisite: C D 135, 164B, 261, 262, 263, 264, and successful completion of the NTE (General Knowledge — Core Battery) or a Single or Multiple Subject Credential. Supervised internship in a residential school for the deaf. Full time in residence for 8 weeks. ***CR/NC*** grading only. (Lab fee, $10)

269. Internship in Audiology (1-6)
Prerequisite: C D 203, 231, 232 and permission of instructor. Supervised internship involving diagnosis and management of audiologic conditions. ***CR/NC*** grading only. (Lab fee, $10)

270. Seminar in Organization and Management of Speech, Language, and Hearing Clinics (1-3)
Prerequisite: permission of instructor. Establishing, organizing, and maintaining speech, language, and hearing clinics.

290. Independent Study (1-3; max see reference)
See *Academic Placement — Independent Study*. Approved for ***SP*** grading.

298. Individual or Group Research Project (1-6; max total 6)
Prerequisite: consent of advisory committee. See *Criteria for Thesis and Project*. A written report on an individual or group research project for the master's degree. Approved for ***SP*** grading.

299. Thesis (2-6; max total 6)
Prerequisite: See *Criteria for Thesis and Project*. Preparation and submission of a thesis. Approved for ***SP*** grading.

IN-SERVICE COURSE

(See *Course Numbering System.*)

Communicative Disorders (C D)

300T. Selected Topics in Communicative Disorders for Continuing Education (1-3)

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 education.

Faculty and Facilities

The faculty come from a variety of areas including computer systems and architecture, theoretical computer science, programming languages, software engineering, computer graphics, distributed systems and parallel processing, and neural networks. 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.

The department houses a networked environment of UNIX-based machines consisting of a DEC VAX 11/785 and a Macintosh IIci microcomputer laboratory for lower-division courses; Sun Microsystems, SGI, and NeXT workstations in an AI/Graphics laboratory and an INMOS Corporation Transputer system (a reconfigurable parallel processing machine) for upper-division courses and research projects. These systems are connected with campus and international networks, allowing access to other machines and communication with people on campus and around the world.

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 find job opportunities in such diverse fields as computer design, software development, systems analysis, database design, computer graphics, and technical programming. Because of the strong theoretical orientation of our program, graduates are 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. A high proportion of our graduates have pursued graduate studies. Students who obtain the master of science degree will be in an excellent position to pursue a Ph.D. degree.

School of Engineering
Department of Computer Science
WALTER READ, *Chair*
McKee Fisk Building, Room 207
(209) 278-4373

B.S. in Computer Science
M.S. in Computer Science
Minor in Computer Science

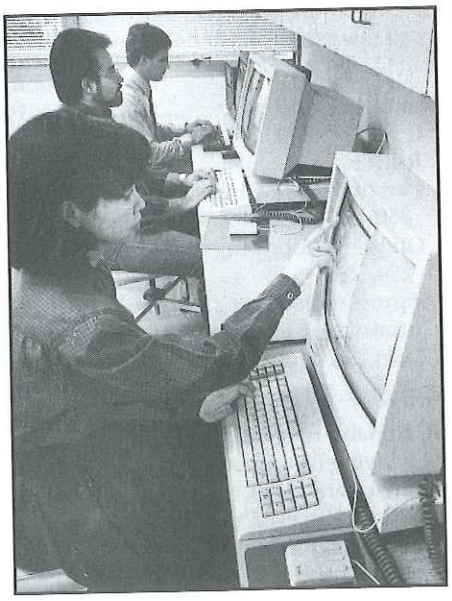
Organizations

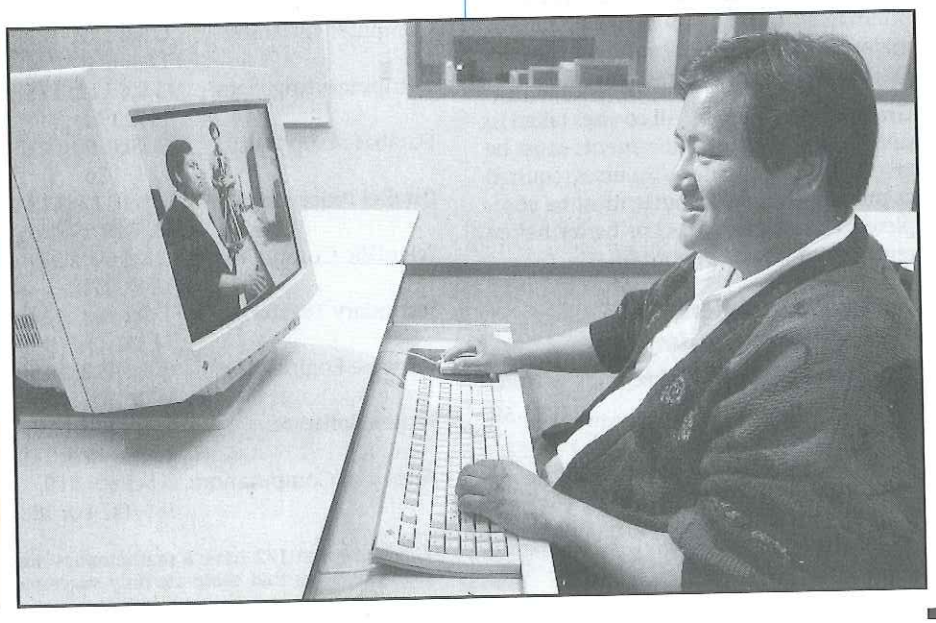
Student chapters of the Association for Computing Machinery (ACM) and the IEEE Computer Society are very active in the department. They organize field trips to major computer manufacturers and users in California. The ACM chapter sponsors the fall CSUF Programming Contest and the annual International Computer Problem Solving Contest for precollege students. The IEEE Computer Society participates in the international IEEE Micromouse competition.

Computer science majors who have a distinguished academic record in computer science are invited to join Upsilon Pi Epsilon, the national honor society for the computing sciences.

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.





Faculty

Walter Read, *Chair*

Tarek Alameldin
Brent J. Auernheimer
Lan Jin
Shigeko Seki
Grace C. N. Wei
Henderson C. Yeung

Undergraduate Program

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.

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 computer architecture, artificial intelligence, databases, compilers, operating systems, computer science theory, computer graphics, software engineering, programming languages, distributed systems, and parallel processing. 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 nonmajors. These courses will benefit any major who wishes to include computer literacy in their undergraduate study.

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

Computer Science Major — ***Units***

Major requirements **55-59**
- C Sci 40, 41, 60, 112, 115, 117,119, 154 ..... (28)
- Select five of the following .. (15-17)
  - C Sci 124, 134, 144, 150 or 172, 156, 164, 174, 176, 186, 191T
  - Select three of the following sequences ..... (9-11)
    - C Sci 124-126;
    - C Sci 134-136;
    - C Sci 144-146 or 144-148;
    - C Sci 150-152 or 172-173;
    - C Sci 156-ECE 146;
    - C Sci 164-166;
    - C Sci 176-177;
    - C Sci 186-188
  - C Sci 198 ..... (3)

Additional requirements **23-24**
- C Sci 1 or Phil 25 or Phil 45 ... (3-4)
- Math 75, 76 (Math 77, 114 recommended) ..... (8)
- Phys 2A and 2B or Phys 4A, 4AL, 4B, 4BL ..... (8)
- ECE 85 and ECE 85L or C Sci 113A ..... (4)

Remaining General Education requirements **42***
- BREADTH Division 4:
- I E 125 (recommended)

Electives **0-4**

Total **124-127**

* Of the 51 required General Education units, 9 are satisfied by C Sci 1 or Phil 25 or Phil 45 (CORE), C Sci 40 or Math 75 (CORE), and Phys 2A or 4A and 4AL (Division 1).

Computer Science Minor

The Computer Science Minor requires 20 units of computer science courses consisting of C Sci 40, C Sci 41, and 12 units from C Sci 60 or other upper-division computer science courses.

Suggested minor sequences (after completion of C Sci 40, 41):

Artificial Intelligence:	C Sci 112, 117, 164, 166
Computer Graphics:	C Sci 112, 172, 173
Computer Languages:	C Sci 112, 115, 117, 134
Database Emphasis:	C Sci 60, 115, 124, 126
Parallel Processing:	C Sci 112, 113A, (176 or 177)
Scientific Computation:	C Sci 60, 112, 154*, 172*
Secondary Teaching:	C Sci 101, 112, 113A, 117
Software Engineering:	C Sci 112, 115, 150, 152
System Software:	C Sci 112, 113A, 144, (146 or 148)
Theory of Computation:	C Sci 60, 119, 186, (174 or 188)

* C Sci 154 and 172 have a mathematics prerequisite. Note that these are only suggested combinations. While attention must be given to prerequisites, many combinations are available to interested students.

Graduate Program

The Master of Science degree program in Computer Science is designed to offer the advanced principles, applications, and current topics in computer science. Students who obtain the M.S. degree will be ready to do significant developmental work in the computer industry or in an important application area and will also be well qualified to pursue a Ph.D. degree.

Applicants must submit Graduate Record Examination (GRE) scores when applying to the graduate program.

To be a fully classified student, an applicant must:

1. meet the university requirements
2. hold a baccalaureate in any field of study with a 2.75 grade point average in the last 60 units, and
3. have completed the following undergraduate course or equivalent with a 3.0 grade point average: C Sci 40, 41, 60, 112, 113A, 115, 117, 119, 144, 154, Math 75 and 76.

(See also the *Graduate Studies* section in this catalog.)

Master of Science Degree Requirements

The Master of Science degree requires a minimum of 30 units after the completion of the baccalaureate degree according to the criteria below. At least 21 units of the total must be taken in 200-level courses in computer science. The undergraduate courses used toward the bachelor's degree or toward fully classified status may not be used toward the master's degree.

Units

Required courses **10**
- C Sci 174, 200, 213, 217

Electives **9**
- Two of the following: C Sci 226, 244, 250, 264, 272, 282
- One of the following: C Sci 246, 252, 274, 284

Approved electives **5-8**

Culminating experience **3-6**
- C Sci 298 or 299

Total **30**

A student must pass the Departmental Qualifying Examination prior to advancement to candidacy. One component of the exam will be used to satisfy the graduate writing skills requirement.

COURSES

Computer Science (C Sci)

1. Critical Thinking and Computer Science (3)
Prerequisite: intermediate algebra. Overview of the field of computer science with an emphasis on critical thinking skills. Problem-solving strategies, algorithm design, and data abstraction. Introduction to hardware, theoretical limitations of computers, and issues arising from the growing role of computers in society. General Education CORE, Critical Thinking.

5. Computer and Applications (3)
An introduction to the computer: tools, applications, and graphics. Overview of the components of computer systems; discussion on software systems, electronic mail, influence of computers on society and the future of computing; extensive hands-on experience with application tools and programming. (2 lecture, 2 lab hours)

7. Computer Literacy (2)
An introduction to the computer for interdisciplinary students. Overview of the history of computing, a presentation of the components of computer hardware and software systems, a study of applications, programming, societal impact, and the future of computing. (1 lecture, 2 lab hours)

10. Introduction to 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.

15. C Programming (2)
Prerequisite: programming experience in a major high-level language, e.g., BASIC, COBOL, FORTRAN, Pascal. An introduction to the C programming language. Types, operators, expressions, flow of control, functions, pointers, and arrays. Standard libraries and programming tools. Emphasis on programming projects.

20. FORTRAN Programming (4)
Prerequisite: Students must take the ELM exam; students who do not pass the exam must record a grade of *C* or better in a college-taught intermediate algebra course; trigonometry. Introduction to programming in FORTRAN with emphasis on program design, debugging, and documentation. Elementary applications and structured programming for algorithm development. General Education CORE, Quantitative Reasoning. (3 lecture, 2 lab hours) (CAN CSCI 4)

40. Introduction to Programming and Problem Solving (4)
Prerequisite: Students must take the ELM exam; students who do not pass the exam must record a grade of *C* or better in a college-taught intermediate algebra course; trigonometry. Introduction to problem solving, algorithm development, procedural and data abstraction; program design, coding, debugging, testing, and documentation; programming language Pascal. General Education CORE, Quantitative Reasoning. (3 lecture, 2 lab hours)

41. Introduction to Data Structures (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)

60. Foundations of Computer Science (3)
Prerequisite: C Sci 40 and 41 or concurrently. Abstraction, iteration, induction, recursion, complexity of programs, data models, and logic.

72. Introduction to Computer Graphics (3)
Comprehensive overview of computer graphics. Geometry, color, hardware devices, surfaces and materials, lighting and shading, polygonal models, textures, fractals, rendering, animation, and production techniques. Case studies, examples, films, and video displays from actual systems.

101. Computer Applications in the Sciences (3)
Prerequisite: intermediate algebra; calculus recommended. Introduction to computers with emphasis on microcomputers. Preparation, storage, and processing scientific data, documents, and illustrations; graphing, manipulating, and simple statistical analysis of data; computer-to-computer communications and file transfers; use of CSU network resources; introduction to computer languages. (2 lecture, 2 lab hours)

105T. Workshop on Computer Languages (1-3)
Prerequisite: C Sci 40 or permission of instructor. Workshops in the use of various high-level programming languages or other selected languages in areas of database, statistical computation, or operating systems.

112. Introduction to Computer Systems (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 41. 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. Algorithms and Data Structures (3)
Prerequisite: C Sci 41, 60. 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 41 and (C Sci 112 or ECE 118). General concepts and paradigms of programming languages; scope and binding rules, applications and implementations of language concepts. Languages selected from: ADA, ICON, Miranda, ML, MODULA 2, OCCAM 2, PROLOG, LISP, Scheme, smallTalk. (3 lecture, 2 lab hours)

119. Introduction to Finite Automata (3)
Prerequisite: C Sci 41, 60. Strings, languages, and fundamental proof techniques. Regular expression, regular grammar, regular languages, finite automata, their interrelationship, and their properties. Introduction to context-free languages.

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. (Spring semester)

126. Database Systems (3)
Prerequisite: C Sci 124. Database concepts; hierarchical, relational, and network models. Data normalization, data description languages, data manipulation languages, and query design. (Fall semester)

134. Compiler Design (3)
Prerequisite: C Sci 115, 117, 119. Syntax and semantics of programming languages. Lexical analysis, parsing techniques, parser generator, SLR and LALR parsing. Introduction to symbol table organization and semantic routines. Compiler generators. (Fall semester)

136. Compiler Construction (3)
Prerequisite: C Sci 134. Advanced topics in compiler design. Type checking. Run-time storage management. Intermediate code generation. Interpreters. Error recovery techniques. Code generation and optimization. (Spring semester)

144. Introduction to Operating Systems (3)
Prerequisite: C Sci 41 and (C Sci 112 or ECE 118). Operating system history and services. File systems. Memory management. Process management — concurrent processes, communication, semaphores, monitors, deadlocks. Resource management — processor and disk scheduling. Security and protection mechanisms.

146. Systems Architecture (3)
Prerequisite: C Sci 113A, 144. An in-depth analysis of one or more operating systems — system data structures, hardware architecture, shell and kernel functions, I/O routines, interrupt handling. Other topics may include parallel hardware architectures, performance analysis. (Spring semester)

148. Systems Programming (3)
Prerequisite: C Sci 113A, 144. Topics include implementation of operating system components and modification of existing systems. Device drivers, memory management, communication networks, and file systems will be examined. Projects will be emphasized.

150. Introduction to Software Engineering (3)
Prerequisite: C Sci 41. History, goals, and motivation of software engineering. Study and use of software engineering methods. Requirements, specification, design, implementation, testing, verification, and maintenance of large software systems. Team programming.

152. Software Engineering (3)
Prerequisite: C Sci 150. In-depth examination of techniques for specification, design, implementation, testing, and verification of software. Human-computer interfaces. Formal methods of software development. Use of software engineering tools for the development of substantial software projects. (2 lecture, 3 lab hours)

154. Simulation (3)
Prerequisite: C Sci 41, 60; Math 75. 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.

156. Internetworking Systems and Protocols (3)
Prerequisite: C Sci 144 or permission of instructor. Review of underlying network technologies. Application-level interconnections, network architectures, addressing, mapping abstract addresses to physical addresses, routing datagrams, error and control messages, protocol layering, gateways, subnets. Client-server interactions. Upper layers of the OSI model. (2 lecture, 3 lab hours)

164. Artificial Intelligence Programming (3)
Prerequisite: C Sci 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. (Fall semester)

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. (Spring semester)

172. Computer Graphics (4)
Prerequisite: Math 76, C Sci 41. Hardware devices, raster graphics, device independence, graphic data structure and representations, interactive techniques, and algorithms for the display of two- and three-dimensional objects, graphic transformations, graphics standards, modeling, animation, and scientific visualization. (3 lecture, 2 lab hours)

173. Advanced Computer Graphics (4)
Prerequisite: C Sci 172. Visible surface algorithms, lighting and shading, textures, curves and surfaces, computer-aided design, advanced modeling techniques, solid modeling, advanced raster graphics architecture, advanced geometric and raster algorithms, user interface, ray tracing, animation techniques, and fractals. (3 lecture, 3 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. (Spring semester)

176. Parallel Processing (4)
Prerequisite: C Sci 113A, 144. Notion, characteristics, and classification of computer systems. Compiler and operating system interfaces with underlying computer architecture. Notion and realization of parallelism. Pipeline design techniques. Vector processing. Array processing. Multiprocessing. Architectural trends. (3 lecture, 2 lab hours)

177. Distributed Computer Systems (4)
Prerequisite: C Sci 113A, 144 (C Sci 176 recommended). The taxonomy of parallel/distributed systems. Shared memory vs. message-passing programming paradigms. Message-based multicomputer systems. Message-passing computer programming. Multicomputer operating systems. Case studies. (3 lecture, 2 lab hours)

186. Formal Languages and Automata (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, push-down automata. (Spring semester)

188. Introduction to Computability (3)
Prerequisite: C Sci 119. Introduction to computability, effective procedures, algorithms; Turing machines, recursive functions, capabilities and limitations of effective procedures, the halting problem, computable functions and decidability. (Fall semester)

190. Independent Study (1-3; max see reference)
See *Academic Placement — Independent Study*. Approved for ***SP*** grading.

191T. Proseminar (1-3; max total 15)
Prerequisite: permission of instructor. Presentation of selected topics in computer science.

194. Cooperative Education (1-4; max total 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. *CR/NC* grading only.

198. Project (3)
Prerequisite: senior standing in computer science or permission of instructor and approved subject. See *Criteria for Thesis and Project*. Study of a problem under the supervision of a faculty member. Presentation by the student in a seminar setting and a final report are required. Satisfies the senior major requirement for the B.S. in Computer Science. Approved for *SP* grading.

GRADUATE COURSES

(See *Course Numbering System.*)

Computer Science (C Sci)

200. Introduction to Research in Computer Science (1)
Prerequisite: permission of instructor. Orientation to the graduate program, introduction to research methodology, and discussion of possible project and thesis topics.

213. Computer Organization (3)
Prerequisite: C Sci 112 and 113A or permission of instructor. Organization of memory, I/O, and processors. Computer busses. Microprogramming and instruction execution. Interrupts. Data communications.

217. Programming Language Principles (3)
Prerequisite: C Sci 117 or permission of instructor. Advanced topics in programming languages: concurrency, exceptions, types, procedures, execution models. Introduction to the formal specification of programming languages: syntax specification, semantic specification.

226. Advanced Database Systems (3)
Prerequisite: C Sci 126 and 144. Implementation of database systems on modern hardware systems. Operating system design issues, including buffering, page size, prefetching, etc. Query processing algorithms, design of crash recovery and concurrency control systems. Implementation of distributed databases and database machines.

244. Operating Systems (3)
Prerequisite: C Sci 144. Review of operating system functions. Performance monitoring and fine-tuning. Network operating system design. Concurrency, analysis of deadlock. Selected topics from current research.

246. Computer Architecture (3)
Prerequisite: C Sci 144. Examination and comparison of RISC and CISC architectures. Parallel processors, multiprocessors, dataflow machines. Database machines. Selected topics from current research.

250. Advanced Software Engineering (3)
Prerequisite: C Sci 150 or permission of instructor. Theoretical and practical aspects of software engineering emphasizing requirements analysis, specification, design, coding, testing, correctness, maintenance, and management. Examination of reliability, performance, and software metrics.

252. Software Development Environments (3)
Prerequisite: C Sci 250. Overview of modern software engineering environments including structured editors, programmer's assistants, and tools for software cost estimation, testing, scheduling, specification, and verification. Relationship between artificial intelligence and software engineering.

264. Artificial Intelligence (3)
Prerequisite: C Sci 164 or ability to program in Lisp and Prolog. Software technology for artificial intelligence systems, including expert systems. Knowledge-based and rule-based systems. Explanation and learning. User-oriented interfaces.

272. Computer Graphics (3)
Prerequisite: C Sci 172 or permission of instructor. 3-D transformations, visible surface algorithms, shading, textures, curves and surfaces, computer-aided design, advanced modeling techniques, solid modeling, advanced raster graphics architecture, advanced geometric and raster algorithms, user interface, ray tracing, animation techniques, and fractals.

274. Combinatorial Algorithms (3)
Prerequisite: C Sci 174. Design and analysis of efficient algorithms for combinatorial problems, Network flow theory, matching theory, augmenting-path algorithms, branch-and-bound algorithms, data structure techniques for efficient implementation of combinatorial algorithms, analysis of data structures, application of data structural techniques to sorting, searching, and geometric problems.

282 Theory of Computation (3)
Prerequisite: C Sci 188 or permission of instructor. General models of computation, recursive functions, undecidable problems, propositional calculus, predicate calculus, complexity classes, NP-complete problems.

284. Automata Theory (3)
Prerequisite: C Sci 186 or permission of instructor. Formal languages, abstract machines, algebraic approach to automata, term rewriting systems, formal power series, cryptography, parallel computation.

290. Independent Study (1-3; max total 6)
Prerequisite: approval of department. See *Academic Placement — Independent Study*. Approved for *SP* grading.

291T. Seminar (1-3; max total 9)
Prerequisite: approval of instructor. Special topics in computer science of current interest and importance.

298. Research Project (3)
Prerequisite: advancement to candidacy. See *Criteria for Thesis and Project*. Independent investigation of an advanced topic as the culminating requirement for the master's degree. Approved for *SP* grading.

299. Master's Thesis (3-6)
Prerequisite: advancement to candidacy. See *Criteria for Thesis and Project*. Preparation, completion, and submission of an acceptable thesis for the master's degree. Approved for *SP* grading.

IN-SERVICE COURSE

(See *Course Numbering System.*)

Computer Science (C Sci)

391T. Topics in Computer Science (1-6; repeatable with different topics)
May be repeated for credit provided different topics are covered.

Criminology

School of Social Sciences
Department of Criminology
MAX D. FUTRELL, *Chair*
McKee Fisk Building, Room 244
(209) 278-2305

B.S. in Criminology
Options:
Corrections
Law Enforcement
Victimology
M.S. in Criminology
Minor 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, victimology/ victim services, 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 students 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. The purpose of the victimology option is to provide students and the victim services field with a balanced theoretical and applied understanding of the principles of victimology. An internship course is required in corrections, law enforcement, and victimology 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; predoctoral 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: victim services, drug abuse, alternative sentencing, juvenile justice, exclusionary rule, crime prevention, and industrial security.

Faculty and Facilities

The criminology department consists of 12 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, and forensics. 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, career opportunities exist at municipal police departments, county sheriffs' offices, probation departments, halfway and prerelease houses, group homes, crisis centers, juvenile halls, welfare fraud units, retail, industrial security agencies, and victim services organizations. At the state level, career opportunities include the State Police, Department of Corrections, Alcohol and Beverage Control, prisons, Department of Motor Vehicles, Departments of Justice, Fish and Game, and Forestry. Federal opportunities include the Border Patrol, FBI, 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
Eric W. Hickey
Jerome E. Jackson
Ruth E. Masters
Barbara Owen
Robert F. Perez
Lester P. Pincu
D. N. Ray
Steven D. Walker
Harvey Wallace
Arthur V. N. Wint

Bachelor of Science Degree Requirements

Criminology Major ***Units***

Criminology — Corrections Option Major 53
Lower-division requirements (see *Note 1*): Crim 2, 20, 31, 50, 73 ..... (16)
Upper-division core (see *Note 2*): Crim 100, 102, 109, 112, 170 (see *Note 6*) ..... (15)
Upper-division requirements: Crim 118, 133, 134, 135, 181 ... (16)
Crim electives (two of the following courses): Crim 113, 117, 120, 126, 127, 136T, 140, 141, 153, 160T, 174, 175, 176, 177, 190 ..... (6)

Criminology — Law Enforcement Option Major 52
Lower-division requirements (see *Note 1*): Crim 2, 4, 20, 31, 50, 73 ..... (19)
Upper-division core (see *Note 2*): Crim 100, 102, 109, 112, 170 (see *Note 6*) ..... (15)
Upper-division requirements: Crim 113, 117, 127, 108 or 180 ..... (12)
Crim electives (two of the following courses): Crim 118, 120, 126, 133, 134, 135, 136T, 140, 141, 153, 160T, 174, 175, 176, 177, 190 ..... (6)

Criminology — Victimology Option Major 52
Lower-division requirements (see *Note 1*): Crim 2, 20, 50, 73 .. (13)
Upper-division core (see *Note 2*): Crim 100, 102, 112, 170 (see *Note 6*) ..... (12)
Upper-division requirements: Crim 174, 175, 176, 177 (or EHD 109), Crim 182, EHD 108 (or Crim 134) ..... (18)
Electives (select 9 units): Af Am 135, 144, 146; Anth 122, 123, 146, 172; AsAm 110; CLS 116, 160; Crim 109, 140; EHD 107; Hist 186; Pl Si 150, 160, 181; S Wrk 128, 129, 136; Soc 111, 122, 165; W S 108, 109, 116, 126, 160 ..... (9)

General Education 51

Electives and remaining degree requirements 24-25
(*see Degree Requirements*); may be used toward a dual major or minor

Total 128

Advising 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 exceptions of Crim 108, 180, 181, 182, 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. General Education and elective units may be used toward a dual major or minor (see *Dual Major* or departmental minor). Consult the appropriate department chair, program coordinator, or faculty adviser for further information.

Criminology Minor

Units

Lower division: Crim 2, 20 6
Upper division: Crim 100 3
Select from upper-division criminology courses 12
Total 21

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 they apply.

Master of Science Degree Requirements

Under the direction of a graduate adviser, each student prepares and submits a coherent program individually designed within the framework below. Each student must see the graduate coordinator each semester prior to registering for courses.

All students must complete required core courses, and successfully complete a qualifying examination as a condition of advancement to candidacy.

	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 coursework.		
Total units	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.

(See also *Admission to Graduate Standing, Advancement to Candidacy, Program Requirements, Foreign Language Requirements,* and *Criteria for Thesis and Project.)*

Victim Services Certificate

The Department of Criminology and the School of Education and Human Development 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
   Child Abuse (EHD 107) 3
   Domestic Violence (W S 116) 1
   Rape (W S 108) 1
   Incest (W S 109) 1

3. Service Delivery
- Intervention and Counseling for Helping Professions (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
- Legal Policy in Victim Services (Crim 177) 3
- Women and Violence (Crim/W S 126) 3

In addition, three units field experience (Crim 182) is available. For additional information or advising, contact the Department of Criminology.

Certificate in Alcohol/Drug Studies

The Department of Criminology is participating in a certificate of special study awarded to those students who successfully complete a minimum of 12 units of interdisciplinary academic coursework in the area of alcohol and drug abuse. (For complete details, see *Health and Social Work Interdisciplinary Courses* in this catalog.)

COURSES

Criminology (Crim)

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; purpose and function of victim services. (CAN AJ 2)

4. Police Operations (3)
Open only to criminology majors. Basic theories, objectives, and activities of police patrol and field operations.

10. Problems of Crime, Victims, and Justice (3)
An integrated approach to the study of contemporary criminal justice problems that affect society and the individual throughout his or her life. Volunteer or field assignments are required.

20. Criminal Law (3)
Introduction to the case method of studying criminal law, theory, concept, and philosophy of substantive law and criminal offenses; analysis of court decisions and opinions through case method. (CAN AJ 4)

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 (4)
Statistical and computer applications as they relate to criminological research and policy. Emphasis on descriptive and inferential statistical methods for the analysis of data and the application of appropriate computer statistical packages and other specialized computer programs for criminal justice. (3 lecture, 2 lab hours) (Lab fee, $15)

73. Criminal Justice Communications (3)
The fundamentals of gathering and organizing data, and writing reports in the criminal justice system, including victim services.

100. Criminology (3)
Theories of criminal behavior; sociological factors; organized crime; professional criminals; selected types of social deviants and criminal offenders. General Education CAPSTONE Cluster course.

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, including victim services agencies.

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. Approved for ***SP*** grading. (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.

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 (3)
Open only to criminology majors. Advanced study of scientific crime investigation, identification, and detection methods.

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, postconviction 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.

120. Juvenile Delinquency (3)
The problem of juvenile delinquency; portrait of delinquency; causal factors; agencies of justice; treatment process; programs for control and prevention. General Education CAPSTONE Cluster course.

126. Women and Violence: Public Policy and the Law (3)
(See W S 126.)

127. Advanced Criminal Legal Process (3)
Prerequisite: Crim 117 or 118. Advanced problems in arrest, search, seizure, interrogation, and prosecution. The law of evidence, including problems of relevancy, hearsay, opinion, privilege, and scientific evidence. Juvenile law and procedure from detention to disposition.

133. Correctional Institutions (3)
Examination of institutional philosophy, theory, function, and practice; historical and systems approach to incarceration; contemporary prison facilities; sociopsychological effects of incarceration; inmates and staff; institutional programs; parole; rights of the confined; institutional issues; future of corrections.

134. Criminal Justice Counseling (4)
An overview of counseling modalities and counseling techniques in criminal justice, including practical experience in problem identification, listening, empa-

thy, goal-setting, confrontation, scenario-building, and action strategies. (3 lecture, 3 lab hours)

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.

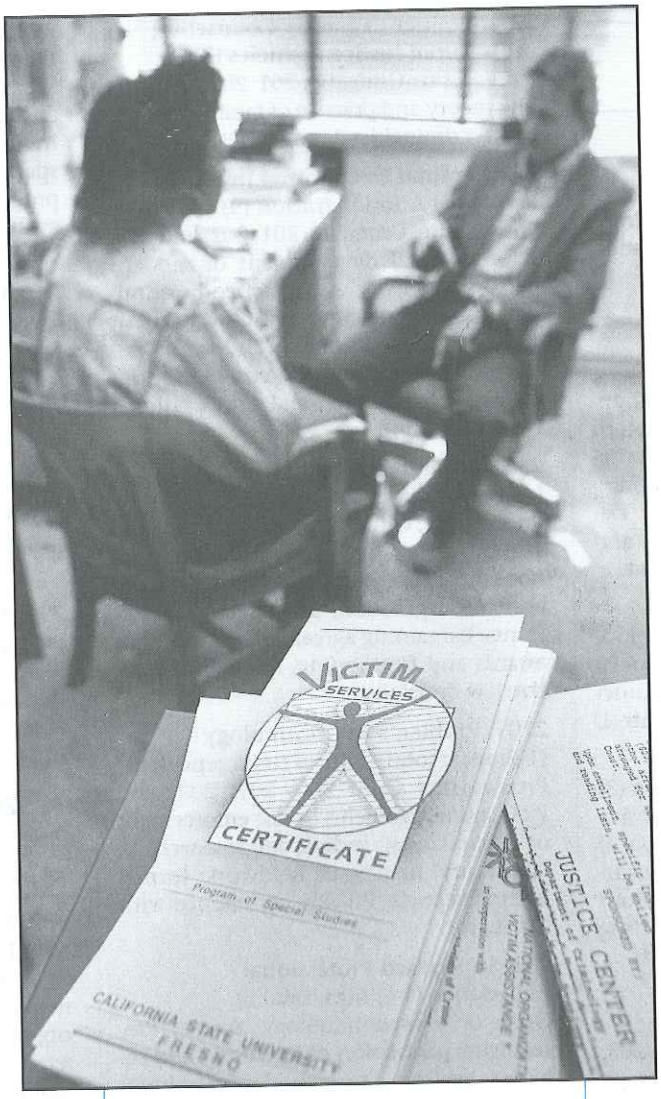
140. Family Violence (3)
Typology and history of family abuse, including: legal guidelines; treatment approaches; emotional abuse; sexual abuse; spousal abuse; elderly abuse; and child abuse as a criminogenic factor.

141. Alcohol, Drugs, and Criminality (3)
Drug and alcohol related criminal behavior and the response of the criminal justice system.

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. General Education CAPSTONE Cluster course.

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, safe-cracking; organized; arson; and environmental.

170. Research Methods in Criminal Justice (3)
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.



174. Ethnic and Gender Issues in Victim Services (3)
Prerequisite: Crim 175 and 176. Culturally specific responses to victimization; use of peers and community as support; prejudice, discrimination, and other special problems experienced by women and various ethnic and racial minority groups in obtaining services from victim services agencies and the criminal justice system.

175. Victimology (3)
Introduction to victimology, with special emphasis on family violence, sexual assault, restitution, compensation, 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 focuses on the role of a victim service agency as a new subsystem, with special emphasis on services.

177. Legal Policy in Victim Services (3)
Prerequisite: Crim 175 and 176. Analysis of legislation and specific legal policies regarding victim services. Victim rights, the process of changing attitudes, and current laws will be a major focus.

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 the student's classroom studies with occupational and professional experiences. Weekly conference with field supervisor. Transfer students should be aware that 12-unit total must include units previously earned; check with departmental adviser. Approved for ***SP*** grading. ***CR/NC*** grading only. (Minimum of 3 field hours per unit.)

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. Transfer students should be aware that 12-unit total must include units previously earned; check with departmental adviser. Approved for ***SP*** grading. ***CR/NC*** grading only. (Minimum of 3 field hours per unit.)

182. Internship in Victimology (1-12; max total 12)
Prerequisite: Crim 175 and 176, permission of instructor and sponsoring agency. Relates the student's classroom studies with occupational and professional experiences. Weekly conference with field supervisor. Transfer students should be aware that 12-unit total must include units previously earned; check with departmental adviser. Approved for ***SP*** grading. ***CR/NC*** grading only. (Minimum of 3 field hours per unit.)

190. Independent Study (1-3; max see reference)
See *Academic Placement — Independent Study*. Approved for ***SP*** grading.

GRADUATE COURSES

(See *Course Numbering System.*)

Criminology (Crim)

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 of 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.

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 fieldwork; 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. Approved for ***SP*** grading. ***CR/NC*** grading only.

290. Independent Study (1-3; max see reference)
See *Academic Placement — Independent Study*. Approved for ***SP*** grading.

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. Approved for ***SP*** grading.

298. Project (2-4; max total 4)
Prerequisite: Crim 200, 201, 202, and 203. See *Criteria for Thesis and Project.* 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. Approved for ***SP*** grading.

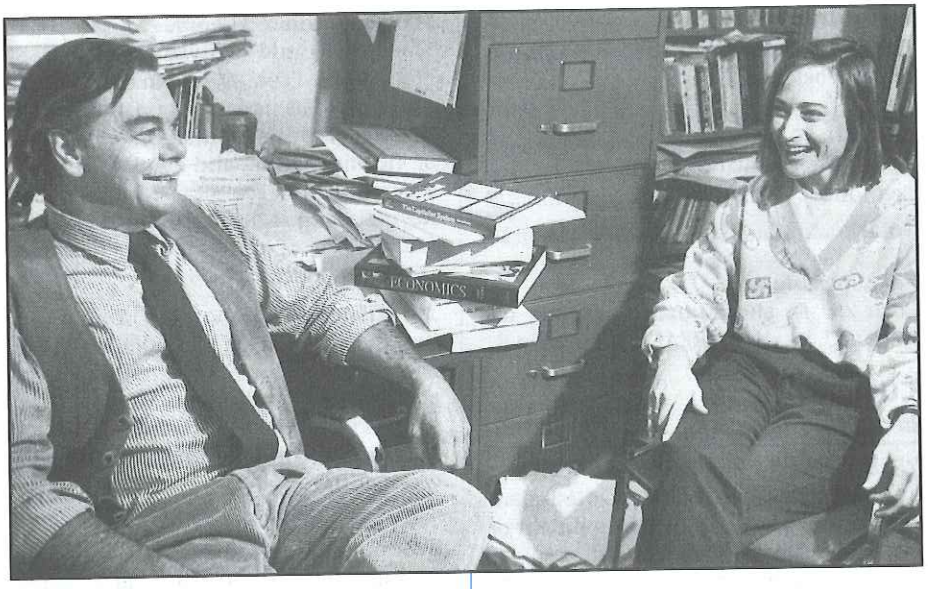
299. Thesis (2-4; max total 4)
Prerequisite: Crim 200, 201, 202, and 203. See *Criteria for Thesis and Project.* Preparation, completion, and submission of an acceptable thesis for the master's degree. Approved for ***SP*** grading.

IN-SERVICE COURSE

(See *Course Numbering System.*)

Criminology (Crim)

302. Topics in Criminology (1-3)
May be repeated for credit provided different fields are covered. Prerequisite: permission of instructor. Selected areas in the organization, administration, and management of agencies engaged in the administration of justice; the police function; prosecution of criminal offenses; the correctional process, deviant behavior.



School of Social Sciences
Department of Economics
DON R. LEET, *Chair*
Peters Business Building, Room 393
(209) 278-3916

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.

Such topics as inflation, unemployment, collective bargaining, banking, international trade, and development have long been within the province of economics. More recently, the economic way of thinking has been extended to other areas. Economic theories have been used to explain crime rates, birth rates, 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 the 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, such as 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. 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 prelaw 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, and insurance companies 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

Don R. Leet, *Chair*

Robert J. Allison
Paul D. Bush
James M. Cypher
Robert A. Minick
Louis F. Pisciottoli
Linda J. Shaffer
John A. Shaw Jr.

Bachelor of Arts Degree Requirements

Economics Major

Econ 40 and 50 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.*

	Units
Major requirements	**36**
Core: Econ 40, 50, 100A, 100B, 101, 123, 131, 135	(24)
Economics electives (at least 12 units upper division)	(12)
General Education	**51**
Electives and remaining degree requirements (see *Degree Requirements*); may be used toward a dual major or minor	**37**
Total	**124**

Advising 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 or minor.
3. General Education and elective units may be used toward a dual major or minor (see *Dual Major* or departmental minor). Consult the appropriate department chair, program coordinator, or faculty adviser for further information.
4. Economics majors may not use Econ 25, 40, 50, or Ag Ec 1 for General Education BREADTH, Division 8.

Economics Minor

The Minor in Economics requires 18 units as listed below.

	Units
Econ 40, 50	**6**
Select one: Econ 100A, 100B, 101	**3**
Economics electives	**9**
Total	**18**

Advising Note

Econ 25, 40, and 50 may also count for General Education BREADTH, Division 8.

COURSES

Economics (Econ)

25. Introduction to Economics (3)
Recommended for first semester freshmen. Elementary survey of the development of economic ideas and theories in the context of economic history. Topics may vary as circumstances warrant. Does not count toward the major in economics. General Education BREADTH, Division 8.

40. Principles of Microeconomics (3)
Prerequisite: Not open to first semester freshmen. Introduction to microeconomic theories of consumption, production, and income distribution; price determination and resource allocation under alternative forms of market organization; government regulation of economic activity; applied economic analysis and policy formation in selected topic areas. General Education BREADTH, Division 8. (CAN ECON 4)

50. Principles of Macroeconomics (3)
Prerequisite: Economics 40. Introduction to macroeconomic theories of the determination of income, output, employment, and prices in the economy as a whole; the monetary system; governmental countercyclical fiscal, monetary, and income policies; economic growth; international economics; economic development; and comparative economic systems. General Education BREADTH, Division 8. (CAN ECON 2)

100A. Economic Theory: Microeconomic Analysis (3)
Prerequisite: Econ 40, 50. 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 40, 50. 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 40, 50. 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 40, 50; 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 50. 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 40, 50. 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 40, 50. 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 40, 50. 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 neoclassical economics.

109. Principles of Political Economy (3)
Prerequisite: Econ 40, 50 or permission of instructor. A critique of political economy; political nature of applications of economic theory.

110. Economic History of the United States (3)
Prerequisite: Econ 40, 50. Exploration and colonization to the present; economic factors in development of the United States; relationships of economic forces to historical, political, and social change.

114. Economic Development of Poor Nations (3)
Prerequisite: Econ 40, 50. Intensive study of the causes and consequences of underdevelopment which affect two-thirds of the world's people. Topics include theories of development, historical roots of underdevelopment, evaluation of aid programs, New International Economic Order, Asian export economies, managing external debt.

115T. Topics in U.S. 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 40, 50. 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. General Education CAPSTONE Cluster course.

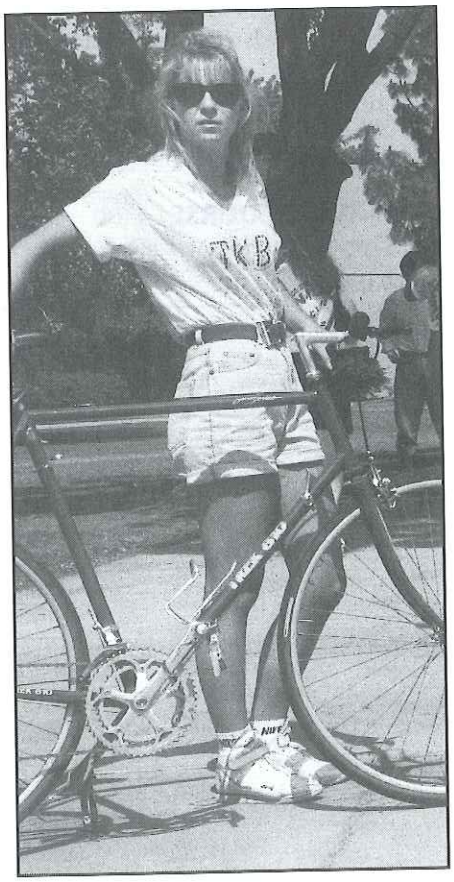
123. Introduction to Econometrics (3)
Prerequisite: Econ 40, 50; Math 11 or permission of instructor. Statistical data analysis in economics. Use of multiple regression analysis, time series analysis, index numbers. Basic theory; computer applications using major economic data sources; interpretation of results. (2 lecture, 2 lab hours)

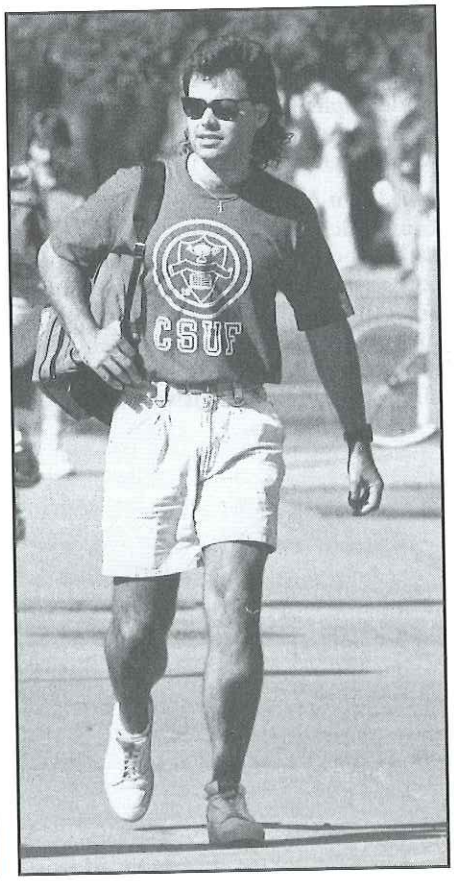
125. Introduction to Mathematical Economics (3)
Prerequisite: Econ 40, 50; Math 75. Introduction to uses of mathematics (primarily calculus and matrix algebra) in theoretical economic analysis. Knowledge of basic economics assumed; math is taught. Strongly recommended for students considering graduate work in economics or business.

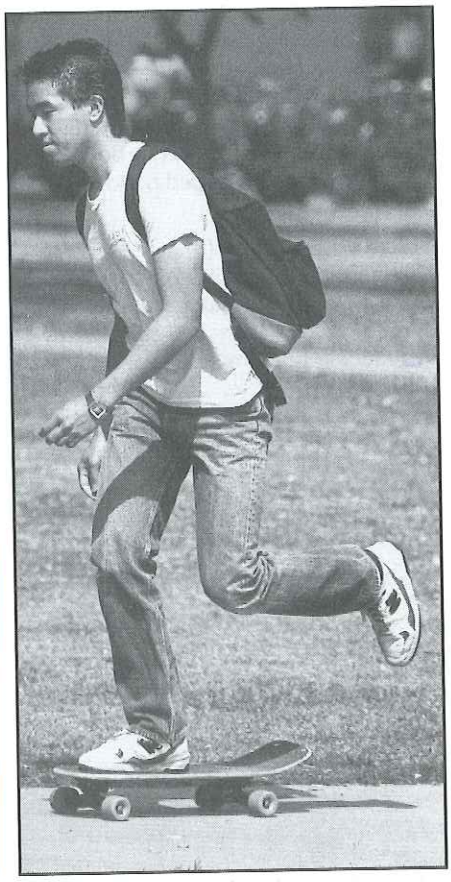
131. Public Finance (3)
Prerequisite: Econ 40, 50. Governmental revenues and expenditures at federal, state, and local levels of jurisdiction. Tax limitation measures, efficiency in government, subsidies, and fiscal relationships between different levels of government.

135. Money and Banking (3)
Not open to students with credit in Fin 122. Prerequisite: Econ 40, 50. 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 50. 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 40, 50. 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 40, 50. 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 40, 50 or permission of instructor. Economic theory of investment in education, job training, and health; economic theories of discrimination; analysis of earnings differentials for women and ethnic minorities. Issues discussed include educational choices, affirmative action, comparable worth, and "manpower" planning policies.

161. Population Economics (3)
Prerequisite: Econ 40, 50. 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.

165. The Modern American Economy (3)
Not open to economics majors. Provides an overview of the major economic forces that shape our everyday experiences by introducing fundamental economic principles and applying them to the American economy. Audio-visual materials and computer simulations are presented.

174. Government Regulation of Economic Activity (3)
Prerequisite: Econ 40, 50. 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 40, 50 or permission of instructor. Emphasizes economic concepts, issues, and institutions through an integrated series of classic films, lectures, and discussions. Students will apply economic theory to contemporary problems.

178. International Economics (3)
Prerequisite: Econ 40, 50. 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 multinational corporations, theories of economic imperialism.

180. Comparative Economic Systems (3)
Prerequisite: Econ 40, 50. Comparative study of economic systems of the modern world; capitalism, socialism, communism, fascism, and the problems which arise within each.

181. Latin American Economic Development (3)
Latin America's principal economic problems examined within a historical context. Topics may include Colonialism, Neo-Colonialism, foreign corporations, debt crises, problems of industrialization, agricultural backwardness. Intensive examination of major nations. Theories of development (structuralism, dependency, dualism, modernization) are integrated into case studies.

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; max total 6)
Prerequisite: Econ 40, 50, 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 40, 50. Consideration of in-depth, 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 40, 50. 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*. Approved for ***SP*** grading.

IN-SERVICE COURSE

(See *Course Numbering System.*)

Economics (Econ)

365T. Economics for Teachers (1-6)

EDUCATION Interdepartmental Programs and Courses

The interdepartmental section provides information about the Master of Arts degree program in Education — Curriculum and Instruction, and the Victim Services Certificate of Special Study Program. These programs are sought by students with varied professional interests and career goals.

Information is also provided about special School of Education and Human Development (SOEHD) programs and services that are available for administrators, faculty, and students. Brief summaries of additional programs expected to receive approval during the 1993-94 academic year are also provided.

For faculty listings, refer to the following departments within the SOEHD:
- Counseling and Special Education (CSE)
- Curriculum, Teaching, and Educational Technology (CTET)
- Educational Research, Administration, and Foundations (ERAF)
- Literacy and Early Education (LEE)

Master's Degree Program

The Master of Arts degree in Education with an option in curriculum and instruction is designed to provide professional and specialized preparation for candidates interested in acquiring knowledge and skills essential for the design and development of curriculum and related instructional practices. This 30-semester unit program provides candidates with an opportunity to obtain in-depth study in a variety of specialty areas associated with the field of education, such as microcomputer applications, subject area applications, philosophical/psychological foundation applications, etc. For more information about this program, refer to the *Education — Curriculum, Teaching, and Educational Technology* section in this catalog.

Victim Services Certificate Program

The SOEHD and the Department of Criminology jointly sponsor the Victim Services Certificate of Special Study Program.

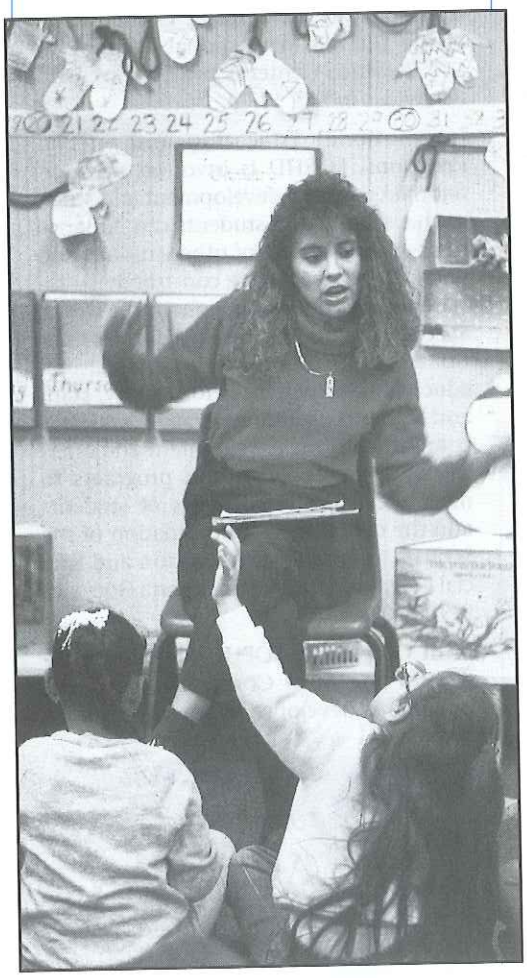
The primary goal of the Victim Services Program is to provide experiences, knowledge, and skills for working with victims within a criminological/human development framework. This program is also very useful for individuals interested in pursuing a career in the area of behavioral sciences.

Students working toward a Victim Services Certificate 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 is 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: admission, completion of program courses, and 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 SOEHD 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)
   b. Completion of at least one general course in psychology, sociology, anthropology, health science, or child and family studies.



Completion of Program Courses:
1. Complete all approved courses that are identified on the Victim Services Program Application form.
2. Complete the Application for the Victim Services Certificate form obtained in EdP 120.

Certificate Authorization:
1. The SOEHD credential analyst verifies that all coursework has been completed.
2. The certificate is signed and awarded.

Course Requirements. A minimum of 12 units are required with 3 units selected from each of the four emphasis areas: 1) theory, 2) victim issues, 3) service delivery, and 4) legal/social policy.

School of Education and Human Development
BARBARA G. BURCH, *Dean*
Ed/Psych Building, Room 133
(209) 278-2623

ROBERT H. MONKE, *Associate Dean*
Ed/Psych Building, Room 120
(209) 278-3084

BERTA GONZALEZ, *Interim Coordinator*
DAVID LOPEZ, *Adviser*
Multiple Subject Credential Program
(209) 278-6840

JOLYNE DAUGHTRY, *Coordinator*
Single Subject Credential Program
(209) 278-6840

M.A. in Education
Curriculum and Instruction Option
Victim Services Certificate

	Units
1. Theory	3
Victimology (Crim 175)	
2. Victim Issues	3
Select a minimum of 3 units:	
Family Violence (Crim 140)	(3)
Child Abuse (EHD 107)	(3)
Domestic Violence (W S 116)	(1)
Rape (W S 108)	(1)
Incest (W S 109)	(1)
3. Service Delivery	3
Select a minimum of 3 units:	
Intervention and Counseling for Helping Professions (EHD 108)	(3)
Victim Services (Crim 176)	(3)
Child Welfare (S Wrk 128)	(3)
4. Legal/Social Policy	3
Select a minimum of 3 units:	
Education for Community Change (EHD 109)	(3)
Legal Policy in Victim Services (Crim 177)	(3)
Women and Violence (Crim/W S 126)	(3)
Total	12

Field Experience. An additional 3-unit field experience (Crim 181: Internship in Corrections) is available to interested students. Enrollment can be arranged by contacting the Department of Criminology.

Advising. For information and advisement, contact the School of Education and Human Development certificate program adviser or the chair of the Department of Criminology.

Special Programs and Services

The Center for Educational Research and Services (CERS) assists faculty, students, school districts, and the community in improving practice in education through research. Emphasis is on applied and collaborative research which will impact educational quality for learners of all ages. Assistance is available in grant proposal writing and submission; in administering state, federal, and private grants; and for consultation for specific needs such as organizational change, publication, and program planning. Other technical support includes evaluation, survey design, and statistical programming, analysis, and interpretation. The SOEHD Center for Educational Research and Services is located in EdP 130.

Development and Alumni Relations. In its effort to provide the highest quality programs and services to the educational community in the Central Valley, the SOEHD has begun a comprehensive plan of development. The school intends to involve faculty, emeriti faculty, business leaders, students, alumni, and friends of education in providing "state-of-the-art" instruction, facilities, and programs for continuing development and support of education. Coordination of the Development and Alumni Relations program is provided by Belle Trinkle located in San Ramon 2-49.

The Instructional Technology and Resource Center, INTERESC, is designed to provide support to faculty for the utilization and integration of technology in the curriculum. INTERESC staff provide assistance in instructional design for the preparation and production of videotapes, slidetape programs, and other media formats. Center personnel also consult with faculty and staff in selecting specific computer hardware and software, reserving audiovisual equipment, microcomputers, and other instructional resources, and providing audio and videotaping support. INTERESC staff are responsible for management and operation of computerized classrooms in the SOEHD. Coordination of the SOEHD Instructional Technology and Resource Center is provided by Otto Benavides in EdP 117D.

International Education and Special Programs. SOEHD is involved in international program development and study so that faculty and students can enhance their understanding of other cultures and nations and contribute constructively toward a better future throughout the world. Special support is provided for international, multicultural, and cross-cultural educational experiences for faculty, staff, and students. Additionally, the SOEHD is committed to the development and offering of special courses and programs to meet the educational needs of students and the community. Coordination of the SOEHD International Education and Special Programs is provided by Berta Gonzalez in AH 207.

Mini Corps. The SOEHD provides facilities for the Mini Corps Program. This program is developed to prepare migrant students to work in bilingual classrooms and to obtain teaching credentials. Mini Corps staff provide counseling, advising, and financial support annually for 40 migrant students who are interested in becoming teachers. For more information contact Directors Lilly Lomeli or Jose Lomeli in the Mini Corps office located in San Ramon 4-118.

"The role of a teacher is to arrange victories for students."

Quintilian

Proposed Programs

The School of Education and Human Development administration and faculty are involved in the development of several new programs. These programs are expected to be implemented during the 1993-94 and 1994-95 academic years.

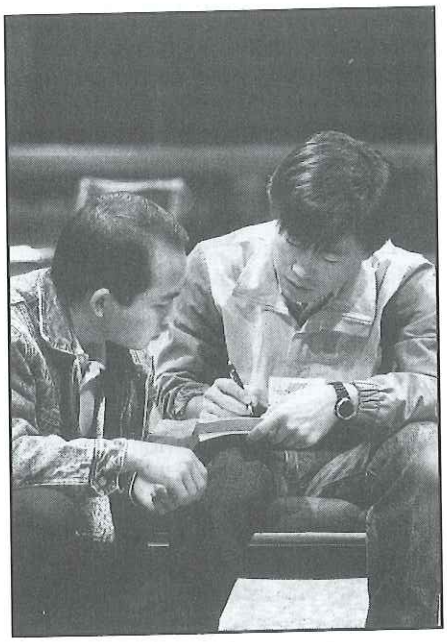
Cross-Cultural Language and Academic Development (CLAD) and Bilingual Cross-Cultural Language and Academic Development (BCLAD) Credential. These credential programs are being developed and will replace the current Bilingual/Cross-Cultural Emphasis program in 1993-94. The emphasis of the CLAD/BCLAD credential is to prepare teachers to work with limited English proficient students. The CLAD authorization will certify teachers to provide instruction for English language development and specifically designed academic instruction, delivered in English, to students. The BCLAD will authorize teachers to provide academic instruction to limited English proficient students in their primary language. See the CLAD/BCLAD coordinator for specific details.

Middle School Emphasis Programs for both Multiple Subject and Single Subject Credentials are being developed. These programs will provide special preparation for candidates who wish to teach in middle school settings (grades 7-8). These programs are expected to be available in 1994-95. Coordination for both programs will be provided in the SOEHD Admissions and Records Office in EdP 111.

COURSES

Education and Human Development (EHD)

50. Introduction to Teaching (2)
Orientation to role of teacher in public schools; observation of teacher-pupil interaction, instructional approaches, classroom management in elementary, secondary, and/or middle schools; two-hour lecture weekly, plus two-hour school site observation weekly, not including travel. *CR/NC* grading only. (Former T Ed 50)



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. Child Abuse (3)
Develops perspectives on child abuse and child victimization. Assessment, treatment, and prevention of child abuse/neglect are covered. Other areas include: effects of divorce, media, and war on the lives of children and children's rights. Course meets licensure and licensure renewal requirements for many professional groups.

108. Intervention and Counseling for Helping Professions (3)
Focuses on crisis intervention and the coping process. Looks at ways of assisting persons directly and indirectly affected by crises such as crime victimization, family change, and other problems.

109. Education for Community Change (3)
The capacity of a society to ensure 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 affecting public policy is explored. The course includes such activities as advocacy, interprofessional collaboration, planning strategies, legislative proposals, grant writing, grass roots organizing, and public education efforts at the city, county, and state levels.

110. Initial Student Teaching (1-3; max total 3)
Prerequisites: admission to Multiple Subject Program; ERF 130, 140, or concurrent enrollment; CTET 150 and LEE 156M must be taken concurrently, except in Options II and IV. Supervised activities and teaching in public school classrooms. Minimum of 40 minutes per day per unit, with additional conference periods. ***CR/NC*** grading only. (Instructional materials fee, $10; less than 3 units, $3.50 per unit) (Former T Ed 110)

115. Liberal Studies Project (3)
Prerequisite: senior standing. Supervised tutorial in the public schools, working one-on-one with students identified as "at risk" of school failure. A journal, session commentaries, reviews of professional articles, and a final paper are required. One hour lecture, three hours tutorial.

155A. Student Teaching in Secondary School (5)
Prerequisites: admission to the Single Subject Credential Program; ERF 151, 152, and CTET 159 must be taken prior to or concurrently with EHD 155A. Student teaching in middle school under clinical supervision; assignment requires 3 hours per day, Monday through Friday. ***CR/NC*** grading only. (Instructional materials fee, $15) (Former T Ed 155A)

155B. Student Teaching in Secondary School (5 or 10; max total 10)
Prerequisites: admission to student teaching; EHD 155A; CTET 161 (or concurrently depending on major departmental policy); senior or postbaccalaureate standing; approval of major department including subject matter competency approval; completion of waiver program or passing of appropriate National Teachers Examination. Supervised teaching in a single subject classroom; assignment is for the full day; five days per week. ***CR/NC*** grading only. (Former T Ed 155B)

160A. Student Teaching in Elementary School (6)
Prerequisites: 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. ***CR/NC*** grading only. (Instructional materials fee, $5) (Former T Ed 160A)

160B. Student Teaching in Elementary School (6)
Prerequisites: 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. ***CR/NC*** grading only. (Instructional materials fee, $5) (Former T Ed 160B)

160C. Student Teaching in Elementary School (12)
Prerequisites: admission to the Multiple Subject Credential Program; completion of all requirements for admission to student teaching. Supervised teaching in public school classrooms; assignment is daily for a full school day. ***CR/NC*** grading only. (Instructional materials fee, $10) (Former T Ed 160C)

180T. Topics in Education and Human Development (1; max total 9)
Issues and topics in education and human development. (Former T Ed 180T)

IN-SERVICE COURSES

(See *Course Numbering System.*)

Education and Human Development (EHD)

Note: EHD 306, 316, and 326 are equivalent to the CSU consortium courses Designated Subjects 306, 316, and 326. They satisfy specified requirements for the Designated Subjects Credential for Adult and Vocational Education.

306. Foundations of Adult/Vocational Education (3)
Scope and function of adult education, curriculum principles and practices, instructional techniques and media, student and instructional evaluation; applicable toward a B.S. degree in Vocational Education. (Former T Ed 306)

316. Seminar in Adult/Vocational Education (3)
Prerequisite: EHD 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 T Ed 316)

326. Independent Study in Adult/Vocational Education (3)
Prerequisite: EHD 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 T Ed 326)

328. Techniques of Teaching (4)
For the part-time Ryan Designated Subject credential candidate. Learning processes, curriculum and media, instructional techniques and practices, and evaluation of student achievement. This course will *not* be accepted for degree credit. (Former T Ed 328)

353. Curriculum Problems and Practices (1-3; max total 12 if no topic repeated)
Prerequisite: teaching credential. Individual or group projects in curriculum analysis, implementation, and evaluation; implications of individual differences and environmental factors. Written report required. May not be applied to a master's program. (Former T Ed 353)

361. General Methods of Teaching (3)
Basic principles of teaching and application to the classroom; implications of methods for classroom management, motivation, pupil behavior, and reporting to parents; preparation of instructional plans and evaluation instruments. (Former T Ed 361)

363F. Fieldwork in Curriculum (1-3; max total 6 if no project repeated)
Prerequisite: regular credential or recommendation of the principal. Special projects in curriculum implementation and evaluation. Individual or group projects. Written report submitted to instructor and school district (individual or group conference; hours arranged). (Former T Ed 363F)

381. Planning and Organizing Outdoor Education (3)
Prerequisite: teaching experience. Role of the public school in promoting learning opportunities outside the classroom; outdoor science, conservation, education, health and safety, group living, camp work experience, and nature study; responsibilities of classroom teachers for outdoor leadership. (Seminar, lab, field trips) (Former T Ed 381)

395. Supervision of Student Teachers (2; max total 4)
Prerequisites: postbaccalaureate standing, teaching experience. Supervision and evaluation of student teachers; role of the supervising classroom teacher, college supervisor, and other personnel. ***CR/NC*** grading only. (Former T Ed 395)

EDUCATION Counseling and Special Education

The Department of Counseling and Special Education offers programs and master's degrees in the areas of counseling, rehabilitation counseling, and special education. The programs utilize the services and facilities of community agencies and school districts within the university service area.

Counseling. Three master's degrees are available in the field of counseling: the Master of Arts in Education with an option in counseling and student services; the Master of Science in Counseling with an option in marriage, family and child counseling; and the Master of Science in Rehabilitation Counseling.

The M.A. degree in Education is a 30-unit program for individuals seeking advanced preparation for careers in school counseling (grades K-12) or student services in higher education.

The M.S. in Counseling degree is a 60-unit program designed for persons who desire professional preparation for the practice of marriage, family and child counseling in agency or private settings.

The M.S. in Rehabilitation Counseling is a 60-unit program designed for persons who desire professional preparation to work in agency or private settings assisting those who are physically, mentally, or emotionally disabled to reach optimal occupational, personal, and social adjustment.

The Pupil Personnel Services Credential Program is a 36-unit program that provides preparation for individuals who desire to function as school counselors in grades K-12.

Special Education. The Master of Arts in Special Education is awarded after completion of a minimum of 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 K-12) must possess the appropriate Special Education Specialist Credential.

Career Opportunities

Completion of the Pupil Personnel Services Credential and the M.A. in Education with an option in counseling and student services qualifies graduates to work in a public school setting or at the community college or university level in the areas of counseling and student services.

Completion of the M.S. in Counseling with an option in marriage, family and child counseling may qualify for employment in private or agency counseling practices, county mental health programs, employee assistance programs, drug and alcohol abuse centers, and hospital mental health settings. 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 Counselor License.

Persons completing the M.S. in Rehabilitation Counseling may become employed in a variety of work settings including state and federal vocational rehabilitation programs, sheltered workshops, medical rehabilitation centers, private 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. Students in the M.S. in Rehabilitation Counseling program may, during their final semester of study, qualify to take the exam to become a Certified Rehabilitation Counselor (CRC).

Persons completing the M.A. in Special Education and a Special Education Specialist Credential may seek employment in public or private school programs, clinics, special schools, resource classrooms, educational programs, residential facilities, hospitals, and other agencies serving persons with special needs.

School of Education and Human Development
Department of Counseling and Special Education
H. DAN SMITH, *Chair*
Education Annex, Room 105
(209) 278-2271

M.A. in Education
Counseling and Student Services Option
Pupil Personnel Services Credential

M.S. in Counseling
Marriage, Family and Child Counseling Option

M.S. in Rehabilitation Counseling

M.A. in Special Education
Specialist Credentials:
Learning Handicapped
Severely Handicapped

Faculty

H. Dan Smith, *Chair,* (209) 278-2271
Juan C. García, *Coordinator of Counselor Education,* (209) 278-2322
Anita Leal-Idrogo, *Rehabilitation Counseling Adviser/Coordinator,* (209) 278-2105
Janice A. Chavez, *Coordinator of Special Education,* (209) 278-4608

Ray E. Brewer	Landa J. Iverson
Sari H. Dworkin	Ronald S. Kiyuna
Deanna Evans-Schilling	Robert H. Monke
Leslie J. Farlow	E. W. "Bud" Stude

Credential Program Requirements

The Department of Counseling and Special Education offers programs leading to credentials in the fields of counseling and special education. Credential programs include: *Counseling*: Pupil Personnel Services Credential; *Special Education*: Special Education Specialist Credential with an emphasis in Learning Handicapped or Severely Handicapped.

Counseling

Pupil Personnel Services Credential — School Counseling. The Pupil Personnel Services Credential is required to function as a counselor in a public school setting, grades K-12.

Admission Deadlines. Students seeking summer or fall enrollment must complete all admission requirements by March 1. Students seeking spring enrollment must complete all admission requirements by October 1.

Admission Requirements. Applicants for the Pupil Personnel Services Credential must complete the admissions packet as specified in the *General Admission Requirements* in the *Education — Graduate Program* section. In addition to these requirements, applicants must:

1. Include the following with the admissions packet:
   a. Verification of attendance at a counselor education program orientation
   b. Verification of having completed the Sixteen Personality Factor Questionnaire (16 PF) with provision to forward scores to the School of Education and Human Development
   c. Evidence of having passed the California Basic Educational Skills Test (CBEST)
   d. A current medical clearance
   e. A valid Certificate of Clearance to participate in public school field placement activities
2. Complete prerequisite coursework: COUN 174 (Introduction to Counseling) and ERF 153 (Educational Statistics) or equivalent.
3. Receive approval through a review by a program faculty committee. Following receipt of the completed packet and the review by program faculty, applicants will receive written notification regarding admission status.

Program Requirements. Candidates for the Pupil Personnel Services Credential who have been approved by the Program Faculty Review Committee for admission to the program and who want to be recommended for the credential must meet the following program requirements:

1. Complete COUN 150, 200, 201, 202, 203, 206, 220, 240, 241, 249A, 249B, 280T.
2. Complete practicum and field practice with a grade of ***B*** or better.
3. Pass the competency exit review.

Note: Students may not enroll in 200-level courses until their application has been approved by the Program Faculty Review Committee and they have been admitted to the credential program.

Pupil Personnel Services Credential — School Psychology. See *Psychology Department.*

Special Education

Special Education Specialist Credential. The Special Education Credential Program offers preparation for teaching in areas of learning handicapped and severely handicapped.

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 postbaccalaureate standing at CSU Fresno.
2. Complete application for admission to a School of Education and Human Development graduate program.
3. Possess an undergraduate GPA that falls within the upper 50 percent of undergraduate students in the candidate's discipline on the campus. Students who have completed postbaccalaureate work must possess a minimum GPA of 3.0 on these units.
4. Complete a statement of purpose.
5. Obtain three letters of recommendation.
6. Complete prerequisites including: SPED 160, 160F (1 unit), 170 for Learning Handicapped program applicants only or 175 for Severely Handicapped program applicants only, and ERF 153.
7. Take the Graduate Record Examination (GRE) — General Test or the Miller Analogies Test (MAT) and submit appropriate scores.
8. Provide evidence of having passed the California Basic Educational Skills Test (CBEST).
9. 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. Complete a basic teaching credential.
2. Receive permission of the special education faculty prior to enrollment in 200-level courses.
3. Complete required courses for the desired area of specialization:
   a. *Learning Handicapped* (learning disabled, behaviorally disturbed, and educable mentally retarded): SPED 201, 202, 210, 211, 213, 215, 218, and COUN 240 or SPED 219.
   b. *Severely Handicapped* (severely mentally retarded, severely emotionally disturbed or autistic, and multiple handicapped): SPED 201, 202, 220A, 220B, 221A, 221B, 222, 228, and COUN 240 or SPED 219.
4. Complete practicum and fieldwork with a grade of ***B*** or better.
5. Pass the competency exit review.

Notes

1. Individuals must possess a minimum graduate GPA of 3.0 prior to enrollment in SPED 218 or 228.
2. Individuals wishing to enroll in fieldwork or supervision courses — SPED 160F (when not taken the same semester as SPED 160), 190, 218, 220B, 221B, 228, 290, 298 — must contact and receive permission from the coordinator of special education the semester prior to enrolling in the course.

Graduate Programs

The Department of Counseling and Special Education offers programs leading to a Master of Arts degree in Education with an option in counseling and student services; a Master of Science degree in Counseling with an option in marriage, family and child counseling; a Master of Science degree in Rehabilitation Counseling; and a Master of Arts degree in Special Education.

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

Counseling and Student Services

The Master of Arts degree in Education with an option in counseling and student services is designed for individuals seeking advanced preparation for careers within educational settings.

Admission Requirements for Classified Standing. See *General Admission Requirements* in the *Education — Graduate Program* section in this catalog.

Admission Deadlines. Students seeking classified standing (full admission) for summer or fall enrollment must complete all admission requirements by March 1. Students seeking classified standing for spring must complete all admission requirements by October 1.

Admission Requirements. Applicants for admission to the Master of Arts degree in Education with an option in counseling and student services must complete the admissions packet as specified in the *General Admission Requirements* in the *Education — Graduate Program* section. In addition to these requirements, applicants must:

1. Include the following with the admissions packet:
   a. Verification of attendance at a counselor education program orientation
   b. Verification of having completed the Sixteen Personality Factor Questionnaire (16 PF) with provision to forward scores to the School of Education and Human Development
2. Complete prerequisite coursework: COUN 174 (Introduction to Counseling) and ERF 153 (Educational Statistics) or equivalent.
3. Receive approval through a review by program faculty committee. Following receipt of the completed packet and the review by program faculty, applicants will receive written notification regarding admission status.

Note: Students may not enroll in 200-level courses until their application has been approved by the review committee and they are admitted to classified standing (fully admitted to the program).

	Units
Core requirements	**27**
ERF 220, 285 or 288; COUN 298 or 299	(10)
COUN 200, 203, 208, 220, 249A or 249B or 249C	(17)
Electives	**3**
COUN 150, 180T, 201, 202, 240, 241, 280T, 290; ERF 289; or other approved electives	
Total	**30**

Note: Practicum and field practice must be completed with a grade of ***B*** or better.

Master of Science Degree in Counseling

Marriage, Family and Child Counseling

The Master of Science in Counseling is a 60-unit professional degree program designed for persons who desire to practice in the field of counseling. An option is available in marriage, family and child counseling. Persons completing this degree may qualify to work in agencies, community colleges, four-year colleges and universities, marriage and family counseling, and related areas. Completion of the M.S. in Counseling with an option in marriage, family and child counseling fulfills the educational requirements for the state of California Marriage, Family and Child Counselor License if students take an elective upper-division or graduate-level course (at least 2 units) in substance abuse and obtain at least 7 clock hours of training through either a university course or a noncredit professional development workshop (with appropriate verification of attendance) in child abuse assessment and reporting. Students seeking licensure should contact the coordinator of counselor education for information regarding licensing.

Admission Requirements for Classified Standing. See *requirements for M.A. degree in Education, counseling and student services option.*

Course Requirements. Under the direction of a graduate adviser, each student develops and submits an individually designed program within the following framework:

	Units
Core requirements	**29**
ERF 220, COUN 298 or 299	(7)
COUN 176, 200, 201, 202, 203, 206, 208	(22)
Option	**22**
Marriage, Family and Child Counseling COUN 230, 231, 238, 239 (6 units), 280T; S Wrk 273	
Electives	**9**
Approved by adviser	
Total	**60**

Note: Practicum and field practice must be completed with a grade of ***B*** or better.

Master of Science Degree in Rehabilitation Counseling

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 the student has a working knowledge of the behavioral sciences. The degree requires 60 units of credit and is designed to cover two years of full-time coursework, including a full semester of internship. The program provides a combination of classroom and practical field experiences, which integrates theory and practice of rehabilitation counseling in a rehabilitation setting. The curriculum has flexibility to meet varying student needs.

The graduate program in rehabilitation counseling is accredited by the Council on Rehabilitation Education (CORE). Students are eligible to take the exam to become a Certified Rehabilitation Counselor (CRC) during the last semester of study.

Admission Requirements for Classified Standing. See *General Admission Requirements* in the *Education — Graduate Program* section of this catalog.

Admission Deadlines. Students seeking classified standing (*full admission*) for summer or fall enrollment must complete all admission requirements by March 1. Students seeking classified standing for spring must complete all admission requirements by October 1.

Admission Requirements. Applicants for admission to the Master of Science degree in Rehabilitation Counseling must com-

plete the admission packet as specified in the *General Admission Requirements* in the *Education — Graduate Program* section. In addition to these requirements, applicants must:

1. Include the following with the admissions packet:
   a. Verification of attendance at a counselor education program orientation
   b. Verification of having completed the Sixteen Personality Factor Questionnaire (16PF) with provision to forward scores to the School of Education and Human Development
2. Complete COUN 250 and 251 with a grade of *B* or better in each class.
3. Receive approval through a review by a program faculty committee. Following receipt of the completed packet and review by program faculty, applicants will receive written notification regarding admission status.

Note: Students may not complete more than 10 units of 200-level coursework before obtaining classified standing (full admission to the program).

Program Prerequisites. ERF 153 (Educational Statistics), Psych 154 (Personality) or 250T (Seminar in Personality) or COUN 174 (Introduction to Counseling), and Psych 166 (Abnormal Psychology) or COUN 176 (Counseling and Mental Health) or their equivalents. Program prerequisites may not be counted toward the Master of Science degree in Rehabilitation Counseling.

Course Requirements. Under the direction of the graduate adviser, each student prepares and submits an individually designed program within the following framework:

	Units
Core requirements	**38**
COUN 250, 251, 252, 253, 257, 258, 260, 261, 269	
Courses in supporting curriculum	**12**
Research methods: ERF 220	(3)
Individual and group counseling skills: COUN 200, 202	(6)
Assessment: COUN 203	(3)
Electives	**10**
Approved by adviser	
Total	**60**

The student must demonstrate proficiency by the satisfactory completion of a comprehensive examination, in addition to fulfillment of all other specified degree requirements. A thesis/project is optional.

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 exceptional individuals.

Admission Requirements for Classified Standing. See *General Admission Requirements* in the *Education — Graduate Program* section in this catalog. Students seeking admission to the Master of Arts degree program in Special Education must possess an undergraduate GPA that falls within the upper 50 percent of undergraduate students in the candidate's discipline on the campus. Students who have completed postbaccalaureate work must possess a minimum GPA of 3.0 on these units.

Program Prerequisites. SPED 160, 170 or 175; ERF 153; statement of purpose; interview with program coordinator; faculty review.

	Units
Core requirements	**7**
ERF 220 and SPED 298 or 299	
Area of specialization	**15**
Learning Handicapped: SPED 201, 202, 211; COUN 240 or SPED 219	
Severely Handicapped: SPED 220A, 220B, 221A, 221B, 222	
Approved electives	**8**
Select from SPED 160F, 202, 210, 211, 213, 215, 216, 218, 220A, 220B, 221A, 221B, 222, 228, 280T, 290; ERF 285, 288, 289	
Total	**30**

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.

Counselor Education (COUN)

100. Career/Life Planning (3)
An examination of the career development process with an emphasis on assisting students to explore their interests through self-assessment, career exploration, and development of techniques for placement readiness. *CR/NC* grading only. (Course fee for assessment materials, $10) (Former A S 100)

150. 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. (Former A S 172)

174. Introduction to Counseling (3) (Same as Psych 174.) An overview of basic counseling models, including psychoanalytic, behavioral, cognitive, and humanistic approaches. Includes a personal counseling experience. (Former A S 174)

176. 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-R. (Former A S 118)

180T. Topics in Counseling (1-3; max total 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. (Successful Career Development, $10) (Former A S 185T)

190. Independent Study (1-3; max see reference)
See *Academic Placement — Independent Study*. Approved for *SP* grading. (Former A S 190)

GRADUATE COURSES

(See *Course Numbering System.*)

Counselor Education (COUN)

200. Seminar in Counseling Techniques (3)
Prerequisite: COUN 174 or 250. Emphasis given to interviewing skills, philosophy, theory, and methodology as applied to counseling. (2 seminar, 2 lab hours) (Former A S 224)

201. Seminar in Multicultural Aspects of Counseling (3)
Prerequisite: COUN 174 or 250. Cognitive and experiential study of social and psychological variables which influence the cross-cultural counseling relationship. Culturally relevant models of counseling theory and practice are explored. Current research methods and findings are presented. (2 seminar, 2 lab hours) (Former A S 221)

202. Seminar in Group Counseling (3)
Prerequisite: COUN 174 or 250. Theories and methods of interpersonal communication within groups, transferal of information, group leadership and mem-

bership, role perceptions, verbal and nonverbal interaction, and group counseling. (2 seminar, 2 lab hours) (Former A S 228)

203. Seminar in Assessment in Counseling (3)
Prerequisite: ERF 153. Selection, administration, and evaluation of psychological tests and psychometric data for use in counseling settings. (2 seminar, 2 lab hours) (Course fee for assessment materials, $10) (Former A S 227)

204. Seminar in Counseling the Older Adult (3)
Prerequisite: COUN 200. Study of counseling philosophy, theory, methodology, and skills applicable to problems of the older adult. (2 seminar, 2 lab hours) (Former A S 229)

205. Seminar in Advanced Theories and Techniques in Counseling (3)
Prerequisite: COUN 200. Emphasis on philosophy, theory, and methodology as applied to Gestalt and behavioral approaches to counseling. (2 seminar, 2 lab hours) (Former A S 225)

206. Counseling Through the Lifespan (3)
Prerequisite: COUN 174 or 250. Explores developmental issues and life events from infancy through old age and their effect upon individual, couples and family relationships. The impact of gender, race, ethnicity, class and sexual orientation on developmental process is explored. (Former COUN 280T section)

208. Practicum in Counseling (4; max total 8)
Prerequisites: 12 units in counseling program, including COUN 200. 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) (Former A S 231)

218. Practicum in Group Counseling (4; max total 8)
Prerequisites: COUN 202, 208, 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) (Former A S 234)

220. Seminar in Career Development Theory (3)
Prerequisite: COUN 174. Examination of career development theories and research for their implications in understanding career development generally and career counseling specifically. (2 seminar, 2 lab hours) (Course fee for assessment materials, $10) (Former A S 222)

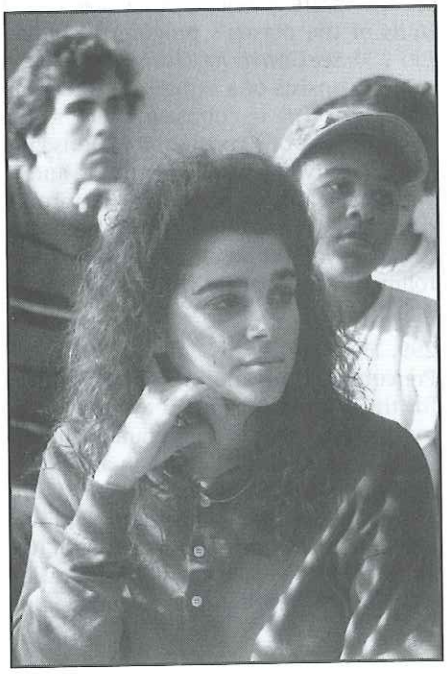
221. Seminar in Career Counseling: Methods and Materials (3)
Prerequisites: COUN 174, 220. Develop knowledge and skills necessary to facilitate career assessment, decision-making, and job-seeking activities of students and other clientele. (2 seminar, 2 lab hours) (Course fee for assessment materials, $10) (Former A S 232)

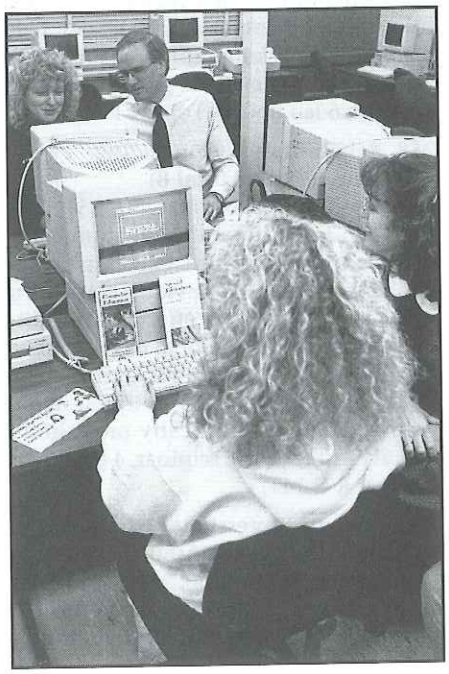
228. Practicum in Career Development Counseling (4; max total 8)
Prerequisites: COUN 208, 220, and permission of instructor. Supervised counseling experiences in vocational career development. (Former A S 235)

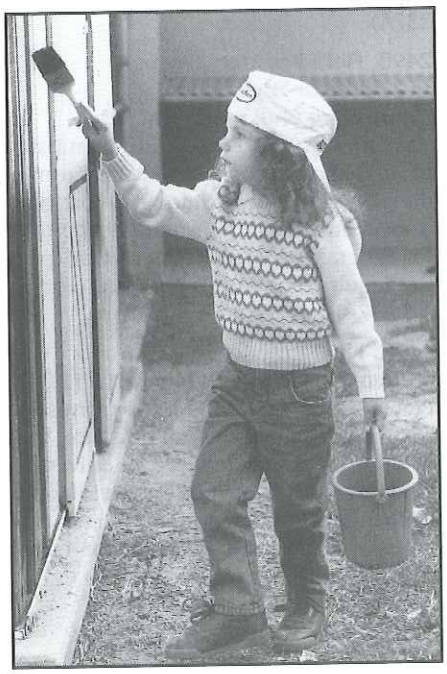
230. Seminar in Theories of Marriage, Family and Child Counseling (3)
Prerequisite: COUN 174. Study of theories, techniques, and methodology of counseling with families. Current research and methods are presented. (2 seminar, 2 lab hours) (Former A S 223)

231. Seminar in Professional Practices of Marriage, Family and Child Counseling (3)
Prerequisites: COUN 200, 230, and permission of instructor. Analysis of separation, divorce, and relation dissolution, family law and legal issues in counseling practice; diagnosis of client and family disorders; family practice and third party payments. (2 seminar, 2 lab hours) (Former A S 236)

238. Practicum in Marriage, Family and Child Counseling (4; max total 8)
Prerequisites: COUN 208, 230, 231, and permission of instructor. Supervised MFCC counseling experiences involving selected families, couples, and/or children. Students must carry professional liability insurance. (Former A S 233)







239. Field Practice in Professional Services Counseling (3-12; max total 12)
Prerequisites: 40 units in counseling program, including COUN 200 and 208. Designed for students wishing to do field practice in professional counseling services, including, but not limited to, agencies, colleges, and universities. Supervised placement. Typically requires a one-year commitment. Students must carry professional liability insurance. Approved for ***SP*** grading. (150 hours of field practice required for 3 units of credit) (Former A S 238)

240. 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; direct contact with families, case study, and current legislation. (2 seminar, 2 lab hours) (Former A S 230)

241. Seminar in Organization of Counseling Services (3)
Prerequisite: COUN 200. Organization, administration, and evaluation of counseling programs. (2 seminar, 2 lab hours) (Former A S 226)

249A. Field Practice in Elementary School Counseling (4-8; max total 12)
Prerequisites: COUN 200 and permission of instructor. Supervised practice in an elementary school. Students must carry professional liability insurance. Approved for ***SP*** grading. (160 hours of field practice required for 4 units of credit) (Former A S 237A)

249B. Field Practice in Middle or High School Counseling (4-8; max total 12)
Prerequisites: COUN 200 and permission of instructor. Supervised practice in middle or high schools. Students must carry professional liability insurance. Approved for ***SP*** grading. (160 hours of field practice required for 4 units of credit) (Former A S 237B)

249C. Field Practice in Student Services (4-8; max total 12)
Prerequisites: COUN 200 and permission of instructor. Supervised practice in a community college, college, or university. Students must carry professional liability insurance. Approved for ***SP*** grading. (160 hours of field practice required for 4 units of credit)

250. 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. (Former R C 201)

251. Medical Aspects of Disability (3)
Seminar in the treatment of disabling conditions including etiology, functional limitations, and vocational implications. Student presentation of case studies. (Former R C 211)

252. 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) (Former R C 203)

253. 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. (Former R C 212)

257. Case Practices in Rehabilitation Counseling (4)
Prerequisites: COUN 250, 251. 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 seminar, 6 lab hours) (Former R C 221)

258. Rehabilitation Counseling Practicum (4; max total 8)
Prerequisites: COUN 200, 250, 251, 252, 253, 257. Laboratory rehabilitation counseling experiences with clients who are disabled, supervised individual counseling sessions, analysis of the effects of disability on personal and vocational development, methods of facilitating vocational rehabilitation, observations, critiques, report writing. Students must carry professional liability insurance. (2 seminar, 4 lab hours) (Former R C 241)

260. Current Professional Issues in Rehabilitation Counseling (3)
Prerequisites: COUN 250, 251. Seminar on current professional issues in the field of rehabilitation counseling and vocational rehabilitation programs in the public and private sectors with emphasis on ethical standards, legal concepts, and professional development responsibilities.

261. Rehabilitation of the Severely Disabled (3)
Prerequisites: COUN 250, 251. Seminar on strategies to facilitate the vocational rehabilitation of persons with severe disabilities with emphasis on the principles of independent living, supported employment, client assistance programs, and rehabilitation engineering/technology.

269. Internship in Rehabilitation Counseling (12)
Prerequisites: COUN 200, 202, 203, 250, 251, 252, 253, 257, 258, 260, 261, permission of instructor. Full-time, supervised field placement in one of a variety of settings including case responsibilities. ***CR/NC*** grading only. (Former R C 296)

280T. Advanced Topics in Counseling (1-3; max 12 if no topic is repeated)
Prerequisites: postbaccalaureate standing and permission of instructor. Topics may include new developments in counseling techniques, rehabilitation counseling practices, special populations, and current research. (Former A S 281T; R C 251T)

290. Independent Study (1-3; max see reference)
See *Academic Placement — Independent Study*. Approved for ***SP*** grading. (Former A S 290; R C 290)

298. Project (4)
Prerequisites: advancement to candidacy for the master's degree; ***B*** average on 24 units of the master's program including ERF 220. See *Criteria for Thesis and Project*. A project consists of a significant undertaking appropriate to counseling such as the development of a program for counseling service delivery, development of audiovisual materials or computer software for counselor education or service delivery. An approved proposal is required for enrollment. Approved for ***SP*** grading. (Former A S 298A)

299. Thesis (4)
Prerequisites: advancement to candidacy for the master's degree; ***B*** average on 24 units of the master's program including ERF 220 and completion of an acceptable thesis proposal. See *Criteria for Thesis and Project*. Preparation, completion, and submission of an acceptable thesis for the master's degree. See School of Education and Human Development's graduate pro-

grams coordinator for school thesis guidelines. Approved for *SP* grading. (Former A S 299; R C 299)

IN-SERVICE COURSES

(See *Course Numbering System.*)

Counselor Education (COUN)

303. Human Interaction in Counseling (1-3; max total 12 if no topic repeated)
An exploration of human interaction skills. The course is designed to improve the ability to interact with others. Not applicable toward degree requirements. (Former R C 303)

380T. Topics in Counseling (1-3; max total 12 if no topic repeated)
Selected areas in counseling; placement skills, vocational evaluation, research, medical history, case management, mental health, counseling strategies, and theoretical orientation. Not applicable toward degree requirements. (Former R C 333T)

COURSES

Special Education (SPED)

160. Mainstreaming Exceptional Students (3)
Prerequisites: ERF 130 or 152 and EHD 110 or 155A; or permission of instructor. 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). (2 seminar, 2 lab hours) (Former A S 111)

160F. Fieldwork in Special Education (1-3; max total 12)
Prerequisite: permission of instructor. Supervised observation and participation in selected programs for exceptional individuals; educational planning, guidance and counseling. (Former A S 115F)

170. Introduction to Teaching Learning Handicapped Students (4)
Prerequisite: SPED 160 or equivalent. Introduction to theories, programs, and methods of educating students with learning handicaps. (2 seminar, 4 lab hours) (Former A S 170)

175. Introduction to Teaching Individuals with Severe Disabilities (4)
Prerequisite: SPED 160. Introduction to individual characteristics, curriculum issues, and strategies applicable to the education of individuals with severe disabilities. (2 seminar, 4 lab hours) (Former A S 171)

190. Independent Study (1-3; max see reference)
See *Academic Placement — Independent Study*. Approved for *SP* grading. (Former A S 190)

GRADUATE COURSES

(See *Course Numbering System.*)

Special Education (SPED)

201. Seminar in Behavior Management (3)
Prerequisite: SPED 160 or equivalent. Behavior management principles, effective discipline, programs, and techniques employed in special education and clinical prescriptive teaching. Emphasis on school and home applications. (2 seminar, 4 lab hours) (Former A S 242)

202. Career Development and Transition for Students with Disabilities (3)
Prerequisite: SPED 160 or permission of instructor. Seminar in the examination of career education; models, curriculum scope and sequence, transitional approaches to independent living, and the utilization of local, state, and federal resources. (2 seminar, 4 lab hours) (Test materials fee, $10) (Former A S 253)

210. Motor, Sensory, and Perceptual Abilities (4)
Prerequisite: SPED 160 or equivalent. Seminar in the special education of persons who are learning handicapped with psychomotor disabilities such as hyperkinesis, visual or auditory deficits, and dyslexia. Diagnostic-prescriptive programming and critiques required. (2 seminar, 4 lab hours) (Former A S 243)

211. Assessment of Learning Handicapped Students (3)
Prerequisites: ERF 153; SPED 160, 170. Review of testing techniques and instruments, and development of psychoeducational reports. Extensive independent child study and evaluation with appropriate diagnostic instruments. (2 seminar, 4 lab hours) (Course fee for assessment materials, $10) (Former A S 245)

"Good teaching is a talent, like fine painting and beautiful music. Some people can learn to do it well, and some can't."

Charlotte Hiatt
Assistant to the Dean,
Sid Craig School of Business

213. Social and Affective Education (3)
Prerequisite: SPED 160 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) (Former A S 248)

215. Seminar in Curriculum for Learning Handicapped Students (3)
Prerequisites: SPED 160, 170, 210, 211. Current and effective instructional practices in the curricular areas of language arts, mathematics, social studies, and science for learning handicapped students; emphasis on the integration of cognitive strategies and advanced technology. (2 seminar, 4 lab hours) (Former A S 246)

216. Organization and Supervision of Special Education (3)
Prerequisite: SPED 160 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. (Former A S 244)

218. Practicum in Special Education: Learning Handicapped (5)
Prerequisites: ERF 153; SPED 160, 160F, 170, 210, 211; prior and/or simultaneous enrollment in a maximum of 12 units in the following courses: SPED 201, 202, 213, 215; COUN 240. 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. (Former A S 256)

219. Clinical and Field Experience with Families and Schools (3; max total 6)
Prerequisite: permission of instructor. Instruction and practice in working with exceptional children, their families and schools. Students use diagnostic teaching techniques, assist parents in becoming effective tutors, facilitate support groups, and develop home-school partnerships. (2 seminar, 2 lab hours) (Former SPED 280T section)

220A. Assessment of Individuals with Severe Disabilities (3)
Prerequisites: SPED 160, 175. Concurrent enrollment in SPED 220B required. Presentation of assessment strategies and methods used to identify current levels of educational performance for individuals. Emphasis is upon assessment practices and community-based curriculum domains which contribute data to the design of appropriate individualized education plans. (2 seminar, 2 lab hours) (Former A S 250A)

220B. Practicum in Assessment of Students with Severe Disabilities (3)
Prerequisites: SPED 160, 175. Concurrent enrollment in SPED 220A required. Supervised, field-based experience in educational assessment strategies used to plan individualized instructional programs and services. (Former A S 250B)

221A. Instructional Methods for Students with Severe Disabilities (3)
Prerequisites: SPED 160, 175, 220A, 220B. Concurrent enrollment in SPED 221B required. Presentation of instructional approaches, methods and techniques for individuals from birth to adulthood using home, school and community-based curriculum content. Emphasis is upon educational practices which contribute to the design, implementation, and evaluation of appropriate individualized education programs and services. (2 seminar, 2 lab hours) (Former A S 251A)

221B. Practicum in Instruction of Students with Severe Disabilities (3)
Prerequisites: SPED 160, 175, 220A, 220B. Concurrent enrollment in SPED 221A required. Supervised, field-based experience in instructional methods and strategies used to implement and evaluate individualized educational programs. (Former A S 251B)

222. Seminar in Contemporary Issues in Severe Disabilities (3)
Prerequisites: SPED 160, 175; prior or concurrent enrollment in 220A and 220B or 221A and 221B. Analysis of contemporary educational practices, policies, and issues affecting the organization and provision of appropriate programs, medical/therapeutic issues, and related services for individuals with severe disabilities from infancy through adulthood. Review of selected research literature. (Former A S 254)

228. Advanced Practicum in Special Education for Individuals with Severe Disabilities (5)
Prerequisites: ERF 153; SPED 160, 160F, 175, 220A, 220B, 221A, 221B, 222; prior or concurrent enrollment in SPED 201, 202, COUN 240. Supervised, field-based experience in advanced teaching methods and procedures for integrating required competencies in the areas of program organization, management of teaching environments, skill assessment and instructional planning, behavior management, IEP implementation, program evaluation, teacher and parent consultation, microtechnology, and continuing professional development. (Former A S 255)

280T. Advanced Topics in Special Education (1-3; 12 if no area is repeated)
Prerequisites: postbaccalaureate standing and permission of instructor. Topics may include special education legislation, parenting, transitional programming, parents as teachers, adolescents and adults with disabilities, current research, child abuse, gifted and talented. (Former A S 280T)

290. Independent Study (1-3; max see reference)
See *Academic Placement — Independent Study*. Approved for ***SP*** grading.

298. Project (4)
Prerequisites: advancement to candidacy for the master's degree; ***B*** average on 24 units of the master's program including ERF 220. See *Criteria for Thesis and Project*. 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. Approved for ***SP*** grading. (Former A S 298C)

299. Thesis (4)
Prerequisites: advancement to candidacy for the master's degree; ***B*** average on 24 units of the master's program including ERF 220 and completion of an acceptable thesis proposal. See *Criteria for Thesis and Project*. 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. Approved for ***SP*** grading. (Former A S 299)

IN-SERVICE COURSE

(See *Course Numbering System*.)

Special Education (SPED)

380T. Topics in Special Education (1-3; max total 12 if no topic repeated)
Selected areas in special education; identification of exceptional students, assessment of learning disabilities, focus on specific disabling conditions, instructional methods, parent involvement with handicapped students, federal and state legislation. Not applicable toward degree requirements.

EDUCATION Curriculum, Teaching, and Educational Technology

Students in Block A take all of their classes at a school site and spend part of each day in public school classrooms integrating their coursework with field experience.

School of Education and Human Development
Department of Curriculum, Teaching, and Educational Technology
THERESA R. PEREZ, *Chair*
Ed/Psych Building, Room 125
(209) 278-2316

Basic Teaching Credentials
Multiple Subject, General
Multiple Subject, CLAD/BCLAD (expected approval, 1993-94)
Multiple Subject, with emphasis in Early Childhood Education
Multiple Subject, Communicative Disorders
Multiple Subject, Postbaccalaureate Block Program
Single Subject

M.A. in Education
Curriculum and Instruction Option

The primary mission of the Department of Curriculum, Teaching, and Educational Technology is the preparation and continuing education of K-12 educators, particularly teachers. Coursework and field experiences are designed to prepare teachers who are reflective thinkers, problem solvers, and decision makers to meet the challenges of teaching in a rapidly changing world characterized by social, economic, and cultural/linguistic diversity.

The coursework offers students opportunities to develop and refine their understanding of the teaching/learning process while experiencing the best of the world of practice. Additionally, educational technology coursework enhances their instructional effectiveness. Supervised field experiences along with instructional planning and evaluation techniques provide the foundation for productive and responsive teaching. In this context, all faculty promote teaching as a science and an art. Programs offered through the Department of Curriculum, Teaching, and Educational Technology are identified within two major categories: teaching credential programs and master's degree programs.

Career Opportunities

CSU Fresno is the focal point of the San Joaquin Valley. The city of Fresno is a large and growing urban/industrial and agricultural regional service area. This unique geographical position allows for ready access to a variety of school systems — large urban schools as well as many less populated school districts in predominantly rural settings. 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 directly or indirectly related to the field of education.

Faculty

Theresa R. Perez, *Chair*

Jody Daughtry, *Coordinator of Single Subject Credential Program,* (209) 278-6840

Berta Gonzalez, *Interim Coordinator of Multiple Subject Credential Program,* (209) 278-4462

Joan Henderson, *Director of Professional Field Experiences,* (209) 278-6840

David Lopez, *Adviser for Multiple Subject Credential Program,* (209) 278-6840

Susana Mata, *Coordinator of Multiple Subject Postbaccalaureate Block Program,* (209) 278-5252

Mario L. M. Baca
Leonard H. Bathurst
Otto E. Benavides
Carol F. Bohlin
Roy M. Bohlin
Barbara G. Burch
Susan B. Harris
Nancy P. Hunt
Alexander H. Lark
Sandra J. LeSourd
Cathleen C. Loving
James E. Marshall
Arne J. Nixon
Kien T. Pham
Ivan H. Rowe
Bernice A. Stone

The faculty represents a wide range of experience and specializations. 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.

Credential Programs

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 the Multiple Subject Credential and the Single Subject Credential.

The Multiple Subject Credential holder is authorized to teach in self-contained classrooms from K-12. Most holders of the Multiple Subject Credential teach in elementary school settings. Programs include:

- Multiple Subject — General (See this section.)
- Multiple Subject — Early Childhood Education (See this section and the *Department of Literacy and Early Education.*)
- Multiple Subject — CLAD/BCLAD, expected approval, 1993-94 (See *Proposed Programs* in this section and the *Department of Literacy and Early Education.*)

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, English-ESL, foreign languages (French, German, and Spanish), health science, home economics, industrial arts, life science, mathematics, music, physical education, physical science, and social science.

For information about the professional preparation component of the Multiple and Single Subject Credential programs, see this section. For information about the academic components of the Multiple Subject Credential, see the liberal studies major; for information about the academic component of the Single Subject Credential, see the appropriate department.

State Admission Requirements

California Code of Regulations, 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 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 is 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 or 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. The School of Education and Human Development offers the Multiple Subject Credential in cooperation with 45 other university academic departments. The cooperating departments are primarily responsible for developing subject matter competency which leads to the completion of the Liberal Studies Waiver Program and baccalaureate degree in liberal studies. The School of Education and Human Development offers required coursework in professional education.

Multiple Subject Academic Advisers. Jacques Benninga serves as coordinator of the liberal studies major. Academic advising for the liberal studies major is conducted by Carolyn Botta in the School of Education and Human Development's Advising Office in EdP 111.

Multiple Subject Professional Preparation Adviser. David Lopez, adviser for the Multiple Subject Credential Program, is located in the School of Education and Human Development's Advising Office in EdP 111 and serves as the adviser for the professional preparation component of the program.

Types of Multiple Subject Credentials. There are two types of multiple subject credentials — the Preliminary Multiple Subject Credential and the clear Multiple Subject Credential (fifth year).

A Preliminary Multiple Subject Credential provides authorization to teach in a self-contained classroom for a maximum time period of five years.

A Professional (Clear) Multiple Subject Credential is required for full authorization in a self-contained classroom. All requirements for a clear Multiple Subject Credential must be completed within five years of the date of issuance of the preliminary credential.

Requirements for a Preliminary Multiple Subject Credential

1. Complete a 30-unit core of professional education courses.
2. Demonstrate subject matter competence by:
   a. completing an approved Liberal Studies Waiver Program or passing the National Teacher Examination Multiple Subject Assessment for

Teachers (NTE/MSAT), Tests 14, 15, and 16, and
   b. receiving clearance from the academic adviser that subject matter competence has been met.
3. Complete a bachelor's degree.

Preliminary Multiple Subject Credential — General Requirements for Initial Admission

1. Attend a Multiple Subject Credential Program orientation meeting.
2. Provide evidence of successful completion of an appropriate pre-program field experience or EHD 50, Introduction to Teaching.
3. Provide 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 GPA 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 multiple subject credential faculty members.
8. Obtain a medical clearance at the University Health Center.
9. Obtain two 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.
10. Obtain appropriate clearance to teach in a public school by presenting a valid California Teaching Credential or applying for a Character and Identification Clearance.

Required application materials and forms are available in the School of Education and Human Development's Admissions and Records Office in EdP 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. Application forms are available in the School of Education and Human Development's Admissions and Records Office in EdP 120.

Semester Enrolled	*Application Requirements Completed*
Summer	April 1
Fall	April 1
Spring	November 1

Preliminary Multiple Subject Credential — Requirements for Admission to Student Teaching

Multiple Subject Credential candidates must qualify for admission to two distinct levels of student teaching: (1) Initial Student Teaching (EHD 110) and (2) Final Student Teaching (EHD 160A, B, and C).

Requirements for Admission to Initial Student Teaching (EHD 110)

1. Submit an application form for EHD 110 by the specified deadline.
2. Complete all admissions requirements and receive notification of initial admission to the program.
3. Students must take ERF 130, Psychological Foundations of Education (3 units), ERF 140, Cultural Foundations of Education (3 units), CTET 150, Curriculum and Instruction in Elementary School (3 units), and LEE 156M, Reading in the Elementary School (3 units) concurrently with Initial Student Teaching (EHD 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 ERF 130 and 140 prior to Initial Student Teaching. However, CTET 150 and LEE 156M must be taken concurrently with Initial Student Teaching (except in Option II).
4. Maintain a 3.0 GPA on all professional preparation courses.
5. Complete a fifth-year Program Form and have it signed by the multiple subject fifth-year adviser (EdP 111).

Timelines for admission to Initial Student Teaching (EHD 110) are listed below. Application forms are available in the School of Education and Human Development's Admissions and Records Office in EdP 120.

Semester Enrolled	*Application Requirements Completed*
Fall	April 1
Spring	November 1

Requirements for Admission to Final Student Teaching (EHD 160A, B, and C*)

1. Submit an EHD 160 application form by deadline.
2. Successfully complete Initial Student Teaching (EHD 110).
3. Demonstrate subject matter competency by:
   a. completing an approved Liberal Studies Waiver Program *or* passing the National Teacher Examination Multiple Subject Assessment for Teachers (NTE/MSAT Tests 14, 15, and 16) and
   b. receiving clearance from the program faculty that subject matter competency has been met by completing the Multiple Subject — Subject Matter Clearance form signed by the liberal studies adviser (EdP 111).
4. Complete an approved program of professional preparation in a specific program option (see *Program Option* section) and maintain a GPA of 3.0.
5. If admitted as an exception with conditions, satisfy all conditions specified.
6. *Clarification: Students who elect to complete EHD 160 in two semesters must sign up for EHD 160A (6 units) and EHD 160B (6 units). Successful completion of EHD 160A and 160B must include a minimum of one week of full-time student teaching. Successful completion of EHD 160C requires one full semester, all day, every day of student teaching in each assignment. Students will be solely responsible for planning and teaching a minimum of two weeks all day in this EHD 160 assignment.

Timelines for Admission to Final Student Teaching (EHD 160A, B, and C) are listed below. Application forms are available in the School of Education and Human Development's Admissions and Records Office in EdP 120.

Semester Enrolled	*Application Requirements Completed*
Fall	February 28
Spring	September 30

Basic Teaching Credentials

Preliminary Multiple Subject Credential programs include:

- Option I, General and proposed Cross-Cultural Language and Academic Development (CLAD) and Bilingual Cross-Cultural Language and Academic Development (BCLAD)
- Option II, Early Childhood Education Emphasis
- Option III, Communicative Disorders — Deaf and Hard-of-Hearing
- Option IV, Postbaccalaureate Block Program
- Teacher in Preparation (TIP) Internship — Postbaccalaureate Program: Multiple Subject Internship

Multiple Subject, General (Option I). 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 NTE/MSAT and receive faculty certification of competence.

2. **Professional Preparation** *Units*

EHD 110	3
CTET 121	3
ERF 130	3
ERF 140	3
CTET 150	3
LEE 156M	3
EHD 160	12
Total	**30**

3. **Completion of a bachelor's degree.** California law requires a bachelor's degree in a subject area other than professional education.

   For more information, see the Multiple Subject adviser in EdP 111.

Proposed Programs — Cross-Cultural Language and Academic Development (CLAD) and Bilingual Cross-Cultural Language and Academic Development (BCLAD) Credential (Option I). These credential programs are being developed and will replace the current Bilingual/Cross-Cultural Emphasis program in 1993-94. The emphasis of the CLAD/BCLAD credential is to prepare teachers to work with limited English proficient students. The CLAD authorization will certify teachers to provide instruction for English language development and specifically designed academic instruction, delivered in English, to students. The BCLAD will authorize teachers to provide academic instruction to limited English proficient students in their primary language. For specific details, see the CLAD/BCLAD coordinator, Finian McGinn, Industrial Technology 242.

Multiple Subject, emphasis in Early Childhood Education — (Option II). The Early Childhood Education Emphasis program prepares students to teach in the elementary grades, with special strengths in early childhood education. This block program with fieldwork 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 EHD 160 in two semesters must sign up for EHD 160A (6 units) and EHD 160B (6 units). Successful completion of EHD 160A and 160B must include a minimum of one week of full-time student teaching in each assignment.

Program Requirements

1. **Subject Matter Competency.** Demonstrate subject matter competence through completion of the Liberal Studies Waiver Program or pass the NTE/MSAT and receive faculty certification of competence.

2. **Professional Preparation** *Units*

EHD 110	3
CTET 121	3
ERF 130A	1
ERF 130ECE	2
ERF 140A	1
ERF 140ECE	2
LEE 146	3
LEE 148	4
EHD 160	12
Total	**31**

3. **Completion of a bachelor's degree.** California law requires a bachelor's degree in a subject area other than professional education.

   For more information about Option II, see *Education, Department of Literacy and Early Education.*

Multiple Subject, Communicative Disorders (Option III). The Option III, Communicative Disorders Program is designed for students who wish to prepare for specialization in special education as educators of the deaf.

Program Requirements

1. **Subject Matter Competency.** Complete an approved major in Communicative Disorders, pass the NTE/MSAT and receive faculty certification of competence.

2. **Professional Preparation** *Units*

EHD 110	3
CTET 121	3
ERF 130	3
ERF 140	3
CTET 150	3
LEE 156M	3
EHD 160	12
Total	**30**

3. **Completion of a bachelor's degree.** California law requires a bachelor's degree in a subject area other than professional education.

   For more information about Option III, see the requirements for the Education of the Deaf and the Special Education Specialist Credential in the *Department of Communicative Disorders* section.

Multiple Subject, Postbaccalaureate Block Program (Option IV). The Option IV program is designed to meet the needs of the reentry 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 and teach in various school settings.

Program Requirements

1. **Subject Matter Competency.** Complete a bachelor's degree with a major in a subject area other than professional education, pass the NTE/MSAT, and receive faculty certification of competence.

2. **Professional Preparation** *Units*

EHD 110	3
CTET 121	3
ERF 130	3
ERF 140	3
CTET 150	3
LEE 156M	3
EHD 160	12
Total	**30**

3. **Completion of a bachelor's degree.** California law requires a bachelor's degree in a subject area other than professional education.

   For more information, contact the Option IV coordinator at (209) 278-5252.

Multiple Subject, Teacher in Preparation (TIP) Internship Program. The TIP Internship program is designed for qualified individuals who have prior classroom experience and who seek an alternative route to obtaining a Professional (clear) Teaching Credential. Students must possess a bachelor's degree from an accredited institution, meet all criteria for admission to a basic credential program, and have extensive classroom related experience. Refer to the preliminary Multiple Subject Credential general requirements for initial admission. Candidates who have been successful long-term substitute teachers or who have taught under an emergency credential are good candidates for the internship program.

The internship is designed for a candidate to have a year-long reduced salary contract with a school district, while continuing to enroll in coursework leading to a Professional (clear) Credential. The entire program requires two summers and two semesters to earn a Professional (clear) Credential.

Program Requirements

1. **Subject Matter Competency.** Demonstrate subject competency through completion of the Liberal Studies waiver program or pass the NTE/MSAT and receive faculty certification of competency.
2. **Admission to Program.** Applicants must be admitted to CSUF and a basic teaching credential program in the School of Education and Human Development. They must participate in two level interviews: one by a university selection committee and another by school district personnel. Candidates must also be offered a teaching contract by a participating school district. Interns have the responsibility for finding their own jobs with participating districts.
3. **Professional Preparation** *Units*

Summer I:	CTET 150	3
	ERF 130	3
	LEE 156M	3
Fall:	EHD 110	3
	CTET 121	3
Spring:	EHD 160C	12
	ERF 140	3
Summer II:	CTET 100	3
	SPED 160	3
	H S 120	2
Total		**38**

Contact Internship Program Coordinator Berta Gonzalez, AH 207.

Professional (Clear) Multiple Subject Credential Programs (Fifth Year)

The Professional (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 *Preliminary Multiple Subject Credential — General Requirements for Initial Admission.*)

Requirements for Admission to Student Teaching. (See *Preliminary Multiple Subject Credential — Requirements for Admission to Student Teaching.*)

In addition to these requirements, the Professional (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 (SPED 160 or equivalent).
4. Complete a health education requirement (H S 120 or equivalent).
5. Complete a classroom computer application course (CTET 100).
6. Complete Cardiopulmonary Resuscitation (CPR) training.

Program Advisement. Program advisement for a Professional (clear) Multiple Subject Credential is obtained from the Multiple Subject Fifth-Year adviser located in the School of Education and Human Development's Advising Office in EdP 111.

Time Restrictions. All requirements for a Professional (clear) Multiple Subject Credential must be completed within five 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 School of Education and Human Development offers the Single Subject Credential in cooperation with 18 academic departments. The cooperating departments are responsible for developing subject matter competency; the School of Education and Human Development is primarily responsible for developing professional education competency.

The single subject coordinator in the School of Education and Human Development provides general advisement for single subject credential candidates. Area advisers (see list) 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 liaisons between the subject matter departments and the single subject coordinator in the Educational Research, Administration, and Foundations Department.

Single Subject Majors and Advisers

Agriculture: R. Rogers/A. Parham
Art: D. Nadaner/P. Fleming
Business: R. Lacy
English: R. O'Neil/L. Alexander
English (Theatre Arts): K. Morin
English (ESL): P. Master/B. Birch
English (Speech): G. Sorenson
Foreign Languages: R. Freeman/R. Kuhn/D. Engle
Health Science: S. Sowby
Home Economics: N. Dilbeck
Industrial Arts: R. Blanton
Life Science (Biology): F. Schreiber
Mathematics: A. Tuska
Music: L. Guelker-Cone
Physical Education: G. Chadwick/M. Irvin
Physical Science (Chemistry): H. Ono
Physical Science (Physics): H. Ono
Social Science: J. Echeverria

Single Subject Professional Preparation Adviser. Jody Daughtry, coordinator of the Single Subject Program, is located in the School of Education and Human Development's Advising Office in EdP 111 and serves as the adviser for the professional preparation component.

Types of Single Subject Credentials. There are three types of Single Subject Credentials:

- Preliminary Single Subject Credential
- Internship Single Subject Credential
- Professional (clear) Single Subject Credential (fifth year)

Preliminary Single Subject Credential. A Preliminary Single Subject Credential provides authorization to teach a specified subject in a departmentalized classroom for a maximum period of five years.

Professional (Clear) Single Subject Credential. A Professional (clear) Single Subject Credential is required for full authorization in a departmentalized classroom. All requirements for a Professional (clear) Single Subject Credential must be completed within five years of the date of issuance of the preliminary credential.

Requirements for a Preliminary Single Subject Credential

1. Complete a 30-unit core of professional education courses.
2. Demonstrate subject matter competence by:
   a. completing an approved subject matter waiver *or* passing the National Teacher Examination (NTE) Specialty Area Test and, if applica-

ble, the Content Area Performance Assessment (CAPA), and

b. receiving clearance from the academic adviser that subject matter competency has been met.

3. Complete a bachelor's degree.

Preliminary Single Subject Credential — General Requirements for Initial Admission

1. Attend a Single Subject Credential program orientation meeting.
2. Provide evidence of successful completion of an appropriate pre-program field experience or EHD 50, Introduction to Teaching.
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 GPA 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 an interview from a Single Subject Credential faculty member and from the subject area academic adviser.
8. Obtain a medical clearance at the University Health Center.
9. Obtain two 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.
10. Obtain appropriate clearance to teach in a public school by presenting a valid California Teaching Credential or applying for a Character and Identification Clearance.

Required application materials and forms are available in the School of Education and Human Development's Admissions and Records Office in EdP 120. All admission requirements (forms, documents, prerequisites) must be completed prior to enrollment in professional program courses.

Timelines for initial admission to the Single Subject Credential program are listed below. Application forms are available in the School of Education and Human Development's Admissions and Records Office in EdP 120.

Semester Enrolled	*Application Requirements Completed*
Summer	April 1
Fall	April 1
Spring	November 1

Preliminary Single Subject Credential — Requirements for Admission to Student Teaching

Admission to Initial Student Teaching (EHD 155A). Authorization to begin student teaching requires that the candidate:

1. Submit an EHD 155A application form by the specified deadline.
2. Receive notification of initial admission to the Single Subject Credential program.
3. Successfully complete or be enrolled concurrently in ERF 151, 152, and CTET 159. LEE 156S must be taken concurrently with EHD 155A or EHD 155B.
4. Maintain a 3.0 GPA on all professional education courses.
5. Complete a fifth-year Program Form and have it signed by the academic area adviser and the Single Subject coordinator.

Timelines for Admission to Initial Student Teaching (EHD 155A) are listed below. Application forms are available in the School of Education and Human Development's Admissions and Records Office in EdP 120.

Semester Enrolled	*Application Requirements Completed*
Fall	April 1
Spring	November 1

Admission to Final Student Teaching (EHD 155B). Requirements for admission to final student teaching (EHD 155B) include the following:

1. Submit an EHD 155B application form by deadline.
2. Successfully complete ERF 151, 152, CTET 159, and EHD 155A. LEE 156S must be taken concurrently with EHD 155B if it was not taken with EHD 155A.
3. Successfully complete or be enrolled concurrently in CTET 161 (depending on academic department policy).
4. Demonstrate subject matter competence by:
   a. completing an approved subject matter waiver program (see *single subject majors* and *advisers*) or passing the NTE Specialty Area Test and appropriate CAPA, and
   b. receiving authorization from the academic area adviser that subject matter competence has been met.
5. Maintain a 3.0 GPA on professional education coursework.
6. If granted an "Exception" admission, satisfy all requirements specified when the exception was granted.

Timelines for Admission to Final Student Teaching (EHD 155B) are listed below. Application forms are available in the School of Education and Human Development's Admissions and Records Office in EdP 120.

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 NTE Specialty Area Test and appropriate CAPA.
2. **Professional Preparation** ***Units***

ERF 151	3
ERF 152	3
CTET 159	3
CTET 161	3
EHD 155A	5
EHD 155B	10
LEE 156S	3
Total	**30**

3. **Completion of a bachelor's degree.** California law requires a bachelor's degree in a subject area other than professional education.

Single Subject Teacher in Preparation (TIP) Internship Program. The Single Subject Internship program is designed for qualified individuals who have prior classroom experience and who seek an alternative route to obtaining a Professional (clear) Teaching Credential. The entire program requires two summers and two semesters to earn a Professional (clear) Credential. Refer to preliminary Single Subject Credential general requirements for admission. Candidates who have been successful long-term substitute teachers in a single subject area are good candidates for the Internship Program. Interns have a year-long reduced salary contract with a

school district, while continuing to enroll in coursework leading to a professional (clear) credential.

1. **Program Requirements**
   a. **Subject Matter Competency.** Have subject matter competency verified by an academic adviser.
   b. Provide evidence of teaching experience in the subject matter area.
   c. Provide a support letter from a participating school district willing to hire the candidate as an intern.
2. **Admission to Program.** Applicants must be admitted to CSUF and a basic teaching credential program in the School of Education and Human Development. They must participate in two level interviews: one by a university selection committee and another by school district personnel. Candidates must also be offered a teaching contract by a participating school district. Interns have the responsibility for finding their own jobs with participating districts.
3. **Professional Preparation**

		Units
Summer I:	CTET 159	3
	ERF 152	3
Fall:	EHD 155A	5
	CTET 161	3
Spring:	EHD 155B	10
	LEE 156S	3
Summer II:	CTET 101	3
	ERF 151	3
	SPED 160	3
	H S 121	2
Total		38

Contact Internship Program Coordinator Berta Gonzalez, AH 207.

Professional (Clear) Single Subject Credential Program (Fifth Year). The Professional (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 *Preliminary Single Subject Credential — General Requirements for Initial Admission.*)

Requirements for Admission to Student Teaching. (See *Preliminary Single Subject Credential — Requirements for Admission to Student Teaching.*)

In addition to these requirements, the professional (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 (SPED 160 or equivalent).
4. Complete a health education requirement (H S 121 or equivalent).
5. Complete the classroom computer application course (CTET 101).
6. Complete Cardiopulmonary Resuscitation (CPR) training.

Program Advisement. Program advisement for a Professional (clear) Single Subject Credential is obtained from the single subject fifth-year adviser located in the School of Education and Human Development's Advising Office in EdP 111 and from the subject area academic adviser.

Time Restrictions. All requirements for a Professional (clear) Single Subject Credential must be completed within five years of the date of issuance of the Preliminary Credential.

Certificate of Advanced Study in Educational Technology

The Certificate of Advanced Study in Educational Technology is a postbaccalaureate program designed to provide professional and specialized preparation for the candidate interested in acquiring knowledge and skills essential for technology-related leadership in educational settings.

Students completing this program will be able to:

- describe the current and potential impact of advanced technologies on education and society
- analyze instructional needs and determine viable uses of technology for meeting those needs
- select and develop appropriate technology-based materials which correlate to curriculum objectives
- model the effective use of technologies (including microcomputers, video, instructional television, telecommunications and multimedia) within educational settings
- demonstrate an understanding of the equitable and ethical use of technology, and
- plan, implement, and evaluate programs which exemplify the effective use of technology to attain curriculum objectives.

Classes taken while working on this certificate can be counted as elective units toward a Master of Arts in Education with a concentration in curriculum and instruction. Students who hold a valid California teaching credential may also apply to the Commission on Teacher Credentialing (CTC) to have their files reviewed for the supplemental authorization "Computer Concepts and Applications."

Students who wish to pursue either of these options while working on the certificate should state such an intent early in their program so they can receive proper advising regarding master's or CTC requirements.

Admission Requirements

1. Possess a valid teaching, specialist, or services credential.
2. Complete or receive a waiver for CTET 100 or 101.
3. Verify admission to CSU Fresno.
4. Verify application or admission to the SOEHD graduate programs. See *General Admission Requirements* in the *Education — Graduate Programs* section in this catalog.

Course Requirements	*Units*
CTET 225, 227, and 230	9
Approved Electives	5-6
Total	14-15

For further information, contact the educational technology certificate adviser at (209) 278-4461.

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 and related instructional practices. Beyond the course requirements, the program enables the student to elect and pursue in-depth study in areas of curriculum and instruction such as bilingual education, computer education, multicultural education, math education, science education, social science education, or other specializations related to elementary, middle school, and secondary education. The program allows the student to take a varied representation of courses

within the context of curriculum and instruction, which may also be used to meet fifth-year requirements for the clear Teaching Credential.

Admission Requirements for Classified Standing. See *General Requirements* in the *Education — Graduate Program* section of this catalog.

Program Requirements

1. **Prerequisites:** 15 units in professional education coursework including ERF 153; completion of prerequisites required for enrollment in advanced coursework in the area of specialization.
2. **Course Requirements** ***Units***
   ERF 220; ERF 285 or 288 6
   CTET or ERF 298 or 299 4
   CTET 250, 275 5-6
3. **Electives:** Electives are selected from the School of Education and Human Development and include special subject areas to constitute a broad-based program in curriculum and instruction or to represent an in-depth study in a specialty area within the context of curriculum and instruction.* 14-15

   Total **30**

*The student's program of study is to be determined in consultation with a curriculum and instruction faculty adviser and approved by the program coordinator.

COURSES

Note: Students must provide their own transportation to off-campus sites for classes, student teaching, practice and field activities, and defray any resulting personal expense.

Curriculum, Teaching, and Educational Technology (CTET)

1R. 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 only; not applicable toward baccalaureate degree requirements. (Former T Ed 1R)

100. Educational Applications of Microcomputers — Multiple Subject (3)
Prerequisite: EHD 50 or permission of instructor. Not open to single subject students. Methods for using microcomputer-based technologies for teacher and student productivity and to promote the development of critical thinking skills and achievement of K-8 curricular objectives. (2 lecture, 2 lab hours) (Instructional materials fee, $15) (Former T Ed 134M)

101. Educational Applications of Microcomputers — Single Subject (3)
Prerequisite: EHD 50 or permission of instructor. Not open to multiple subject students. Methods for using microcomputer-based technologies for teacher and student productivity and to promote the development of critical thinking skills and achievement of subject area curricular objectives with emphasis on grades 7-12. (2 lecture, 2 lab hours) (Instructional materials fee, $15) (Former T Ed 134S)

102. Introduction to Educational Technology (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 T Ed 135)

121. Mathematics in the Elementary School (3)
Prerequisite: admission to the Multiple Subject Program and satisfy General Education quantitative analysis requirements (see requirements in *General Education* section). Methods and materials for developing the mathematics concepts and skills taught in the elementary school. A variety of manipulative materials are applied in a lab setting. (2 lecture, 2 lab hours) (Former T Ed 121)

122. Fieldwork in Outdoor Education (1-2; max total 2)
Prerequisite: ERF 130 or 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 T Ed 122F)

123. Classroom Management (2)
Classroom organization, management, and mainstreaming including focus on the culturally, linguistically diverse student. (Former T Ed 120CM)

124. Issues in Education (3)
In-depth study of various curriculum issues impacting education. (Former T Ed 120CU)

125. Sciencing for Elementary Teachers (3)
In-depth study of science as activity for the elementary school. (2 lecture, 2 lab hours) (Former T Ed 120SC)

126. Social Studies in the Elementary School (3)
In-depth study of the strategies and techniques of social studies instruction. (Former T Ed 120SS)

136. Multicultural Education (3)
Assists teachers and other school personnel to acquire skills in multicultural curriculum design and delivery. Emphasizes language acquisition instruction and mentoring techniques for working with students in a pluralistic society. (Former T Ed 136)

137. Creative Dramatics (3)
(See Drama 137.) (Former T Ed 137)

150. Curriculum and Instruction in the Elementary School (3)
Prerequisite: admission to the Multiple Subject Credential Program, ERF 130 and 140 (or concurrent enrollment) and EHD 110 and LEE 156M taken concurrently. Current conceptions of curriculum and instructional resources in the elementary school; methods of teaching. (Former T Ed 150)

158. Communication and Learning (3)
(See Spch 114.) No credit will be given if the student has taken Spch 114. (Former T Ed 158)

159. Curriculum and Instruction in Secondary Schools (3)
Prerequisite: admission to the Single Subject Credential Program; ERF 151 and 152 or concurrent enrollment. Instructional planning, methodologies of teaching and learning, evaluation techniques, motivation, classroom management and discipline, preparation and evaluation of materials. Microteaching practice and analysis. (2 lecture, 2 lab hours) (Instructional materials fee, $5) (Former T Ed 159)

161. Methods and Materials in Secondary Teaching (3)
Prerequisite: ERF 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. (Former T Ed 161)

180T. Topics in Curriculum, Teaching, and/or Educational Technology (1-3; max total 9)
Issues and topics in curriculum and instruction; elementary, middle school, and secondary education; technology, and computer literacy. (Former T Ed 180T)

190. Independent Study (1-3; max see reference)
See *Academic Placement — Independent Study*. Approved for ***SP*** grading. (Former T Ed 190)

GRADUATE COURSES

(See *Course Numbering System.*)

Curriculum, Teaching, and Educational Technology (CTET)

225. Integration of Technology Across the Curriculum (3)
Identification, evaluation, and use of advanced technologies such as microcomputers, instructional video, laserdisc, television, and telecommunications for developing teaching materials appropriate for state curriculum framework.

227. Current Issues and Trends in Educational Technology (3)
Prerequisite: preliminary credential or permission of instructor. Focuses on the social, economic, and psychological impacts of technology and technology research on schools, teaching, and learning. Students examine the past and formulate a vision of the future of educational technology through readings, discussions, and research.

228. Developing Problem-Solving Skills with Computers (3)
Prerequisite: CTET 100 or 101. Developing problem-solving skills within K-12 computing environments. Students will develop curriculum materials, lesson plans, and teaching strategies for promoting problem-solving skills through the effective use of applications software, problem-solving software, programming languages, and authoring systems. (2 seminar, 2 lab hours) (Instructional materials fee, $10)

230. Planning and Implementing Innovative Technology Programs (3)
Prerequisite: CTET 100 or 101. Strategies for implementing change in educational settings; planning for equitable technology use; planning and instituting effective staff development programs; managing resources, including networking equipment; locating, developing, and coordinating funding sources; and gaining parent and community support.

250. Curriculum/Instructional Development and Evaluation (3)
Prerequisite: CTET 150 or 159 or permission of program adviser. Theory and practice of curriculum development, evaluation, and revision. Study of contemporary problems and curriculum approaches to meet societal needs. (2 lecture, 2 lab hours) (Instructional materials fee, $5) (Former T Ed 250)

273. Secondary School Curriculum (3)
Prerequisite: EHD 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. (Former T Ed 273)

275. Practicum in Curriculum Development (1-6; max total 6)
Prerequisite: teaching credential. Study and application of contemporary research in curriculum development. (Former T Ed 275)

280T. Advanced Topics (1-3)
Prerequisite: permission of instructor. Advanced, in-depth analysis of issues and problems in curriculum and instruction; elementary, middle school, and secondary education; technology and computers in education. Emphasis placed on advanced research. (Former T Ed 280T)

290. Independent Study (1-3)
See *Academic Placement — Independent Study*. Approved for ***SP*** grading. (Former T Ed 290)

298. Project (4)
Prerequisite: advancement to candidacy for the master's degree; ***B*** average on 24 units of the master's program including ERF 220. See *Criteria for Thesis and Project*. A project consists of a significant undertaking appropriate to education such as the development of curricula and instructional materials, educational policy, educational theory, and educational technology. An approved proposal is required for enrollment. Approved for ***SP*** grading. (Former A S 298B)

299. Thesis (4)
Prerequisite: advancement to candidacy for the master's degree; ***B*** average on 24 units of the master's program including ERF 220 and completion of an acceptable thesis proposal. See *Criteria for Thesis and Project*. 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. Approved for ***SP*** grading. (Former A S 299)

IN-SERVICE COURSE

(See *Course Numbering System.*)

Curriculum, Teaching, and Educational Technology (CTET)

380T. Topics in Education (1-6; max total 12)
Studies in theory, procedures, and application in such areas as social forces, professional activities, technology, and instructional innovations.

EDUCATION Educational Research, Administration, and Foundations

School of Education and Human Development
Department of Educational Research, Administration, and Foundations
DAVID E. TANNER, *Chair*
Education Annex, Room 104
(209) 278-4485

M.A. in Education
Option: Administration and Supervision
Credentials
Preliminary Administrative Services
Professional Administrative Services

The Department of Educational Research, Administration, and Foundations sponsors one graduate degree and offers coursework in support of all the education graduate and credential programs. Consequently, departmental faculty are involved in some fashion in nearly all formal school programs.

Program

Educational Administration. The Master of Arts in Education with an option in administration and supervision is a 30-unit degree program. The Administrative Services Credential Program is a two-tier program that provides authorization to function in an administrative position in a K-12 school setting.

The Preliminary Administrative Services Credential Program is a 24 semester unit program that provides basic preparation for employment in a K-12 public school administrative position. The Professional Administrative Services Credential Program is also a 24 semester unit program that provides advanced preparation and is taken following completion of the preliminary credential.

Research. The research program component is an integral part of all graduate degrees and offers coursework in research methodology theory and practices, measurement, program evaluation, and qualitative and quantitative analyses. The faculty also play an important role in providing consultation and support to graduate students' research.

Foundations. Courses in the cultural and social foundations of education are fundamental to understanding contemporary education, and with educational psychology, are found in all teacher education programs. The foundations faculty have developed coursework tailored to a variety of teaching credential options, ranging from early childhood through high school.

Faculty

David E. Tanner, *Chair*

Donald G. Coleman, *Coordinator of Educational Administration*, (209) 278-5222

Kathryn J. Biacindo
Ric S. Brown
Alfredo Cuellar
Jolyne S. Daughtry
Roland V. Ellertson
Lynn D. Hemink
Rebecca J. Kopriva
Phyllis A. Kuehn
Rosemary Papalewis
J. Leonard Salazar
Robert D. Segura
Carl R. Stutzman
Susan M. Tracz
Atilano A. Valencia
Sarah E. Wright
Diane M. Yerkes

Credential Programs

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

Admission Requirements. Applicants for the Preliminary Administrative Services Credential must meet the following requirements for admission to the program:

1. Complete the Application for Postbaccalaureate Admission at CSU Fresno.
2. Complete the Application for Admission to School of Education and Human Development graduate programs.
3. Possess a GPA of 2.75+ over the last 60 semester units.
4. Obtain three letters of recommendation.
5. Provide evidence of having taken the California Basic Educational Skills Test (CBEST).
6. Demonstrate writing competence.
7. Provide a complete set of transcripts of all prior college and university work.
8. Complete a statement of purpose.
9. Submit scores from the Graduate Record Examination (GRE) — General Test or the Miller Analogies Test (MAT).
10. Possess a basic teaching credential.
11. Be approved by the education administration faculty.

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. Possess a valid California teaching credential based on a bachelor's degree or a Pupil Personnel Services Credential.
2. Verify three years of successful, full-time teaching experience **or** three years of pupil personnel experience in public schools, or in private schools of equivalent status.
3. Complete ERF 285; EAD 261, 262, 263, 267, 268, 269, and 272.
4. Verify training in the needs of and methods of providing educational opportunities to individuals with exceptional needs through completion of SPED 160, one year of full-time experience in special education, *or* 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.
7. Completed a master's degree.

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 GPA of 3.0 or better over the last 60 semester units.
2. Hold a valid Preliminary Administrative Services Credential.
3. Be in a position requiring the Preliminary Administrative Services Credential as verified by the district.

Program Requirements. Candidates for the Professional Administrative Services Credential (Advanced Credential) who have been admitted to the program must meet the following requirements:

1. Verify a minimum of two years of full-time experience in public or private schools in a position requiring an administrative credential.

2. Complete for the credential:
   a. 12 units from EAD 264, 265, 266, 271, 272, 273, 274, 275, 277, 278T; SPED 216
   b. 8 units of EAD 279 and
   c. 4 units from EAD 280T or 380T
3. Be in a position requiring the Preliminary Administrative Services Credential as verified by the district.
4. Possess a master's degree.
5. Pass the competency exit review.

Master of Arts Degree in Education

Administration and Supervision

The Department of Educational Research, Administration, and Foundations offers a program leading to a Master of Arts degree in Education with an option in administration and supervision. Candidates who qualify for a preliminary teaching credential, with prior approval, may use part or all of a master's degree program to satisfy the fifth-year requirements for a clear teaching credential.

The administration and supervision option is designed to provide professional preparation for the positions of principal, consultant, supervisor, program director, assistant superintendent, and superintendent.

Program Requirements

Admission Requirements for Classified Standing. See *General Admission Requirements* in the *Education — Graduate Program* section in this catalog.

Program Prerequisites. Fifteen units in education or the equivalent, including ERF 153; an adequate background for advanced work in the field.

	Units
Core requirements	
ERF 220, 285 or 288, EAD 298 or 299	10
EAD 261, 262, and 9 units from the following: EAD 263, 264, 265, 266, 267, 268, 271, 272, 273, 274, 275, 277, 278T, 279	15
Electives: 5 units from the above or other approved electives	5
Total	30

COURSES

Educational Research, Foundations (ERF)

130. Psychological Foundations of Education — Multiple Subject (3)
Not open to students with credit in ERF 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. (Former T Ed 130)

130A. Psychological Foundations Fieldwork — ECE (1)
Admission to Option II teacher education program or permission of instructor. Taken concurrently with ERF 140A. Supervised field experiences related to interprofessional collaboration.

130ECE. Psychological Foundations of Education — ECE (2)
Admission to Option II teacher education program. Foundation for relating human development and educational concepts, ideas and principles to facilitation of learning with a special focus on programs for children eight years and younger.

140. Cultural Foundations of Education (3)
Not open to students with credit in ERF 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. (Former T Ed 140)

140A. Cultural Foundations Seminar — ECE (1)
Taken concurrently with ERF 130A (Option II) and fieldwork courses in the departments of Counseling and Special Education, Criminology, Nursing, Psychology, and Social Work Education. Shared discussion and analysis of processes related to collaboration among education, health, law, psychology, and social service professionals.

140ECE. Cultural Foundations of ECE (2)
Admission to Option II teacher education program. Functions of education in America's multicultural society. Foundation for understanding children and families in the ecological contexts of home, school, and community with special focus on programs serving children eight years and younger.

151. Social Foundations of Education (3)
Not open to students with credit in ERF 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. (Former T Ed 151)

152. Psychological Foundations of Education — Single Subject (3)
Not open to students with credit in ERF 130. Prerequisite: admission to Single Subject Credential Program; Psych 10. Educational psychology; growth and development, learning, personality and self-concepts of adolescents; implications for learning and teaching. (Former T Ed 152)

153. Educational Statistics (3)
Prerequisite: ELM exam. Methods of describing, analyzing, and interpreting data; statistical inference, including "t" test, correlation and prediction, chi square, and simple research design. Computer applications during lab activities. (2 seminar, 2 lab hours) (Former A S 153)

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 T Ed 180T)

190. Independent Study (1-3; max see reference)
See *Academic Placement — Independent Study*. Approved for ***SP*** grading. (Former T Ed 190)

GRADUATE COURSES

(See *Course Numbering System.*)

Educational Research, Foundations (ERF)

220. Research in Education (3)
Prerequisite: 12 units of education courses or equivalent and ERF 153. 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. (2 seminar, 2 lab hours) (Former A S 220)

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. (Former T Ed 272)

274. Social Interaction in Teaching (3)
In-depth study of the dynamics of effective interpersonal relations in the classroom with students; and beyond, with administrators, parents, and colleagues. Strategic interaction for creative, low-stress teaching and learning based upon related theory and research. (2 seminar, 2 lab hours) (Former T Ed 274)

280T. Advanced Topics in Education (1-3)
Prerequisite: permission of instructor. Advanced, in-depth analysis of issues and problems in educational foundations; curriculum and instruction; reading; early childhood, elementary, middle school, and secondary education; and computers in education. Emphasis placed on advanced research. (Former T Ed 280T)

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.

284. Seminar in International Education (3)
Analysis of historical, social, and political forces which shape national education endeavors. Emerging international education efforts and organizations. (Former T Ed 284)

285. Seminar in Advanced Educational Psychology (3)
Prerequisite: minimum 3 units from the following: ERF 130, 152; COUN 174, or Psych 101. Seminar on the psychological foundations of education; nature and characteristics of development, learning processes, and forces which affect educational growth. (Former A S 285)

286. Social Issues in Education (3)
Prerequisite: ERF 140 or 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 T Ed 286)

287. Seminar in History of Educational Thought (3)
Prerequisite: ERF 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 T Ed 287)

288. Educational Measurement and Program Evaluation (3)
Prerequisite: ERF 153. Procedures and issues involved in the measurement and evaluation of educational programs; planning, etc. Applications in educational settings are emphasized. (2 seminar, 2 lab hours) (Former A S 288)

289. Seminar in Advanced Educational Research (3)
Prerequisite: ERF 153 and 220; or permission of instructor. Emphasis on conceptualizing advanced educational research problems, analyzing data and interpreting data, computer lab activities using such techniques as ANOVA, multiple regression, and multivariate statistics and developing the methodology for thesis proposals. (2 seminar, 2 lab hours) (Former A S 289)

290. Independent Study (1-3; max see reference)
See *Academic Placement — Independent Study*. Approved for ***SP*** grading. (Former T Ed 290)

298. Project (4)
Prerequisite: advancement to candidacy for the master's degree; ***B*** average on 24 units of the master's program including ERF 220. See *Criteria for Thesis and Project.* A project consists of a significant undertaking appropriate to graduate study in education. An approved proposal is required for enrollment. Approved for ***SP*** grading. (Former A S 298B)

299. Thesis (4)
Prerequisite: advancement to candidacy for the master's degree; ***B*** average on at least 24 units of the master's program, including ERF 220 and completion of an acceptable thesis proposal. See *Criteria for Thesis and Project.* 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. Approved for ***SP*** grading.

IN-SERVICE COURSE

(See *Course Numbering System.*)

Educational Research, Foundations (ERF)

380T. Topics in Education (1-6; max total 12)
Studies in theory, procedures, and application in such areas as social forces, professional activities, technology, and instructional innovations. (Former T Ed 380T)

GRADUATE COURSES

(See *Course Numbering System.*)

Educational Administration (EAD)

261. Managing Educational Organizations (3)
Prerequisite: initial course in Education Administration sequence. Development of knowledge and skills central to managing educational organizations. (Former A S 261)

262. Education Leadership (3)
Prerequisite: EAD 261; concurrent enrollment in EAD 267 required for preliminary administrative service credential candidates. Initial course in education leadership. Development of knowledge and skills essential to organizational leadership. (Former A S 262)

263. Seminar in Instructional Supervision (3)
Prerequisite: EAD 261, 262. 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. (Former A S 263)

264. Seminar in the Legal Aspects of Education (2)
Prerequisite: teaching experience; EAD 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. (Former A S 264)

265. Seminar in School-Community Relations (2)
Prerequisite: EAD 261. Seminar on interaction with community forces, news media, political agencies, and minority groups in policy analysis and development; data-based decision-making and analysis. (Former A S 265)

266. Seminar in School Finance and Business Administration (2)
Prerequisite: EAD 261. Economic perspectives and practices of school finance and business administration; local, state, and federal responsibility for financial support of education. (2 seminar hours) (Former A S 266)

267. Fieldwork in Education Administration I (3)
Prerequisite: EAD 261; taken concurrently with EAD 262 and adviser permission. Supervised administrative practice in multiple sites and grade levels including culturally diverse settings; observe and practice leadership and general supervisory skills. Includes seminar discussions of field experiences and required research. *CR/NC* grading only. (Minimum of 120 hours required for 3 units of credit) (Former A S 267)

268. Fieldwork in Education Administration II (3)
Prerequisite: EAD 261, 262, 267; taken concurrently with or after EAD 263 and adviser permission. Supervised administrative practice with specific emphasis on classroom clinical supervision in multiple sites and grade levels, including culturally diverse settings; observe and practice leadership skills in instructional supervision. Includes seminar discussions of field experiences and required research. *CR/NC* grading only. (Minimum of 120 hours required for 3 units of credit) (Former A S 268)

269. Site-based Leadership (3)
Prerequisite: EAD 261, 262, 263, 267, 272. Includes essentials of site leadership: school law, finance, community relations, personnel, and support services. In-depth research into restructuring, teacher empowerment, and student achievement in culturally diverse schools.

271. Seminar in School Facilities (3)
Prerequisite: preliminary credential or 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. (2 seminar, 2 lab hours) (Former A S 271)

272. Seminar in Advanced Curriculum Evaluation and Development (3)
Prerequisite: EAD 261 and ERF 285 or permission of instructor. 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. (Former A S 272)

273. Ethical and Professional Issues in Education Administration (3)
Prerequisite: Preliminary Administrative Services Credential or permission of instructor. Seminar on the ethical and professional issues of administrative professionalism, examined in the context of the various roles the administrator is expected to perform as a practitioner. (Former A S 273)

274. Advanced School Finance and Business Services (3)
Prerequisite: preliminary credential or 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. (2 seminar, 2 lab hours) (Former A S 274)

275. Seminar in Advanced Techniques of Personnel Administration in Education (2)
Prerequisite: preliminary credential or permission of instructor. Advanced techniques of staff improvement in-service, 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. (Former A S 275)

277. Computer Applications in Educational Administration (3)
Prerequisite: preliminary credential or permission of instructor. 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. (2 seminar, 2 lab hours) (Former A S 277)

278T. Topics in Advanced Educational Administration (1-3)
Prerequisite: preliminary credential or permission of instructor. Seminar covering special topics relating to educational administration: new developments in educational administration, special populations, and current research. (Former A S 278T)

279. Advanced Administration Fieldwork (1-8; 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. *CR/NC* grading only. (40 hours required for 1 unit) (Former A S 279)

280T. Topics in Professional Development (1-3)
Prerequisite: preliminary credential or adviser permission. Not applicable toward a M.A. degree. Advanced-level studies in theory, procedures, and application of education administration principles. Includes such topics as: community advisory committees, marshalling resources, interventions for school improvement, technology utilization, and restructuring.

290. Independent Study (1-3; max see reference)
See *Academic Placement — Independent Study*. Approved for ***SP*** grading. (Former A S 290)

298. Project (4)
Prerequisite: advancement to candidacy for the master's degree; ***B*** average on 24 units of the master's program including ERF 220. See *Criteria for Thesis and Project.* A project consists of a significant undertaking appropriate to graduate study in education. An approved proposal is required for enrollment. Approved for ***SP*** grading. (Former A S 298B)

299. Thesis (4)
Prerequisite: advancement to candidacy for the master's degree; ***B*** average on 24 units of the master's program including, ERF 220 and completion of an acceptable thesis proposal. See *Criteria for Thesis and Project.* 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. Approved for ***SP*** grading. (Former A S 298B)

IN-SERVICE COURSE

(See *Course Numbering System.*)

Educational Administration (EAD)

380T. Topics in Educational Administration (1-6; max total 12)
Studies in theory, procedures, and application in such areas as social forces, professional activities, technology, and instructional innovations.

EDUCATION Literacy and Early Education

School of Education and Human Development
Department of Literacy and Early Education
JACQUES S. BENNINGA, *Chair*
Ed/Psych Building, Room 123
(209) 278-5762

Credentials
Multiple Subject, Option II
Early Childhood Education
Multiple Subject, CLAD/BCLAD
(expected approval 1993-94)
Early Childhood Specialist
Language Development
Specialist Certificate
Reading Specialist

M.A. in Education
Options:
Early Childhood Education
Reading

The primary mission of the Department of Literacy and Early Education is to prepare knowledgeable and professionally competent teachers and curriculum leaders in the areas of early childhood education (N-3), bilingual/cross-cultural education (K-6), and reading (K-12) in both public and private educational settings.

The department offers the Preliminary Multiple Subject Credential in both Early Childhood Education (Option II) and Bilingual/Cross-Cultural Language and Academic Development (CLAD/BCLAD), expected approval 1993-94. At the graduate level, the department offers programs in Early Childhood Education and Reading. In addition, the department offers a certificate program, the Language Development Specialist Certificate.

Credential Programs

Basic Teaching Credentials. The basic Multiple Subject Teaching Credential may be earned in conjunction with a baccalaureate degree (preliminary credential) or following completion of a fifth year of professional preparation in the following areas:

1. Multiple Subject Credential — Early Childhood Education Emphasis
2. Multiple Subject Credential — Bilingual/Cross-Cultural Language and Academic Development (CLAD/BCLAD), expected approval 1993-94.

Specialist Teaching Credential. The specialist teaching credential represents a year of postbaccalaureate study in an area of teaching specialization. The specialist credential may be earned by a holder of a Multiple Subject or Single Subject Credential. The Department of Literacy and Early Education offers specialist credentials in Early Childhood Education and Reading, as well as the Language Development Specialist Certificate.

Master's Degree Programs

The Department of Literacy and Early Education offers advanced and specialized study for the Master of Arts degree in Education with options in early childhood education and in reading. Completion of a master's degree signifies that the holder is prepared to provide professional leadership in an area of specialization offered by the department. Most candidates for the master's degree have three or more years of successful teaching experience.

Faculty

Jacques S. Benninga, *Chair*
Doris Smith, *Coordinator of Early Childhood Education Emphasis (Option II), Specialist Credential and Master's Programs,* (209) 278-2185
Finian McGinn, *Coordinator of Bilingual/Cross-Cultural Education Emphasis* (CLAD/BCLAD), expected approval 1993-94, (209) 278-5723
Robert Pritchard, *Coordinator of Language Development Specialist Certificate Program,* (209) 278-6662
Bonnie Dutton, *Coordinator of Reading Specialist Credential and Master's Programs,* (209) 278-7007

Shareen Abramson
Adrienne L. Herrell
Hee-Won Kang
Judith C. Neal
Cecelio Orozco
Richard F. Osterberg
Marilyn R. Shelton
Charlene K. Smith
Gail E. Tompkins

Credential Programs

Preliminary Multiple Subject Credential programs in the Department of Literacy and Early Education include: Option II — Early Childhood Education Emphasis and Bilingual/Cross-Cultural Language and Academic Development (CLAD/BCLAD), expected approval 1993-94.

Option II — Early Childhood Education Emphasis

The Early Childhood Education Emphasis Program prepares students to teach in the elementary grades, with special strengths in early childhood education. This block program with fieldwork 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 EHD 160 in two semesters enroll in EHD 160A (6 units) and EHD 160B (6 units). Successful completion of EHD 160A and EHD 160B must include a minimum of one week of full-time student teaching in each assignment.

Program Requirements

1. **Subject Matter Competency.** Demonstrate subject matter competence through completion of the Liberal Studies Waiver Program or pass the NTE Multiple Subject Assessment for Teachers (MSAT), Tests 14, 15, and 16.
2. **Professional Preparation** *Units*

EHD 110	3
CTET 121	3
ERF 130A	1
ERF 130ECE	2
ERF 140A	1
ERF 140ECE	2
LEE 146	3
LEE 148	4
EHD 160	12
Total	**31**

3. **Completion of a Bachelor's Degree.** California law requires a bachelor's degree in a subject area other than professional education.

CLAD and BCLAD Credential

Cross-Cultural Language and Academic Development (CLAD) and Bilingual Cross-Cultural Language and Academic Development (BCLAD) Credential. These credential programs are being developed, and will replace the current Bilingual/Cross-Cultural Emphasis program in 1993-94. The emphasis of the CLAD/BCLAD credential is to prepare teachers to work with limited English proficient students. The CLAD authorization will certify teachers to provide instruction for English language development and specifically designed academic instruction, delivered in English, to students. The BCLAD will authorize teachers to provide academic instruction to limited English proficient students in their primary language. For specific details, see the CLAD/BCLAD coordinator, Finian McGinn, Industrial Technology 242.

Program Requirements

1. **Subject Matter Competency.** Demonstrate subject matter competence by completing the Liberal Studies Waiver Program. Specific course requirements can be obtained by contacting the CLAD/BCLAD coordinator.
2. **Completion of Bachelor's Degree.** California law requires a bachelor's degree in a subject area other than professional education.

Specialist Credentials/Certificate

Specialist credentials may be earned by holders of Multiple Subject and Single Subject credentials. The specialist credential represents a year of postbaccalaureate study in an area of teaching specialization. Specialist credential programs offered through the Department of Literacy and Early Education include: 1) Early Childhood Education and 2) Reading. A third program, the Language Development Specialist Certificate, provides the skills useful to those teaching non-English speaking as well as limited English speaking students.

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 Postbaccalaureate Standing (Credential only) or Graduate Standing (Credential and Master's Degree).

Program

1. **Course Requirements** *Units*
   LEE 171, 231, 232, 241, 252, 271 15
   Select 15 units with approval of ECE coordinator)
2. **Electives** are selected from fields including special education, educational administration, bilingual education, and other fields as determined in consultation with the ECE faculty adviser 15

Total **30**

3. **Experience.** Two 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 early childhood education coordinator. Specialist credential courses may also be used to meet part or all of the requirements for a master's degree. It is strongly advised that application for the master's degree be completed at the same time the application for the specialist credential occurs. See the SOEHD Admissions and Records Office in EdP 120 for admission information. For information about all early childhood programs, contact the early childhood education program coordinator at (209) 278-2185.

Reading Specialist Credential

Admission Requirements. 1) Complete application for postbaccalaureate standing at CSU Fresno; 2) Complete application for Admission to SOEHD graduate programs; 3) Possess a GPA of 2.75 overall; 4) Provide three letters of recommendation; 5) Complete a Statement of Purpose; 6) Take the GRE (general test) or the Miller Analogies Test and submit a copy of score; 7) Successfully complete 15 semester units of education coursework, including ERF 153 (Educational Statistics) or its equivalent; 8) Possess a basic teaching credential.

Program

1. **Course Requirements** *Units*
   LEE 213, 214, 215, 224, 234, 244, 254, 278 24
2. **Experience:** Completion of a one semester supervised field experience (LEE 254) and 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. Specialist credential courses may also be used to meet part of the requirements for a master's degree. See the SOEHD Admissions and Records Office in EdP 120 for admission information. For information about the Reading Specialist Credential, contact the reading program coordinator at (209) 278-7007.

Language Development Specialist Certificate

The Language Development Specialist (LDS) Certificate is designed for elementary and secondary teachers planning to work with limited English proficient (LEP) students in regular classrooms or in English as a second language programs. The LDS Program is an approved means of preparation for the LDS Certificate Examination administered by the California Commission on Teacher Credentialing.

Admission Requirements

1. Provide verification of admission to CSU Fresno.
2. Provide verification of a basic teaching credential.
3. Provide complete set of transcripts of all prior college/university work.
4. Possess undergraduate GPA of 2.75.
5. Complete Ling 134.
6. Complete the application to the SOEHD graduate program.
7. Complete a Statement of Purpose.
8. Provide three letters of recommendation.
9. Complete an entrance interview.

Program

Course Requirements	*Units*
CTET 136; LEE 122L,* 138, 175, 215	12-15
Ling 132, 141, 147, 171*	9-12
Total	**24**

* Students take either LEE 122L or Ling 171.

For information about the LDS Credential, contact the LDS program coordinator at (209) 278-6662.

Master of Arts Degree in Education

Early Childhood Education

The Master of Arts degree in Education with an option in early childhood education offers specialized preparation for a wide variety of positions 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 Clear Teaching Credential.

Admission Requirements for Classified Standing. See *General Admission Requirements* in the *Education — Graduate Program* section in this catalog.

Program. Prerequisites: ERF 153 and 12 additional units in education or child development and an adequate background for advanced work in the field.

Course Requirements	*Units*
ERF 220; ERF 285 or 288; LEE 298B or 299	10
LEE 171, 231, 232, 241, 252, 271 (Select 15 units with approval of ECE coordinator)	15
Approved Electives	5
Total	**30**

For information on the M.A. in Education, early childhood education option, contact the early childhood education coordinator at (209) 278-2185.

Master of Arts Degree in Education

Reading

The Master of Arts degree program in Education with an option 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. Students may use the program to meet fifth-year credential requirements for the Basic Teaching Credential.

Admission Requirements for Classified Standing. See *General Admission Requirements* in the *Education — Graduate Program* section in this catalog.

Program. Prerequisites: 15 units of professional education coursework including ERF 153.

Course Requirements	*Units*
ERF 220; ERF 285 or 288 and LEE 298A or 299	10
LEE 213, 215, 244, 278	12
Approved Electives (See adviser for suggested courses or groupings. The program offers special elective groupings in Integrated Language Arts, Teaching LEP Students, and Diagnostic/Clinic Experiences.)	8
Total	**30**

For information on the M.A. in Reading, contact the reading coordinator at (209) 278-7007.

COURSES

Note: Students must provide their own transportation to off-campus sites for classes, student teaching, practica and field activities, and defray any resulting expense.

Literacy and Early Education (LEE)

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 only; not applicable toward baccalaureate degree requirements. (Former T Ed AR)

101. Practicum in Tutoring (1-3)
Skills in tutoring individuals and small groups. Study habits, problem solving, writing, and test-taking skills. Fieldwork in tutoring. Not applicable for public school credentials. (Former T Ed 101)

120. Problems in Education (2-3; repeatable with different topics)
In-depth study of various areas in education including children's literature (CL), kindergarten (KG), language arts (LA), nursery school (NS), and storytelling (ST). Selected topics may require activities. (Former T Ed 120)

122L. Fieldwork in Language Development (3)
Prerequisite: admission to the Language Development Specialist Program and CTET 136; LEE 138, 175, 215; Ling 132, 141, 147. 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. (Former T Ed 122L)

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 T Ed 138)

139. English/Spanish Literacy (3)
Prerequisite: Spanish fluency and permission of instructor. Methods and materials for bilingual/cross-cultural classrooms. A practical look at language arts methodologies for English and Spanish; the teaching of reading in Spanish for native speakers; ESL methods for bilingual and non-English

proficient (NEP) students in public schools. (Former T Ed 139)

141. Spanish Storytelling (3)
Prerequisite: Spanish fluency and permission of the instructor. Collecting and reading of Spanish genres of children's literature from elementary schools. Riddles, myths, games, stories, etc. are collected and adapted for use with Spanish speakers. (Former T Ed 141)

146. Literacy Development in Early Childhood and Elementary Classrooms (3)
Prerequisite: admission to the Multiple Subject Credential Program, Option II. Theories of reading, integrating literature, reading and writing throughout the curriculum; emergent literacy, provision for individual differences, reading motivation and assessment. Socio-psycholinguistic approach to literacy development.

147. 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, children, parents, and staff who interact in a regular classroom with a mainstreamed child. (2 lecture, 2 lab hours) (Former T Ed 147)

148. Integrated Curriculum (4)
Prerequisite: admission to the Multiple Subject Credential Program, Option II; completion of or concurrent enrollment in EHD 110; ERF 130, 140. Taken in place of CTET 150 by students in Option II program. Integration of curriculum and use of instructional resources in early childhood programs and the elementary school (K-6); methods of teaching. Lecture supported by curriculum development activities. (3 lecture, 2 activity hours) (Former T Ed 148)

156M. Reading in the Elementary School (3)
Prerequisite: admission to the Multiple Subject Credential Program; ERF 130 and 140 (or concurrent enrollment); EHD 110; CTET 150 (Option II: LEE 148) to be taken concurrently. Literature-based reading instruction consistent with the California English/Language Arts Framework including techniques for culturally/linguistically diverse learners. (Former T Ed 156M)

156S. Content Area Reading in the Secondary School (3)
Prerequisite: admission to the Single Subject Credential Program; concurrent enrollment in EHD 155A or 155B. Reading instructional techniques appropriate for use in content area subjects including theories, methods, and materials for the development of vocabulary comprehension, writing, and study skills (grades 7-12). (Former T Ed 156S)

164A. 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 hours) (Instructional materials fee, $15) (Former T Ed 164A)

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 hours) (Instructional materials fee, $15) (Former T Ed 164B)

166. Reading Improvement (2)
A course to improve reading abilities. Emphasis placed on improving vocabulary, comprehension, and flexibility in reading skills. (Former T Ed 166)

171. Trends and Issues in 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. (Former T Ed 171)

175. Teaching and Evaluating English Learners in K-12 Classrooms (3)
Prerequisite: completion of student teaching or permission of instructor. Methods and materials for teaching and evaluating K-12 limited English-proficient students, with special emphasis on developing and assessing English language ability and interrelating language instruction with content area subject matter. (Former T Ed 175)

180T. Topics in Literacy and Early Education (1-3; max total 9)
Issues and topics in reading, bilingual/cross-cultural education, reading, and language development. (Former T Ed 180T)

190. Independent Study (1-3; max see reference)
See *Academic Placement — Independent Study*. Approved for *SP* grading. (Former T Ed 190)

GRADUATE COURSES

(See *Course Numbering System.*)

Literacy and Early Education (LEE)

213. Teaching the Language Arts K-12 (3)
Seminar on integrated language arts, reading-writing connections, and using language arts in literature-based reading programs and theme cycles. (Former T Ed 213)

214. Literature for Children and Adolescents (3)
Prerequisite: admission to program or permission of instructor. Survey of genre, authors, and illustrators; critical interpretation and classroom application of books; the impact of social and cultural patterns in literature. (Former T Ed 214)

215. Language Issues in Reading (3)
Prerequisite: LEE 156M or 156S or permission of the instructor. Seminar exploring issues related to language acquisition and literacy development with special emphasis on culturally and linguistically diverse learners. (Former T Ed 215)

221. Early Childhood Curriculum for Children with Special Needs (3)
Modifications in mainstreamed or special settings to adapt early education curriculum for young children with special needs. Study of theoretical models, research, teaching techniques, criteria for selection of appropriate materials and provisions for adapting physical classroom environments. (Former T Ed 221)

224. Assessment and Development of Reading Abilities (3)
Prerequisite: LEE 278. Analysis of reading performance utilizing portfolio and performance based assessments and diagnostic instruments. Consideration of methods and materials for instruction. (2 lecture, 2 lab hours) (Former T Ed 224)

231. Curriculum in Early Childhood Education (3)
Prerequisite: LEE 171; admission to Early Childhood Emphasis or Specialist program. Concepts underlying curriculum and development for children eight years and younger. Teacher's role in planning, implementing, and assessing curriculum and development of teaching strategies. (2 lecture, 2 lab hours) (Former T Ed 231)

232. Reading and Language Arts in Early Childhood Education (3)
Prerequisite: admission to program or permission 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. (Former T Ed 232)

234. Clinical Experiences in Reading Assessment and Instruction (3)
Prerequisite: LEE 224. Clinical experiences in the supervised application of principles learned in LEE 224. Emphasis on individual and small group evaluation and instructional procedures. (2 lecture, 2 lab hours) (Instructional materials fee, $10) (Former T Ed 234A; LEE 234A)

241. Fieldwork 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 preschool, kindergarten, and primary. (Minimum of 135 hours) (Former T Ed 241)

244. Research in Reading Curriculum (3)
Prerequisite: LEE 213, 215, 278, and permission of instructor. Study of past and current research in reading related to instructional issues; planning and analysis of curricula in light of current research; application of research skills. (Former T Ed 244)

252. Mathematics and Science in Early Childhood Education (3)
Prerequisite: admission to Early Childhood Education Emphasis or Specialist program or permission of instructor. Theoretical study of mathematics and science knowledge acquisition for young children. Development of appropriate science and mathematics curriculum materials. Review of literature and related research. (2 lecture, 2 lab hours) (Former T Ed 252)

254. Supervised Field Experiences in Reading (3)
Prerequisite: LEE 224, 244, and permission of instructor. Intensive varied supervised field experiences in settings with reading specialists, consultants, or staff development personnel 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 T Ed 254)

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. (2 lecture, 2 lab hours) (Former T Ed 271)

278. Literacy Processes and Practices (3)
Prerequisite: LEE 156M or 156S or permission of instructor. Understanding literacy processes through the investigation of current theories, issues, and practices. (Former T Ed 278)

280T. Advanced Topics in Literacy and Early Education (1-3)
Prerequisite: permission of instructor. Advanced, in-depth analysis of issues and problems related to literacy, bilingualism, and early childhood education. Emphasis placed on advanced research. (Former T Ed 280T)

290. Independent Study (1-3; max see reference)
See Academic Placement — Independent Study. Approved for ***SP*** grading. (Former T Ed 290)

298A. Project — Literacy (4)
Prerequisite: advancement to candidacy for the master's degree; ***B*** average on 24 units of the master's program including ERF 220. See *Criteria for Thesis and Project*. A project consists of a significant undertaking appropriate to education such as the development of curricula and instructional materials, intervention programs, studies of policy related to reading and literacy, and educational theory. An approved proposal is required for enrollment. Approved for ***SP*** grading. (Former A S 298B)

298B. Project — Early Childhood Education (4)
Prerequisite: advancement to candidacy for the master's degree; ***B*** average on 24 units of the master's program including ERF 220. See *Criteria for Thesis and Project*. A project consists of a significant undertaking appropriate to education such as the development of curricula and instructional materials, intervention programs, studies of policy related to early childhood education, and educational theory. An approved proposal is required for enrollment. Approved for ***SP*** grading. (Former A S 298B)

299. Thesis (4)
Prerequisite: advancement to candidacy for the master's degree; ***B*** average on 24 units of the master's program including ERF 220 and completion of an acceptable thesis proposal. See *Criteria for Thesis and Project*. 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 thesis guidelines. Approved for ***SP*** grading. (Former A S 299)

IN-SERVICE COURSES

(See *Course Numbering System*.)

Literacy and Early Education (LEE)

380T. Topics in Literacy and Early Education (1-6; max total 12)
Studies in theory, procedures, and application in such areas as pertain to departmental focus. (Former T Ed 380T)

383. Problems in Child Study (2; max total 12 if topic not repeated)
Methods of studying children; relationship of child study groups, reviews of research findings in child development, and adolescent behavior. (Former T Ed 383)

School of Education and Human Development
BARBARA G. BURCH, *Dean*
Ed/Psych Building, Room 133
(209) 278-2623

ROBERT H. MONKE, *Associate Dean and Graduate Programs Coordinator*
Ed/Psych Building, Room 120
(209) 278-3084

M.A. in Education
M.A. in Special Education
M.S. in Counseling
M.S. in Rehabilitation Counseling
Ed.D. Educational Leadership

Advanced Credential Programs
Administrative Services
Early Childhood Education Specialist
Language Development Specialist
Pupil Personnel Services
Reading Specialist
Special Education Specialist

The School of Education and Human Development offers advanced and specialized preparation required for awarding a doctoral degree, master's degrees, and advanced specialist and services credentials. Information about interdisciplinary programs is provided in this section. General information is also provided about all advanced programs while more specific program information is obtained by referring to appropriate departmental sections in this catalog.

Master's Degree Programs

The SOEHD offers four master's degree programs in separate areas of professional emphasis. These degree programs include:

1. M.A. degree in Education with the following options: administration and supervision, curriculum and instruction, early childhood education, reading, and counseling and student services
2. M.A. degree in Special Education
3. M.S. degree in Counseling with an option in marriage, family and child counseling
4. M.S. degree in Rehabilitation Counseling

Master's degree programs can be pursued concurrently with fifth-year (postbaccalaureate) 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 SOEHD, EdP 111. Obtain information pertaining to specialist and services credentials by contacting individual program coordinators located in each department.

For additional information and advisement pertaining to SOEHD master's degree programs, consult the appropriate department and program coordinator.

M.A. in Education

- Administration and Supervision. (See *Department of Educational Research, Administration, and Foundations*/coordinator of administrative services program.)
- Curriculum and Instruction. (See *Department of Curriculum, Teaching, and Educational Technology*/coordinator of curriculum and instruction.)
- Early Childhood Education. (See *Department of Literacy and Early Education*/coordinator of early childhood education.)
- Reading. (See *Department of Literacy and Early Education*/coordinator of reading.)
- Counseling and Student Services. (See *Department of Counseling and Special Education*/coordinator of counselor education.)

M.A. in Special Education. (See *Department of Counseling and Special Education*/coordinator of special education program.)

M.S. in Counseling

- Marriage, Family and Child Counseling. (See *Department of Counseling and Special Education*/coordinator of counselor education.)

M.S. in Rehabilitation Counseling. (See *Department of Counseling and Special Education*/coordinator of counselor education.)

Master's Degrees

General Admission Requirements. In addition to making application for admission to the university through the CSU Fresno Admissions Office, consult the SOEHD graduate degrees program coordinator for:

1. Program information
2. SOEHD graduate programs admission forms
3. Any specific program application forms
4. Assignment to an appropriate adviser

All students applying for admission to a master's degree program in the SOEHD must meet the minimum admission requirements listed below and be approved for admission by a program Faculty Review Committee. Evidence of completion of these requirements is to be submitted along with required forms in **one complete packet** to the SOEHD Graduate Programs Office, EdP 120, by the application closing date. A completed admissions packet will include:

1. Verification of admission to CSU Fresno
2. An application to the SOEHD graduate programs
3. A complete set of transcripts of all prior college or university work
4. Evidence of a minimum GPA of 2.75 overall or on the last 60 undergraduate units. Continuing postbaccalaureate students must have attained a cumulative GPA of 2.75 on all units attempted. (For exception, see *Special Education Programs*.)

5. A statement of purpose
6. Three letters of recommendation from persons in a position to make an evaluation in support of program entry
7. Evidence of successful completion of ERF 153 (Educational Statistics) or equivalent
8. Evidence of receipt of the Graduate Record Examination — General Test by providing a copy of the GRE Score Report *or* the Miller Analogies Test (MAT) by providing a copy of the Institution Score Report.
9. Evidence of receipt of a passing score on the Test of English as a Foreign Language (TOEFL) if an international student. The SOEHD also retains the option to require international students to obtain additional preparation if English usage skills are judged to be inadequate.
10. Evidence of writing proficiency by one of the following:
    a. obtaining a passing score on the Upper-Division Writing Exam
    b. completing English 160W with a grade of ***B*** or better
    c. obtaining a passing score on the CBEST
11. Evidence of any additional requirements unique to each degree and program within the degree (refer to M.A. programs in education and the M.S. programs in counseling and rehabilitation counseling). See graduate programs offered through the departments of Counseling and Special Education; Curriculum, Teaching, and Educational Technology; Educational Research, Administration, and Foundations; and Literacy and Early Education.

Required application packets are available in the SOEHD Graduate Programs Office, EdP 120.

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 and rehabilitation counseling). See graduate programs offered through the education departments.

Application Deadlines. Deadlines for submitting SOEHD master's degree programs admission materials are:

Semester Enrolled	*Application Requirements Completed*
Summer	April 1
Fall	April 1
Spring	November 1

Applicants are required to attain classified standing (be fully admitted) in a master's degree program prior to the first semester of program enrollment. Applicants who have not completed all requirements for full admission (classified standing) but qualify for unclassified postbaccalaureate standing can enroll in up to 6 units of program coursework. However, no more than 6 program units can be completed during unclassified postbaccalaureate standing and additional program coursework cannot be taken until full admission (classified standing) is attained.

Applicants must complete all program application requirements prior to or during the first semester of enrollment in the degree program. Early completion of application materials assures timely review and written notification of admission status.

Program Faculty Review. Following submission of all application requirements, the program faculty representing each master's degree program reviews the application. Written notification is then sent regarding whether or not admission has been granted.

Appeal of Admissions Decision. Applicants who have received written notification of denial of admission have an opportunity to submit a formal appeal for special consideration to the program faculty. An appeal for special consideration must be submitted within two weeks of the date of the letter of denial in order to be considered by the program faculty during the same semester.

Advancement to Candidacy/Completion of Degree. For information regarding advancement to candidacy and procedures needed to complete the master's degree, contact the SOEHD graduate degrees program coordinator, EdP 120.

The SOEHD Graduate Office maintains a record center for all students who are working toward a SOEHD master's degree. It also maintains liaison between the Division of Graduate Studies and departments in the School of Education and Human Development offering master's degree 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.

Advanced Credential Programs

Advanced Credential Programs are categorized as 1) specialist credentials and 2) services credentials. These credentials require professional preparation at the postbaccalaureate level. All specialist and services credentials (except for Pupil Personnel) require successful completion of a basic Multiple Subject or Single Subject credential.

Specialist Credential Programs offered at CSU Fresno include:

1. Adaptive Physical Education. (See *Department of Physical Education and Human Performance*/adviser for the adaptive physical education program.)
2. Agriculture. (See *Department of Animal Sciences and Agricultural Education*/adviser for the agriculture specialist credential.)
3. Early Childhood Education. (See *Department of Literacy and Early Education*/coordinator of early childhood education.)
4. Reading. (See *Department of Literacy and Early Education*/coordinator of reading.)
5. Special Education:
   - Communication Handicapped. (See *Department of Communicative Disorders*/coordinator of communication handicapped.)
   - Learning Handicapped
   - Severely Handicapped

   (See *Department of Counseling and Special Education*/coordinator of special education.)
6. Language Development Specialist Certificate. (See *Department of Literacy and Early Education*/coordinator of the language development specialist.)

Services Credential Programs offered at CSU Fresno include:

1. Administrative:
   - Preliminary Administrative
   - Professional Administrative

   (See *Department of Educational Research, Administration, and Foundations*/coordinator of educational administration.)
2. Clinical — Rehabilitative. (See *Department of Communicative Disorders*/coordinator of clinical — rehabilitative program.)

3. Health (School Nurse). (See *Department of Nursing*/coordinator of health services.)
4. Pupil Personnel. (See *Department of Counseling and Special Education*/coordinator of counselor education.)
5. School Psychology. (See *Department of Psychology*.)

Specialist and services credential programs can be pursued concurrently with a fifth-year (postbaccalaureate) teaching credential (Multiple Subject or Single Subject) and/or a master's degree. For information regarding the fifth-year clear teaching credential program, contact a fifth-year adviser in the SOEHD, EdP 111.

For information pertaining to the SOEHD master's degree programs, consult with the appropriate program coordinator or the SOEHD Graduate Programs Office, EdP 120.

Admission Requirements for Advanced Credential Programs. For admission requirements for advanced specialist and services credential programs, refer to the specific program information found in catalog sections for the departments of Counseling and Special Education; Curriculum, Teaching, and Educational Technology; Educational Research, Administration, and Foundations; and Literacy and Early Education. Application materials and forms are available in the SOEHD Graduate Programs Office, EdP 120. Admission requirements for advanced credential programs are to be completed along with required forms and submitted **in one complete packet** to the SOEHD Graduate Programs Office, EdP 120.

Admission Deadlines. Applicants are required to be fully admitted to a specific advanced credential program prior to the first semester of program enrollment. Applicants who have not completed all requirements for full admission but qualify for unclassified postbaccalaureate standing can enroll in up to 6 units of program coursework. However, no more than 6 program units can be completed during unclassified postbaccalaureate standing and additional program coursework cannot be taken until full admission is attained.

Applicants must complete all program application requirements prior to or during the first semester of enrollment in a specific credential program. Early completion of application materials assures timely review and notification of admission status.

Program Faculty Review. Following submission of all application materials, the program faculty representing each advanced credential program reviews the application. Written notification is then sent regarding whether or not admission has been granted.

Appeal of Admission Decision. Applicants who have received written notification of denial of admission have an opportunity to make a formal appeal for special consideration to the program faculty. An appeal for special consideration must be submitted within two weeks of the date of the letter of denial in order to be considered by the program faculty during the same semester.

Doctoral Program in Educational Leadership

The California State University, Fresno and University of California (Davis) Joint Doctoral Program in Educational Leadership is intended to produce educational leaders who are scholars with a broad view of educational problems and a strong background in social science theory. This Ed.D. program is appropriate for individuals who plan to devote their lives to the implementation of educational practices informed by research. In addition, the program prepares students to conduct and interpret inquiries on which sound educational policy and practice can be anchored.

The interdisciplinary joint doctoral program leads to the Doctorate in Education in Educational Leadership. CSU Fresno and a consortium of UC faculty from several campuses are involved with the program based on the CSU Fresno campus. The program is headed by co-directors Rosemary Papalewis, Ed.D. (CSU Fresno) and Douglas Minnis, Ed.D. (UC Davis). For further information, write to: CSUF/UC Joint Doctoral Program in Educational Leadership, 351 E. Barstow, Suite 101, Fresno 93710-6002 or call (209) 228-2050.

The curriculum is organized around a core of eight educational leadership courses and coursework in four specialized strands. The core courses are taken by the students as a cohort during the first 15 months. The program emphasizes four areas: organizational studies, curriculum and instruction, assessment and evaluation, and sociocultural contexts. These four areas of emphasis are seen as complementary and mutually supportive. The program is 60 units with students moving through three phases. Phase one is eight core courses, phase two is specialization courses and field case study, and phase three is the dissertation. All students move through phase one as a cohort. The field based experiences are centered in their professional life with theoretical constructs interwoven with problems from the field.

This program places great emphasis on the use of the students work experience. It is recognized that admitted students are fully employed during the program. Employers of program applicants must make a commitment for release time for their employees prior to program admission.

Admission Requirements. Applicants must meet the general admission requirements for both universities. These include:

1. a master's degree or equivalent from an accredited institution and
2. a grade point average of at least 3.2 in upper-division undergraduate and master's degree coursework.

Applicants must demonstrate high potential for educational leadership and scholarly achievement through professional experience, academic achievement, and professional recommendations. Applicants possessing graduate degrees in fields other than education are encouraged to apply. Applicants whose graduate degrees are in subjects other than education or education administration and plan to pursue a Professional Administrative Services Credential must complete the required 24 credential units (Preliminary level) prior to admittance. Applicants are accepted for the fall term only. Finalists will be interviewed by the Joint Doctoral Program Admissions Committee.

Admission Notification. Notification of admission will be sent by both the CSUF and UCD offices of Graduate Studies, as well as the co-directors of the CSUF/UCD Joint Doctoral Program in Educational Leadership. Admission to CSUF does not constitute admission to the CSUF/UCD Joint Doctoral Program in Educational Leadership.

DOCTORAL GRADUATE COURSES

Educational Leadership (EdL)

201. Organizational Theory in Complex Organizations (3)
Prerequisite: admission to the program. Seminar. Combines alternative views of organizational theory with applications to the structure of the school; to critical roles played by teachers, principals and other school personnel; and to examine the relationships among structural elements of schools.

202. Planning and Changing in Education (3)
Prerequisite: admission to the program. Seminar. Examines strategies for initiating and institutionalizing change in people and organizations, with particular attention to moral and ethical issues faced by educational leaders. Attention is given to the development of skills in communicating results of research and evaluation, critiquing of scholarly and professional writing and communication of research and technical information.

203. Governance and Political Perspectives for Educational Leadership (3)
Prerequisite: admission to the program. Seminar. Determinants of policy in educational organizations and leadership. Analysis of structures used for legal, fiscal and political decisions and conflict management. Role of the educational leader in relation to intergovernmental activities aimed at educational reform.

204. Quantitative Methods Applied to Administrative Practice (3)
Prerequisite: ERF 220 or equivalent. A tutor will be available for specific student need. Seminar. Examines advanced research methodologies and data analysis techniques applicable to education and social science settings. Topics include experimental and quasi-experimental design, advanced statistical techniques, sampling distributions, nonparametric statistics, inference and hypothesis testing. Specific applications to the work of the education leader.

205. Families, Communities and Schools in Sociocultural Context (3)
Prerequisite: admission to the program. Seminar. Explores the role of parental relationships with the schools focusing on representation of culturally diverse communities, involvement of parents in their children's education, socialization, and learning processes as related to the transition of children from home to school.

206. Conceptual Curriculum Perspectives for Educational Leadership (3)
Prerequisites: admission to the program and EdL 201, 202. Seminar. Students will develop the philosophical and analytical skills to examine curriculum theory and practice, including the conceptualization of purposes of the organization of subject matters, and of the instructional methods.

207. Ethnographical Research Methods (3)
Corequisites: admission to the program and EdL 204. Seminar. Examines the purpose and nature of ethnographic research including current application in educational settings. Emphasis is directed toward critical analysis of current ethnographic studies and will include field-based application.

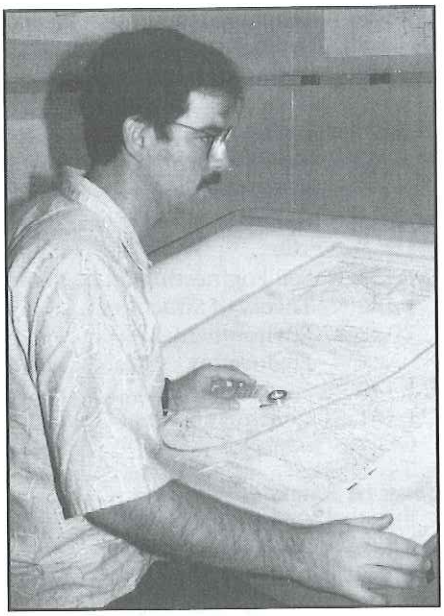
208. Theories of Cross-Cultural Education (3)
Corequisites: admission to the program and EdL 205. Designed to explain and discuss the most relevant theoretical approaches dealing with cross-cultural, multicultural education. As diverse and conflicting perspectives are examined, students will experience the complexity of views and perceptions dealing as leaders with multicultural populations coexisting in a pluralistic society.

210. Field-based Research Practicum in Organizational Settings (1-6)
Prerequisites: admission to the program, EdL 201-208, and permission of the co-directors. Engages students in studies relevant to field settings. Includes collecting and analyzing both qualitative and quantitative data related to improving educational practice and/or solving school problems. Expected to relate to prospective dissertation topic and proposal possibilities.

290. Individual Study (3-18)
Prerequisites: admission to the program, EdL 201-208, and permission of the co-directors. Research for individual doctoral graduate students. *CR/NC* grading only.

299. Dissertation (1-12)
Prerequisites: advancement to candidacy for the Doctorate in Education and a minimum GPA of 3.0. Submission of approved dissertation. See *Criteria for Dissertation*. *CR/NC* grading only.

ENGINEERING Civil and Surveying Engineering and Construction



The Department of Civil and Surveying Engineering and Construction offers programs of study leading to the Bachelor of Science degrees in civil engineering, surveying engineering, and construction management. Civil and Surveying 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. The Construction program is accredited by the American Council for Construction Education.

Civil engineering includes the research, development, planning, design, construction, and maintenance associated with urban development, water supply, structures, energy generation and transmission, water treatment and disposal, and transportation systems. 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. degree in Civil Engineering provides specialized training in the fields of structural engineering and applied mechanics, soil mechanics and foundation engineering, environmental engineering, hydrology and hydraulic engineering, highway engineering, and surveying 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). Surveying engineers apply their knowledge to 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.

Students in construction management (CM) are exposed to a wide variety of topics, ranging from courses in management and administration of construction companies, projects, people, and equipment to courses focusing on specific techniques for project planning and control work improvement and estimating. The Construction Management program also provides opportunities to develop a strong background in computer applications in construction. Computer skills combined with a solid management and technical background are major assets of the construction management graduate.

Faculty and Facilities

The teaching and research specialties of the department's faculty cover every area of civil engineering, surveying engineering, and construction. Most faculty members are licensed as civil engineers, land surveyors, or contractors and have a wide range of professional experience in engineering design, analysis, research and development, and project planning and management.

School of Engineering
Department of Civil and Surveying Engineering and Construction
KARL E. LONGLEY, *Chair*
Engineering East Building, Room 178
(209) 278-2889
FAX (209) 278-6759

B.S. in Civil Engineering
B.S. in Construction Management
B.S. in Surveying Engineering
M.S. in Civil Engineering

Excellent laboratory facilities exist for testing of soils and construction materials, hydraulics testing, and water quality analysis.

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, geographic information systems, and inertial and satellite positioning methods. Most graduates of this program have been employed by federal and state government agencies, the petroleum industry, and other private industries.

Many graduates have earned professional license as civil engineers or land surveyors within a few years of leaving school and are in private practice.

Opportunities for construction management graduates are excellent. Examples of positions held by construction management graduates are project manager, construction manager, project administrator, estimator, scheduler, architectural representative, project superintendent, and construction administrator. Students should consider this challenging, satisfying, and high-paying profession.

Faculty

Karl E. Longley, *Chair*

Chandra S. Brahma
James K. Crossfield
Wayne P. Dominick
Frank H. Goishi
R. Louis Gysler
Mushtaq Hussain
John R. Johnston
Joseph Kao
Riadh Munjy
Fareed W. Nader
C. Dennis Spring
Mohamad Yousef

Bachelor of Science Degree Requirements

Civil Engineering Major	***Units***
Major requirements	**74**
C E 20, 85, 121, 121L, 123, 123L, 124, 128, 129, 130, 132, 133, 140, 142, 142L, 150, 161, 180, 185	(42)
S E 15	(3)
ECE 70, 90	(6)
I E 160	(2)
M E 26, 112, 136	(9)
Technical Area Courses	(12)
Select mandatory technical area courses in one or more of the following groups subject to the *Design Courses* statement below.	
Environmental and Water Resources: C E 141, 143, 144	
General Professional: C E 110, 190, 191T; I E 161	
Geotechnical: C E 125, 134	
Structures: C E 131, 135, 136, 137, 138	
Surveying: S E 151, 173	
Transportation: C E 151,152, 153	
Design Courses: at least 6 units of technical area courses must be selected from the following design courses: C E 110, 125, 134, 135, 136, 137, 141, 143, 144, 151	
Additional requirements	**16**
Geol 1E; Math 76, 77, 81	
General Education	**49**
CORE: Engl 1; Hist 11 or 12; Math 75; Pl Si 2 or 101; Spch 3, 7, or 8; I E 182W	(19)
BREADTH: Biol 10; Chem 1A; Phys 4A, 4AL, 4B, and 4C; 3 units from Division 4 (select from H S 90, 124; Psych 61, 132, 171); 3 units from Division 5 or 7; Phil 120; Pl Si 120	(30)
CAPSTONE: Satisfied by Phil 120 and Pl Si 120 from BREADTH	(0)
Total	**139**

Advising Notes

1. Courses in mathematics, the physical sciences, or engineering taken ***CR/NC*** are not counted toward fulfillment of degree requirements in civil engineering.
2. Since the civil engineering major curriculum is very demanding, many students, especially those not fully prepared in mathematics, chemistry, and/or physics 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 3A in lieu of Chem 1A. If needed, students also may go to the Learning Resource Center in the Keats Building and request tutorial assistance.

Recommended Program

First Semester		***Units***
C E 85	Introduction to Civil Engineering	1
S E 15	Engineering Surveying	3
ECE 70	Engineering Computations Using C and Fortran	3
Engl 1	Composition	3
Math 75	Mathematical Analysis I	4
Spch 3, 7, or 8		3
		17

Second Semester		
M E 26	Engineering Graphics	3
Hist 11/12	American History	3
Math 76	Mathematical Analysis II	4
Phys 4A, L	Mechanics and Wave Motion/Lab	4
Div. 4	Personal Life and Growth[1]	3
		17

Third Semester		
C E 20	Engr Mechanics: Statics	3
Biol 10	Life Science[2]	3
Chem 1A	General Chem and Qual Analysis	5
Math 77	Mathematical Analysis III	4
Phys 4B	Electricity and Magnetism	3
		18

Fourth Semester		
Geol 1E	Physical Geology	4
Humanities	(See[3])	3
Math 81	Applied Analysis	4
Phys 4C	Sound, Heat, and Light	3
Pl Si 2/101	American Constitution	3
		17

Fifth Semester		
C E 121, L	Mechanics of Materials	4
C E 150	Transportation Planning and Design	3
C E 128	Civil Engineering Hydraulics	3
C E 129	Engineering Hydraulics Lab	1
I E 182W	Engineering Writing	3
M E 112	Engineering Mechanics Dynamics	3
		17

Sixth Semester		
C E 123, L	Soil Engineering	4
C E 130	Theory of Structures	3
C E 142, L	Environmental Engineering	4
C E 140	Hydrology	3
C E 161	Construction Engr I	3
		17

Seventh Semester		
C E 124	Concrete Laboratory	1
C E 132	Reinforced Concrete Design	3
ECE 90	Principles of Electrical Circuits	3
I E 160	Engineering Economy	2
M E 136	Thermodynamics	3
Technical Area Courses		6
		18

Eighth Semester		
C E 133	Design of Steel Structures	3
C E 180	Senior Project	2
C E 185	Civil Engineering Practice	1
Phil 120	Contemporary Conflicts of Morals	3
Pl Si 120	International Politics	3
Technical Area Courses		6
		18

[1] Personal Life and Growth: Select one course in Division 4 from Psych 61, 132, 171; H S 90, 124.
[2] Bot 10 or Zool 10 can be used in lieu of Biol 10.
[3] Humanities: Select one course from Divisions 5 or 7.

Master of Science in Civil Engineering

(See also *Admission to Graduate Standing, Advancement to Candidacy, Program Requirements,* and *Criteria for Thesis and Project.*)

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, surveying engineering, or a related field from an institution accredited by the Accreditation Board for Engineering and Technology. To be admitted, students must have a 2.7 grade point average in the last 60 semester-units of engineering courses attempted, on the basis of 4.0 being *A*, or

the approval of the Graduate Committee of the Department of Civil and Surveying Engineering. If an applicant's preparation is deemed insufficient by the Graduate Committee of the Department of Civil and Surveying Engineering, the applicant is required to take additional courses which are 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. The department graduate program coordinator shall appoint an interim graduate adviser for each student when that student is accepted into the graduate program. The coordinator will take into account student interests and correlated faculty interests when making this appointment.

Continuation in the Program. Prior to being admitted to classified standing, a student is 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 then should select a graduate adviser before completing 12 units of graduate study and advancing to candidacy. Other members of his or her graduate committee shall be selected in consultation with the graduate adviser if the student has selected Plan A. This committee shall consist of at least three tenure/tenure track faculty. One or more external committee members, as identified by the graduate adviser and the graduate student, may also be included on this committee as long as the majority of the committee is composed of tenure/tenure track faculty members. The graduate student shall notify the department's Graduate Committee with a letter signed by both the student and the graduate adviser of the membership of the students' Graduate Committee. This letter shall be placed in the student's academic folder.

A graduate student may change graduate advisers when he or she justifies the reasons for such change in writing to the department graduate program coordinator and when such change is approved by the department's Graduate Committee. The student, together with his or her graduate adviser, completes a contract program within his or her first semester of coursework taken for graduate credit. This program must be approved by the department's Graduate Committee. Satisfactory progress toward 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 12 semester hours must be earned before the average is determined.

Campus graduate disqualification procedures shall be enforced by the department graduate program coordinator. Graduate students in the Department of Civil and Surveying Engineering shall maintain a 3.0 grade point average (4.0 scale) each semester and cumulatively throughout all graduate program coursework. Any semester for which the grade point average falls below 3.0 shall result in placing the affected graduate student on probation. Normally, a second consecutive offense shall lead to disqualification. Such probation shall be for at least one semester or shall continue until the cumulative grade point average has again been raised above 3.0.

Program. Each master's degree student selects, as early as possible during the first semester of attendance, and upon consulting with and securing the approval of the graduate adviser, a program best suited to the student's interests and objectives.

The M.S. degree in Civil Engineering requires the completion of one of the following three programs of study containing the following requirements:

Plan A	***Units***
a. 200-series engineering courses	12-24
b. 100-series civil engineering or surveying engineering undergraduate elective courses	0-6
c. Outside of the Department of Civil and Surveying Engineering — 100-series upper-division and 200-series graduate courses in engineering, 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	0-12
d. Thesis 299	6
Total	30

Under this plan the total units from (b) and (c) may not exceed 12 units with not more than 6 units being 100-series upper-division courses.

Plan B	***Units***
a. 200-series engineering courses	15-27
b. 100-series civil engineering or surveying engineering undergraduate elective courses	0-6
c. Outside of the Department of Civil and Surveying Engineering — 100-series upper-division and 200-series graduate courses in engineering, 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	0-12
d. Project 298	3
Total	30

Under this plan the total units from (b) and (c) may not exceed 12 units with not more than 6 units being 100-series upper-division courses.

Plan C	***Units***
a. 200-series engineering courses	18-30
b. 100-series civil engineering or surveying engineering undergraduate elective courses	0-6
c. Outside of the Department of Civil and Surveying Engineering — 100-series upper-division and 200-series graduate courses in engineering, 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	0-12
d. Comprehensive Final Examination	0
Total	30

Under this plan the total units from (b) and (c) may not exceed 12 units with not more than 6 units being 100-series upper-division courses.

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 110	Computer Application in Civil Engineering (3)
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 Design of Building (3)
C E 138 Structural Mechanics (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 151 Pavement Design (3)
C E 153 Traffic Operations and Control (3)
C E 191T Topics in Civil Engineering (3)
S E 121 GIS Database Design (3)
S E 125 Analytical Photogrammetry (3)
S E 126 Digital Mapping (3)
S E 135 Advanced Survey Computations (3)
S E 140 Earth Resources Surveying (3)
S E 145 Geopositioning (3)
S E 147 GIS Design Problems (3)
S E 152 Real Property Descriptions (3)
S E 153 Advanced Boundary Law (3)
S E 161 Data Interface Design (3)
S E 174 GIS Applications in Engineering (3)
S E 191T Topics in Surveying Engineering (1-3; max total 3)

Graduate Courses (C E)

205 Computing in Engineering Analysis (3)
206 Environmental Engineering and Planning (3)
220 Advanced Foundation Engineering (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)
237 Dynamics of Structures (3)
240 Engineering Hydrology (3)
242 Water Resources Planning and Management (3)
245 Advanced Unit Operations and Processes (3)
246A, B Advanced Water Quality (3, 3)
247 Solid and Hazardous Wastes Engineering (3)
251 Advanced Boundary Law (3)
261 Geoprocessing (3)
271 Geodetic Systems Optimization (3)
275 Satellite Surveying (3)
280 Surveying Engineering Seminar (1; max total 3)
281 Civil Engineering Seminar (1; max total 3)
283 Digital Remote Sensing (3)
285 Advanced Analytical Photogrammetry (3)
286 Geographic Information Systems Design (3)
290 Independent Study (1-3)
291T Topics in Civil Engineering (1-3; max total 15)
298 Project (3)
299 Thesis (2-6; max total 6)

COURSES

Civil Engineering (C E)

20. Engineering Mechanics: Statics (3)
Prerequisite: Math 77 or concurrently; Phys 4A. Analysis of force systems, equilibrium problems, section properties; graphic, algebraic, and vector methods of problem solution. (2 lecture, 2 lab hours) (CAN ENGR 8)

29. Engineering Mechanics (3)
(See M E 29.)

85. Introduction to Civil Engineering (1)
The civil engineering profession and its role in society; creative thinking and critical thinking as integral parts of the engineering decision process; engineering methods of analysis; career opportunities. (Field trips required)

110. Computer Applications in Civil Engineering (3)
Prerequisite: ECE 70, C E 130. Use and modification of existing programs. Creation of new programs. Use of structured language, spreadsheets, and database management software. Interactive design and graphic displays. Design orientation. Term projects. (Former C E 191T section)

121. Mechanics of Materials (3)
Prerequisite: C E 20. Application of principles of mechanics to find stresses and deformations in machine and structural members.

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)

123. Soil Engineering (3)
Prerequisite: C E 121, ECE 70. 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; computer-aided analysis 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, ECE 70. Design and theory 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, computer-aided design, and case histories.

127. Construction Soils and Foundation (3)
Not open to civil engineering majors. Prerequisite: 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.

127L. Construction Soil Lab (1)
Not open to civil engineering majors. Corequisite: C E 127. Laboratory experiments and sessions to reinforce principles of soil mechanics as well as foundation design and illustrate the use of soil as a construction material. (3 lab hours and field trips required)

128. Civil Engineering Hydraulics (3)
Prerequisite: M E 112 or concurrently. Fundamentals of civil engineering hydraulics with application to hydraulic structures.

129. Engineering Hydraulics Lab (1)
Prerequisite: C E 128 or concurrently. Experiments and demonstrations in fluid properties, flow management, pipe flow, open channel flow, pumps, and hydraulic scour. (3 lab hours)

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. Design of reinforced concrete structural elements using the Ultimate Strength Design Method. Introduction to the Alternate Method. Introduction to prestressed concrete. (2 lecture, 3 lab hours; field trips 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: ECE 70, C E 123, 132 or concurrently. Design and theory of spread and continuous wall, rectangular, cantilever and trapezoidal footings; earth pressures and cantilever as well as gravity retaining walls; pile foundations; pile driving; construction considerations; load tests; subsurface investigations; case histories; and computer-aided design of foundations. (2 lecture, 3 lab hours)

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 trips 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 Design of Building (3)
Prerequisite: C E 130, M E 112. Effects of earthquakes on structures. Introduction to structural dynamics. Response of structures. Seismic provisions of building codes. Basic concepts in seismic-resistant design. Detailing for seismic-resistant construction. Term project. (Field trips required)

138. Structural Mechanics (3)
Prerequisite: C E 130. Energy theorems and applications. Analysis of arches, beams on elastic foundations, cable stayed structures, and unsymmetrical bending of beams. Introduction to plastic theory of structures. (Former C E 191T section)

140. Hydrology (3)
Prerequisite: ECE 70, C E 128 or concurrently. The hydrologic cycle, atmospheric conditions, precipitation, infiltration, ground water, soil moisture, evaporation, runoff, streamflow, hydrographs, flood routing, hydrologic statistical analysis; applications to water resources planning and management. (Field trips required)

141. Water Resources Engineering (3)
Prerequisite: C E 140. Design of water distribution and sewerage systems, facilities for pavement drainage, and other selected water resource projects. (Field trips required)

142. Environmental Engineering (3)
Prerequisite: C E 128 and C E 140 (or concurrently). Introduction to the planning and design of water and wastewater treatment facilities, hazardous and solid waste treatment and disposal facilities, air pollution control facilities, and noise pollution control.

142L. Environmental Quality Laboratory (1)
Prerequisite: C E 142 or concurrently. Study and analysis of physical, chemical, and biological characteristics of air, water, and solid wastes. (Field trips required)

143. Engineering Hydraulics (3)
Prerequisite: C E 128. Design of pressure-conduit and open-channel flow systems with 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 permission of instructor. The process and hydraulic design of physical, chemical, and biological water purification and wastewater treatment facilities for water quality control. (Field trips required)

150. Transportation Planning and Design (3)
Prerequisite: S E 15. 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 Design (3)
Prerequisite: C E 123 or concurrently. Factors affecting pavement performance. Structural design of flexible and rigid highway and airfield pavements. Pavement overlays, recycling, rehabilitation, and management system.

152. Transportation Engineering Materials (1)
Prerequisite: C E 123. Properties, design, and testing of bituminous paving mixtures for pavement construction. (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: C E 123. 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 man-made and natural environmental impacts. The incorporation of a rational process into environmental decision making. Case histories of specific environmental problems. General Education CAPSTONE Cluster course. (Field trips required)

180. Senior Project (2)
Prerequisite: senior standing in civil engineering or permission of instructor; approved subject; I E 182W or concurrently; C E 185 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 or permission of instructor; C E 180 concurrently. Practice of civil engineering; opportunities in civil engineering; transition from student to professional engineer; engineering ethics. Evaluation of design requirements, economic, and social considerations; student presentations.

190. Independent Study (1-3; max see reference)
See *Academic Placement — Independent Study*. Approved for ***SP*** grading.

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. *CR/NC* grading only.

GRADUATE COURSES

(See *Course Numbering System.*)

Civil Engineering (C E)

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. (Former Engr 205)

206. Engineering Environmental Impact (3)
Evaluation 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. (Former Engr 206)

220. Advanced Foundation Engineering (3)
Prerequisite: graduate standing. Design of cantilevered and anchored sheet-pile 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 Engr 291T section, Engr 220)

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. (Former Engr 230)

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 prestressed concrete elements and systems: continuous beams, frames, slabs. Partial prestress. (Field trips required) (Former Engr 232)

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. (Former Engr 233)

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. (Former Engr 234)

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. (Former Engr 235)

237. Dynamics of Structures (3)
Analysis of structural members and systems subject to dynamic loads. Basic theory for single-degree-of-freedom and multi-degree-of-freedom analytical models; free vibration, harmonic and transient excitation, response spectrum, LaGrange's equations, earthquake analysis. (Former Engr 291T section)

240. Engineering Hydrology (3)
Prerequisite: C E 128, 140. Analysis of the physical and stochastic processes governing the occurrence and movement of water in its natural environment. Applications to hydraulic engineering practice. (Former Engr 240)

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. (Former Engr 242)

245. Advanced Unit Operations and Processes (3)
Prerequisite: C E 246A and 246B or concurrently. 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) (Former Engr 245)

246A. Advanced Water Quality (3)
Prerequisite: C E 142 or permission of instructor. Theory and practice of physical/chemical processes for controlling water quality, including chemical equilibrium and kinetics; mass transfer mechanisms; physical separation processes; adsorption, exchange, and membrane-based processes; disinfection.

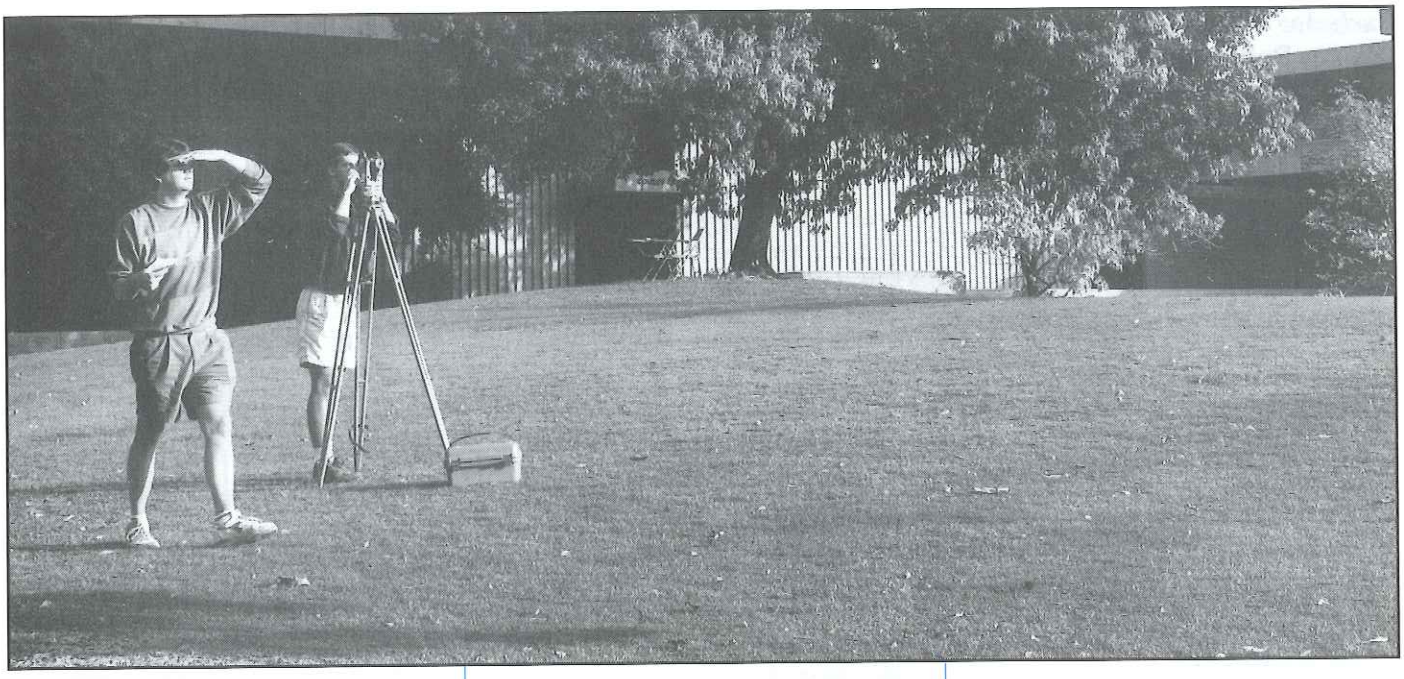
246B. Advanced Water Quality (3)
Prerequisite: C E 142 or permission of instructor; C E 246A recommended. Theory and practice of biological processes for controlling water quality, including suspended growth systems; attached growth systems; ponds; land treatment. Also sludge treatment processes, including biological stabilization, thickening, and dewatering; sludge disposal.

247. Solid Wastes Engineering (3)
Planning and design of waste collection and disposal systems. Waste segregation and energy impact related to recovery and recycling practices. Environmental impact and institutional issues related to solid and hazardous waste systems. (Former Engr 247)

251. Advanced Boundary Law (3)
Prerequisite: S E 151 or equivalent. Land and water boundary legal issues and McDean Boundary Law Developments. Specialized group and individual boundary case law investigations. (Former Engr 291T section)

261. Geoprocessing (3)
Prerequisite: S E 173 or equivalent. Integration of computer technologies for gathering, analyzing, and displaying data associated with the earth's spatial features. Engineering design problems dependent on competing factors. (Former Engr 291T section)

271. Geodetic Systems Optimization (3)
Prerequisite: S E 108 or equivalent. National geodetic networks; planimetric and vertical control systems; geodetic control densification; network optimization criteria and methodology.



275. Satellite Surveying (3)
Prerequisite: graduate standing. Discussion of GPS orbital theory, data collection and processing algorithms, network adjustments, project design and optimization techniques. Review of current research trends and applications. (Field trips required) (Former Engr 275)

280. Surveying Engineering Seminar (1; max total 3)
Prerequisite: graduate standing. Current CSUF surveying engineering research presented and discussed by faculty and graduate students. Oral presentation and written report documenting ongoing research activities required. (Former Engr 280)

281. Civil Engineering Seminar (1; max total 3)
Prerequisite: graduate standing. Current CSUF civil engineering research presented and discussed by faculty and graduate students. Oral presentation and written report documenting ongoing research activities required. (Former Engr 281)

283. Digital Remote Sensing (3)
Prerequisite: S E 140 or equivalent. Quantitative approach in remote sensing; digital image characteristics, error correction, registration; geometric and radiometric image enhancement; image classification; system design; remote sensing and GIS (Former Engr 291T section)

285. Advanced Analytical Photogrammetry (3)
Prerequisite: S E 125 or equivalent. Mathematical models in photogrammetry; bundle block adjustment, self-calibration; close-range photogrammetry; real time photogrammetry and data snooping. System design; hardware and software considerations in photogrammetry.

286. Geographic Information Systems Design (3)
Prerequisite: S E 173 or equivalent. Data structures and algorithms, databases for GIS, error modeling and data uncertainty, visualization, data exchange and standards, the multipurpose cadaster, advanced analysis techniques.

290. Independent Study (1-3; max total 3)
Prerequisite: graduate status in engineering. See *Academic Placement — Independent Study*. Approved for ***SP*** grading. (Former Engr 290)

291T. Topics in Engineering (1-3; max total 6)
Prerequisite: permission of instructor. Investigation of selected engineering topics. May be offered with a lab. (Former Engr 291T)

298. Project (3; max total 3)
Prerequisite: graduate status in engineering. See *Criteria For Thesis and Project*. Independent investigation of advanced character such as analysis and/or design of special engineering systems or projects; critical review of state of the art of special topics, as the culminating requirement for the master's degree. Abstract required. Approved for ***SP*** grading. (Former Engr 298)

299. Thesis (2-6; max total 6)
Prerequisite: See *Criteria For Thesis and Project*. Preparation, completion, and submission of an acceptable thesis for master's degree. Approved for ***SP*** grading. (Former Engr 299)

IN-SERVICE COURSES

(See *Course Numbering System*.)

Civil Engineering (C E)

311. Professional Examination Review (2; may be repeated in different fields)
Prerequisite: bachelor's degree in engineering or eligibility to take state registration examinations. Review of engineering fundamentals for those qualified to take the state examination for certification as engineer-in-training; or review in a specific field (civil, electrical, mechanical, or other) for those preparing to take the examination for registration as professional engineer.

321. Professional Engineering Seminar (1-3; may be repeated in different fields)
Prerequisite: bachelor's degree in engineering or related field, or experience as a professional engineer. Latest developments in various specialized areas of professional engineering practice; new materials, design and construction methods, equipment, devices, and procedures.

Bachelor of Science Degree Requirements

Surveying Engineering Major ***Units***

Major requirements 75

S E 1, 15, 15L, 16, 16L, 23, 23L, 34, 41, 41L, 50, 61, 66, 102, 108, 123, 125, 135, 151, 159, 173, 180, 181 ..... (55)

I E 160 ..... (2)

C E 29 or M E 29 ..... (3)

Technical Courses ..... (15)

Select mandatory technical courses from the following list subject to the *Design Courses* statement listed below: S E 100, 101, 105, 109, 121, 126, 140, 145, 147, 152, 153, 161, 174, 190, 191T; C E 121, 150, 161; C Sci 115, 144, 150, 172; Const 114, 122, 124; B A 154; CRP 100; Fin 180, 181; Math 101, 121; Mgt 104; Phys 110

Design Courses: At least 9 units of technical courses must be selected from the following design courses: S E 126, 145, 147, 153, 161

Additional requirements 8

Math 76 and 77

General Education 52

CORE: Engl 1; Hist 11 or 12; Math 75; Pl Si 2 or 101; Spch 3, 7, or 8; I E 182W ..... (19)

BREADTH: Bot 10; Chem 3A; Geol 1; Phys 4A, 4AL, 4B and 4C; 3 units from Division 4; 3 units from Division 5 or 7; Phil 120; Pl Si 120 ..... (33)

CAPSTONE: Satisfied by Phil 120 and Pl Si 120 from BREADTH ... (0)

Total 135

Advising Notes

1. Courses in engineering, computer science, mathematics, the physical sciences, and mandatory technical courses taken *CR/NC* are not counted toward fulfillment of degree requirements in surveying engineering.
2. All surveying engineering students must consult with their academic advisers at least once each year
3. The surveying engineer major curriculum is very demanding. Many students, especially those not fully prepared in mathematics and physics take $4^1/_2$ or more years to graduate rather than the traditional 4 years. If necessary, students may go to the Learning Resource Center in the Keats Building and request tutorial assistance.

Recommended Program

First Semester		***Units***
S E 1	Introduction to Surveying Engineering	1
S E 15, L	Engineering Surveying	4
S E 61	Microcomputers in Surveying Engineering	3
Math 75	Mathematical Analysis I	4
Engl 1	English Composition	3
		15

Second Semester		
S E 16, L	Municipal Surveying	3
S E 66	Computer-Aided Mapping	3
Math 76	Mathematical Analysis II	4
Phys 4A, L	Mechanics and Wave Motion/Lab	4
Spch 3, 7, or 8		3
		17

Third Semester		
S E 34	Survey Computations	3
S E 41, L	Route Surveying	3
Geol 1	Physical Geology	4
Math 77	Mathematical Analysis III	4
Phys 4B	Electricity and Magnetism	3
		17

Fourth Semester		
S E 23, L	Photogrammetry	3
S E 50	Land Surveying	3
C E 29/ M E 29	Statics and Dynamics	3
Phys 4C	Sound, Heat, and Light	3
Humanities	Select from Div. 5 or 7	3
Personal Life and Growth	Select from Div. 4	3
		18

Fifth Semester		
S E 123	Stereo-Photogrammetry	3
S E 135	Advanced Survey Computations	3
S E 151	Boundary Control and Legal Principles	3
S E 173	Geographic Information Systems	3
I E 160	Engineering Economy	2
Pl Si 2/101	American Constitution	3
		17

Sixth Semester		
S E 102, L	Geodetic Surveying	3
S E 108	Geodesy	3
S E 125	Analytical Photogrammetry	3
S E 159	Subdivision Design	3
I E 182W	Engineering Writing	3
Pl Si 120	International Politics	3
		18

Seventh Semester		
Chem 3A	Introductory General Chemistry	4
Phil 120	Contemporary Conflicts of Morals	3
Technical Courses		9
		16

Eighth Semester		
S E 180	Senior Project	2
S E 181	Project Design	3
Bot 10	Plant Biology	3
Hist 11/12	American History	3
Technical Courses		6
		17

COURSES

Surveying Engineering (S E)

1. Introduction to Surveying Engineering (1)
An introduction to surveying engineering philosophical thought; surveying engineering profession and career opportunities; professional ethics and safety; creative and critical thinking applied to the surveying engineering decision-making process. (Former S E 186; S E 86)

5. Critical Reasoning (3)
Fundamentals of analysis and evaluation in the context of technology. Evaluating the viewpoints of experts. Patterns of deductive and inductive arguments. Common fallacies of reasoning. General Education CORE, Critical Thinking.

11. Plane Surveying (2)
Prerequisite: Math 5. Principles of surveying measurements; distances, directions, elevations, reduction of surveying data; planimetric mapping.

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)

15. Engineering Surveying (3)
Prerequisite: Math 5. Principles of surveying measurements for distance, direction, elevation, and position; geometry of the single aerial photograph; topographic and planimetric mapping, GIS/LIS, horizontal curves, vertical curves, earthwork and construction surveying applications.

15L. Engineering Surveying Laboratory (1)
Prerequisite: S E 15 or concurrently. Field practice in surveying measurement, construction stakeout, and curve alignment problems. (3 lab hours; field trips required)

16. Municipal Surveying (2)
Prerequisite: S E 15, 61. Automated electronic survey data collection and transfer procedures to digital computer applications software; control survey, land survey, GIS overlay mapping, and industrial applications explored. (Former S E 12)

16L. Municipal Surveying Laboratory (1)
Prerequisite: S E 16 or concurrently. Field and office practice in control survey, land survey, GIS overlay mapping and industrial surveying applications using automated electronic survey data collection and transfer procedures to computer applications software. (3 lab hours; field trips required) (Former S E 12L)

23. Photogrammetry (2)
Prerequisite: S E 15, 61, or permission of instructor. Theory of photographic processes, optics, lenses, emulsions, and developers. Image quality control. Characteristics of metrical photography; extraction of metrical data from single and overlapping photographs. Flight planning.

23L. Photogrammetry Laboratory (1)
Prerequisite: S E 23 or concurrently. Planning photography for extraction of metric data. Photographic measurements. Orientation and use of stereoplotters. (3 lab hours; field trips required)

34. Survey Computations (3)
Prerequisite: S E 15, 61, Math 76. Error theory, adjustment of simple survey networks, and matrix methods; digital computer solutions of surveying computation and adjustment problems.

41. Route Surveying (2)
Prerequisite: S E 15, L. Computations and theory covering surveys for highway, irrigation, construction, and other kinds of engineering projects. Includes computer solutions. (Field trips required)

41L. Route Surveying Laboratory (1)
Prerequisite: S E 41 or concurrently. Survey for highway location, stakeout of roads and intersections from plans. Collection of digital survey data for computer processing. (3 lab hours; field trips required)

50. Land Surveying (3)
Prerequisite: S E 15. The United States Public Land Survey System with special emphasis on California; introduction to the California Land Surveyors Act, Certified, A.L.T.A. and mortgage surveys; sectionalized land subdivision, corner restoration, resurveys, evidence, and descriptions. (Field trips required)

61. Microcomputers in Surveying Engineering (3)
Prerequisite: Math 5. Microcomputer operating systems; introduction to high level computer languages, file processing, program documentation, testing, and debugging. (Lab fee, $15)

66. Computer-Aided Mapping (3)
Prerequisite: S E 61. Principles of computer map creation and design; map projections and interactive editing of digital map and graphic data; graphic input to Geographic Information Systems; includes comprehensive computer mapping design experience.

73. Geomatics (1)
Introduction to Geographic and Land Information Systems; software and hardware issues; practical exercises. (Former S E 102L)

100. Land and Society (3)
Prerequisite: junior standing. How private land ownership rights have shaped the development of our nation into a superpower; the effects of virtually "free" western land; land tenure systems and land ethics; current state, national and international societal trends and implications.

101. Creative Thinking (3)
Prerequisite: CORE math, Engl 1. Development of a process for creative thinking. Styles of thinking. Obstacles to overcome. Divergent versus convergent thinking. Idea stimulation. Gaining acceptance for new ideas.

102. Geodetic Surveying (3)
Prerequisite: S E 15, 15L, 34. Triangulation and trilateration for deformation studies and industrial tooling applications; GPS applications, project planning and optimization; precise leveling and state plane coordinates. (2 lecture, 3 lab hours; field trips required)

105. Futuristics (3)
Prerequisite: CORE math, Engl 1. Study of the future with emphasis on technology; growth curves, trend extrapolation, analytical models; breakthroughs; Delphi techniques; cross-impact matrix; flow diagrams and relevance trees; decision making.

108. Geodesy (3)
Prerequisite: Math 77, Phys 4A. Size and shape of the earth; three-dimensional coordinate systems; computations on the spheroid; reduction to plane coordinates; introduction to differential equations, gravity modeling and gravity measurements.

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)

121. GIS Database Design (3)
Prerequisite: S E 135, 173. GIS database structure and design; design, use, maintenance and mutation of comprehensive relational and spatial database structures for GIS applications; structured query language; hardware implications and case studies of existing GIS software packages; creation of new GIS applications software (Former S E 21)

123. Stereo-Photogrammetry (3)
Prerequisite: S E 15, 34 or concurrently. Theory of stereo-photogrammetry; orientation of stereo-model. Design and operating principles of stereoplotters. Photogrammetric mapping; orthophoto mapping. Project planning. (2 lecture, 3 lab hours; field trips required)

125. Analytical Photogrammetry (3)
Prerequisite: S E 123, 135. Introduction to analytical photogrammetry; strip and block aerial triangulation. Design and operating principles of analytical plotters. (2 lecture, 3 lab hours; field trips required)

126. Digital Mapping (3)
Prerequisite: S E 135, 173. Design of data input, editing, display and processing mechanisms for digital mapping applications; hardware considerations and software design for DTM applications. (2 lecture, 3 lab hours; field trips required)

135. Advanced Survey Computations (3)
Prerequisite: S E 34, Math 77. Statistics, propagation of errors, advanced theory of least squares optimization algorithms. Computer programming for complex surveying and photogrammetry adjustment applications. Project design.

140. Earth Resources Surveying (3)
Prerequisite: junior standing or permission of instructor. Extraction of quantitative data from aerial and space imagery for monitoring environment and management of earth resources. Data input for Geographic Information Systems.

145. Geopositioning (3)
Prerequisite: S E 102, 108, 135, Phys 4C. Design of planning, data collection, data processing and network adjustment applications; kinematic and real-time applications; case studies. (2 lecture, 3 lab hours; field trips required)

147. GIS Design Problems (3)
Prerequisite: S E 173. Application of data quality, accuracy, ethics and liability issues to the design of integrated Geographic Information Systems; integrated data structure, algorithm, and database considerations; major design team GIS development project required. (2 lecture, 3 lab hours; field trips required)

151. Boundary Control and Legal Principles (3)
Prerequisite: S E 50 or permission of instructor. Legal principles that control the boundary location of real property.

152. Real Property Descriptions (3)
Prerequisite: S E 151 or permission of instructor. Theory and practice of real property descriptions and recording systems; metes and bounds, United States Public Land Survey System, lot and block and other styles investigated; practical exercises and case studies. (Field trips required)

153. Advanced Boundary Law (3)
Prerequisite: S E 151 or permission of instructor. Design of evidence gathering, resurvey, retracement, and analysis techniques for complex United States Public Land Survey System, metes and bounds, riparian, mineral, land grant and fraudulent surveys; case studies. (Field trips required) (Former S E 191T section)

159. Subdivision Design (3)
Prerequisite: S E 41, 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 lab hours; field trips required)

161. Data Interface Design (3)
Prerequisite: S E 16, 135. Development and design of data collector software; file system generation, manipulation and transfer; microcomputer interface to data collector, electronic total station, digitizer, stereo/mono comparator and stereo-plotters. (2 lecture, 3 lab hours)

173. Introduction to GIS in Engineering (3)
Prerequisite: S E 15 and 66 or M E 26, or permission of instructor. Data quality and accuracy, privacy, ethics, institutional, governmental and technological issues associated with GIS; hardware and software considerations for geodetically controlled cadastral, resource and environmental GIS applications; existing system case studies. (Field trips required)

174. GIS Applications in Engineering (3)
Prerequisite: S E 173. Use of available GIS. Applications software; spatial analysis, simulation modeling and system evaluation; practical applications to specific GIS scenarios; creation, manipulations, maintenance and analysis of geodetic, cadastral, administrative, resource and environmental overlays. (2 lecture, 3 lab hours; field trips required) (Former S E 191T section)

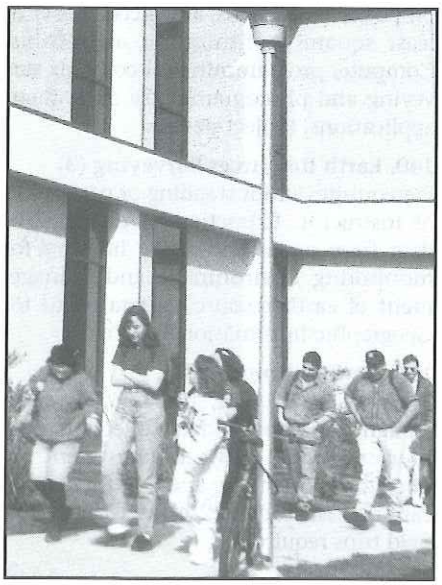
180. Senior Project (2)
Prerequisite: senior standing in surveying engineering or permission of instructor; approved subject; I E 182W or concurrently; S E 181 concurrently. Study of a problem under supervision of a faculty member; final typewritten report required. Individual project except by special permission. When taken concurrently, S E 180 and 181 satisfy the senior major requirement for the B.S. in Surveying Engineering. (Field trips required)

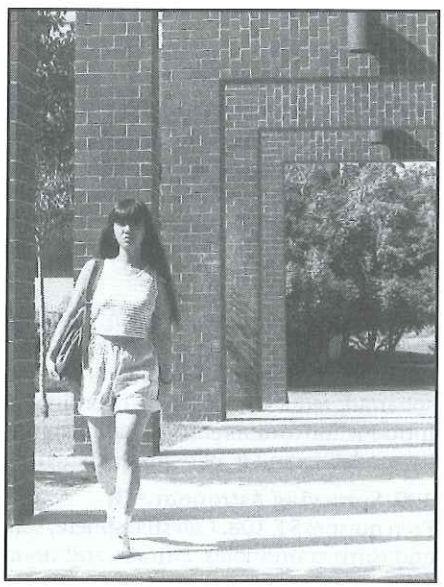
181. Project Design (3)
Prerequisite: senior standing or permission of instructor; S E 180 concurrently. Design of control, boundary location, and photogrammetric systems. Evaluation of design requirements, economic, and social considerations. Case Studies. Student presentations. When taken concurrently, S E 180 and 181 satisfy the senior major requirement for the B.S. in Surveying Engineering. (Field trips required) (Former S E 171)

190. Independent Study (1-3; max see reference)
See *Academic Placement — Independent Study*. Approved for ***SP*** grading.

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. ***CR/NC*** grading only.





Bachelor of Science Degree Requirements

Construction Management Major

	Units
Major requirements	76
Construction Core	(42)
Const 5, 10, 42, 50, 105, 107, 114, 116, 120, 122, 124, 142, 162, 164	
C E 127, 127L; S E 11, 11L; Acct 3; C Sci 5; Mgt 104, 106	(19)
Technical Specialty	(15)
Select one:	
Architecture	
Const 31, 32, 131, 132, 134	
Management	
Const 144, 150, 151, 166; Fin 180	
Additional requirements	4
Math 76, upper-division writing skills by examination	
General Education	52
CORE: Category 3, Math 72 or 75 (required)	
BREADTH: Division 1, Phys 2A (required)	
CAPSTONE: Pollution, Health, and Society Cluster, C E 170 and H S 170	
Total	132

Advising Notes

1. Courses in mathematics, the physical sciences, or construction taken *CR/NC* are not counted toward fulfillment of degree requirements in construction.
2. Since the construction major curriculum is very demanding, many students, especially those not fully prepared in mathematics, chemistry, and/or physics take $4\frac{1}{2}$ or more years to graduate rather than the traditional 4 years. If necessary, students may go to the Learning Resource Center in the Keats Building and request tutorial assistance.
3. The upper-division writing skills requirement can be met by passing the university examination or by completing I E 182W with a letter grade of *C* or higher only after 56 units are completed.
4. Other construction specialties may be developed under department advisement.

Recommended Program for Architectural Specialty

First Semester		Units
GE CORE	English	3
GE CORE	Speech	3
GE CORE	Math 72 or 75 Mathematical Analysis I (required)	3
GE CORE	History	3
GE CORE	Political Science	3
Const 5	Construction Materials	3
		18

Second Semester		
GE CORE	Critical Thinking	3
GE BREADTH	Division 2	3
GE BREADTH	Division 3	3
Const 42	Architectural Drawing	3
Math 76	Mathematical Analysis II	4
		16

Third Semester		
Div. 1	Phys 2A (required)	4
GE BREADTH	Division 4	3
Acct 3	Essentials of Accounting	3
C Sci 5	Computer and Applications	3
Const 50	Basic Building Systems	3
		16

Fourth Semester		
GE BREADTH	Division 5	3
GE BREADTH	Division 6	3
GE BREADTH	Division 7	3
Const 10	Estimating and Bidding	3
S E 11, 11L	Plane Surveying	3
		15

Fifth Semester		
Div. 8	Econ 40 or 50 (required)	3
C E 127	Construction Soil and Foundation	3
Const 31	Architectural Graphics	3
Const 32	Architectural Design	3
Const 105	Construction Structures	3
Const 142	Computer-Aided Construction Detailing	3
		18

Sixth Semester		
GE BREADTH	Division 9	3
C E 127L	Construction Soil and Foundation Lab	1
Const 107	Adv Const Structures	3
Const 120	Construction Contract and Specifications	3
Const 131	Adv Architectural Graphics	3
Const 132	Adv Architectural Design	3
		16

Seventh Semester		
C E 170	Pollution and Society (GE CAPSTONE)	3
Const 116	Scheduling and Controls	3
Const 122	Construction Laws	3
Const 134	Architectural Design Prob	3
Const 162	Mechanical Systems I	3
Mgmt 104	Admin Principles of Mgmt	3
		18

Eighth Semester		
H S 170	Health Effects of Indoor Pollution (GE CAPSTONE)	3
Const 114	Construction Management	3
Const 124	Construction Labor Law	3
Const 164	Building Electrical Systems	3
Mgmt 106	Behavior Principles of Management	3
		15

Recommended Program for Management Specialty

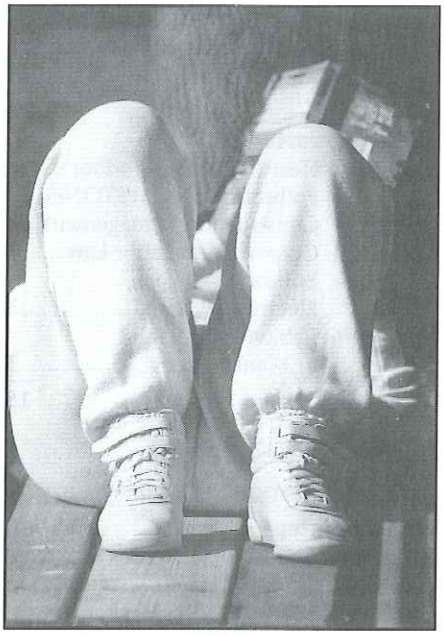
First Semester		Units
GE CORE	English	3
GE CORE	Speech	3
GE CORE	Math 72 or 75 Mathematical Analysis I (required)	3
GE CORE	History	3
GE CORE	Political Science	3
Const 5	Construction Materials	3
		18

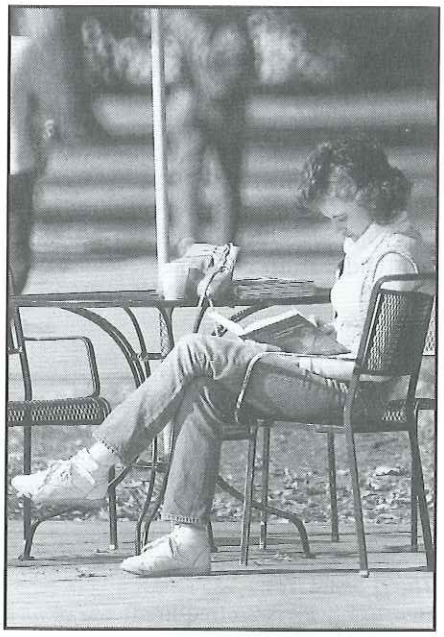
Second Semester		
GE CORE	Critical Thinking	3
GE BREADTH	Division 2	3
GE BREADTH	Division 3	3
Const 42	Architectural Drawing	3
Math 76	Mathematical Analysis II	4
		16

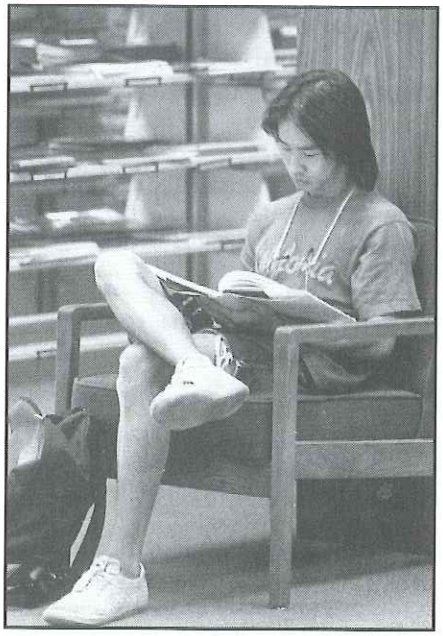
Third Semester		
Div. 1	Phys 2A (required)	4
GE BREADTH	Division 4	3
Acct 3	Essentials of Accounting	3
C Sci 5	Computer and Applications	3
Const 50	Basic Building Systems	3
		16

Fourth Semester		
GE BREADTH	Division 5	3
GE BREADTH	Division 6	3
GE BREADTH	Division 7	3
Cont 10	Estimating and Bidding	3
S E 11, 11L	Plane Surveying	3
		15

Fifth Semester		
Div. 8	Econ 40 or 50 (required)	3
C E 127	Construction Soil and Foundation	3
Const 105	Construction Structures	3
Const 116	Scheduling and Controls	3
Const 142	Computer-Aided Construction Detailing	3
		15







Sixth Semester

GE BREADTH	Division 9	3
C E 127L	Construction Soil and Foundation Lab	1
Const 107	Adv Const Structures	3
Const 114	Construction Management	3
Const 120	Construction Contract and Specifications	3
Const 162	Mechanical Systems I	3
		16

Seventh Semester

C E 170	Pollution and Society (GE CAPSTONE)	3
Const 122	Construction Laws	3
Const 150	Heavy Construction	3
Const 164	Building Electrical Systems	3
Const 166	Mechanical Systems II	3
Mgmt 104	Admin Principles of Mgmt	3
		18

Eighth Semester

H S 170	Health Effects of Indoor Pollution (GE CAPSTONE)	3
Const 124	Construction Labor Law	3
Const 144	Construction Site Planning and Development	3
Const 151	Heavy Building Construction	3
Fin 180	Real Estate Principles	3
Mgmt 106	Behavior Principles of Management	3
		18

COURSES

Construction Management (Const)

5. Construction Materials (3)
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. (6 lab hours)

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. (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.

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: C Sci 5; 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) (Lab fee, $15)

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 man-made 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: senior standing or permission of instructor; Const 132. 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. Satisfies the senior major requirement for the architecture specialty of the B.S. in Construction Management. (6 lab hours)

142. Computer-Aided Construction Detailing (3)
Prerequisite: Const 42. Application of computers to planning and details for wood, concrete, masonry, and steel structures. (6 lab hours; field trips) (Lab fee, $15)

144. Construction Site Planning and Development (3)
Prerequisite: Const 142. Analysis of land development; site investigation, grading, street piping systems, and landscaping. (6 lab hours)

150. Heavy Construction (3)
Prerequisite: senior standing or permission of instructor; Const 105, 116, 120. Problems and methods of solution in heavy construction from earth moving, paving, compacting to tunneling; administrative procedures, quantity surveying, estimating, scheduling, and bidding. Satisfies the senior major requirement for the B.S. in Construction Management. (2 lecture, 2 lab hours; field trips)

151. Heavy Building Construction (3)
Prerequisite: senior standing or permission of instructor; Const 150. Problems and methods of solutions in the construction of heavy buildings; site, excavations, foundations, framework, heavy timber, reinforced concrete, structural steel, masonry construction and related elements. Satisfies the senior major requirement for the B.S. in Construction Management. (2 lecture, 2 lab hours; field trips) (Lab fee, $15)

162. Mechanical Systems I (3)
Heating, ventilating, and air conditioning systems in buildings and plants; California Energy Code, heat loss and gain, system sizing and life cycle cost analysis. Lectures, demonstrations, guest speakers from industry. (Field trips)

164. Building Electrical Systems (3)
Electrical systems for power, light, heat, signals, and communications in commercial, industrial, and residential buildings. (6 lab hours; field trips)

166. Mechanical Systems II (3)
Prerequisite: Const 162. Construction application of water systems, plumbing and storm drainage, and sewage disposal systems.

190. Independent Study (1-3; max see reference)
See *Academic Placement — Independent Study*. Approved for ***SP*** grading. (Course fee variable)

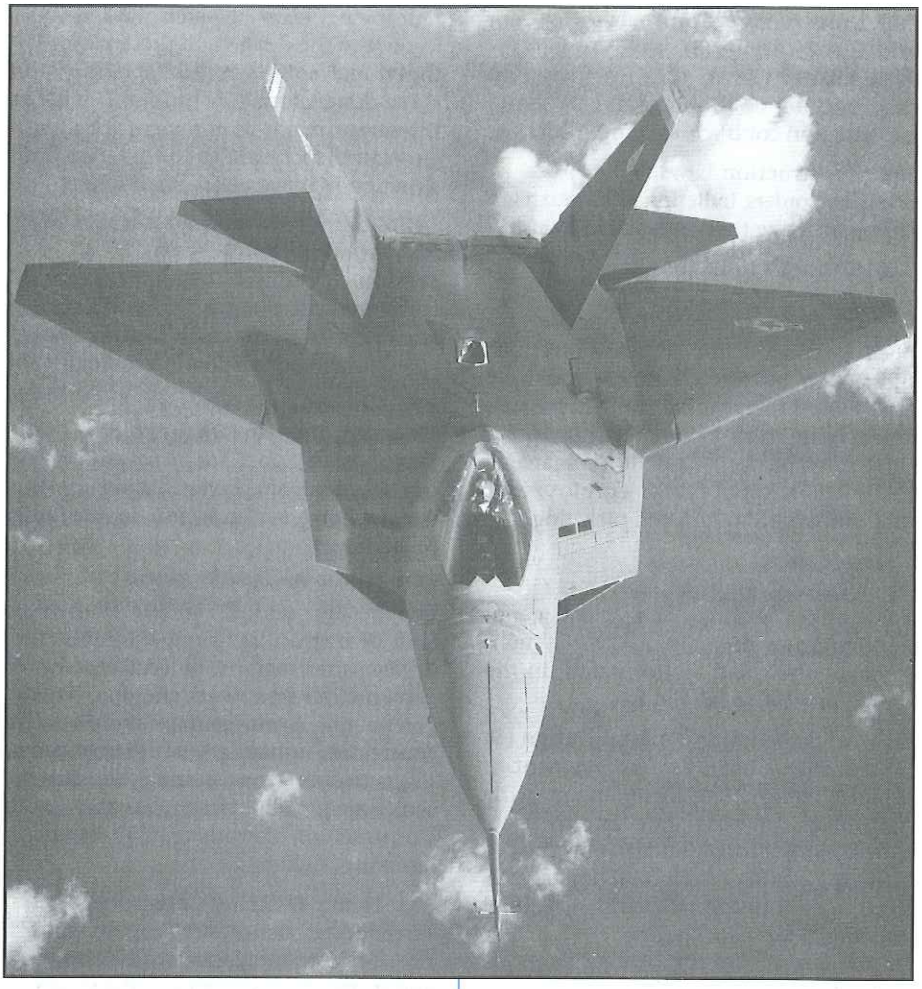
191T. Technical Topics in Construction (1-3; max total 6)
Prerequisite: permission of instructor. Investigation and analysis of selected subjects in construction. (2-6 lab hours)

193. Supervised Work Experience (3-6; max total 6)
Open only to construction majors. Prerequisite: junior standing and permission of instructor. Supervised work experience in construction related industries. Periodic consultations with instructor. ***CR/NC*** grading only.

ENGINEERING Edwards Air Force Base Program

School of Engineering
Edwards Air Force Base Program
ELDEN K. SHAW, *Dean*
Engineering East Building, Room 122
(209) 278-2500

Edwards Air Force Base
James W. Smolka, *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 coursework, 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 coursework. 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 (GRE) Aptitude Test is required of all students prior to advancement to candidate status. The Advanced Test in Engineering is not required. The GRE is administered several times per year at Edwards A.F.B. A GRE information booklet and application forms are available in the resident coordinator's office.

All students must complete a written comprehensive examination before graduation. This examination stresses 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/University. Requirements for admission to California State University, Fresno are in accordance with Title 5, Chapter 1, Subchapter 3 of the *California Code of Regulations*.

Admission to Graduate Standing. Students who apply for the program are placed in one of the following categories:

1. **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, and (c) a minimum GRE quantitative score of 450 are eligible for classified (degree status) graduate standing. This constitutes full admission to the graduate program.

   Students who meet requirements (a) and (c) above with a GPA below 3.0 must take the GRE Advanced Test in Engineering and achieve a score above the 50th percentile. In addition, to achieve classified standing these students must take three courses chosen by the coordinator and the department chair and complete these courses with a grade of ***B*** or higher.
2. **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 1, 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 coursework from the date of embarking on the first course of the proposed masters degree program.
4. Departmental recommendation for advancement to candidacy.
5. Satisfactory completion of the Graduate Writing Skills Requirement.

Nondegree 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	Computing in Engineering Analysis (3)
Engr 210	Linear Control Systems (3)

Mechanical Engineering
Required Courses:

M E 211	Advanced Dynamics (3)
M E 220	Compressible Fluids (3)

Mechanical Engineering Electives:

Engr 212	Advanced Control Systems (3)
M E 221	Incompressible Fluids (3)
M E 223	Jet Engine Propulsion (3)
M E 224	Rocket Propulsion (3)
M E 225	Heat Transfer (3)
M E 227	Advanced Thermodynamics (3)
M E 229	Advanced Gas Dynamics (3)
M E 230	Aircraft Stability and Control (3)
M E 231	Structural Dynamics (3)
M E 232	Advanced Aircraft Stability and Control (3)
M E 233	Structural Analysis (3)
M E 250	Astrodynamics (3)
M E 290	Independent Study (1-3)
M E 291T	Topics in Mechanical Engineering (1-3)

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	Modern Methods in Synchronous Sequential Design (3)
E E 247	Modern Semiconductor Devices (3)
E E 249	Advanced Communications Engineering (3)
E E 251	Antennas and Propagation (3)
E E 253	Advanced Asynchronous Machine Design (3)
E E 255	Digital Signal Processing (3)
E E 257	Optical Communications (3)
E E 259	Radar System Design (3)
E E 290	Independent Study (1-3)
E E 291T	Topics in Electrical Engineering (1-3)

Financial Information

Tuition and Fees. Tuition is $150* per semester hour or $450* 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 $50* for admission to the program and a $30* 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 resident coordinator 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.

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:

James W. Smolka
CSU Fresno Resident Coordinator
Building 2453
Edwards A.F.B., CA 93523

Mailing address from on Base:
650 ABW/MSUE/CSUF
Edwards A.F.B.

Mailing Address from off Base:
P.O. Box 53
Edwards, CA 93523
Telephone: (805) 258-5936

COURSES

Engineering (Engr)

101. Applied Engineering Analysis I (3)
Covers 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)
Covers 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.

*Fees subject to change upon approval.

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. Modern Methods in Synchronous Sequential Design (3)
Synchronous machine design with PLDs and FPGAs; algorithmic state machines; incompletely specified machines; maximum compatibility classes; partitioning of sequential machines; state merging and state splitting.

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.

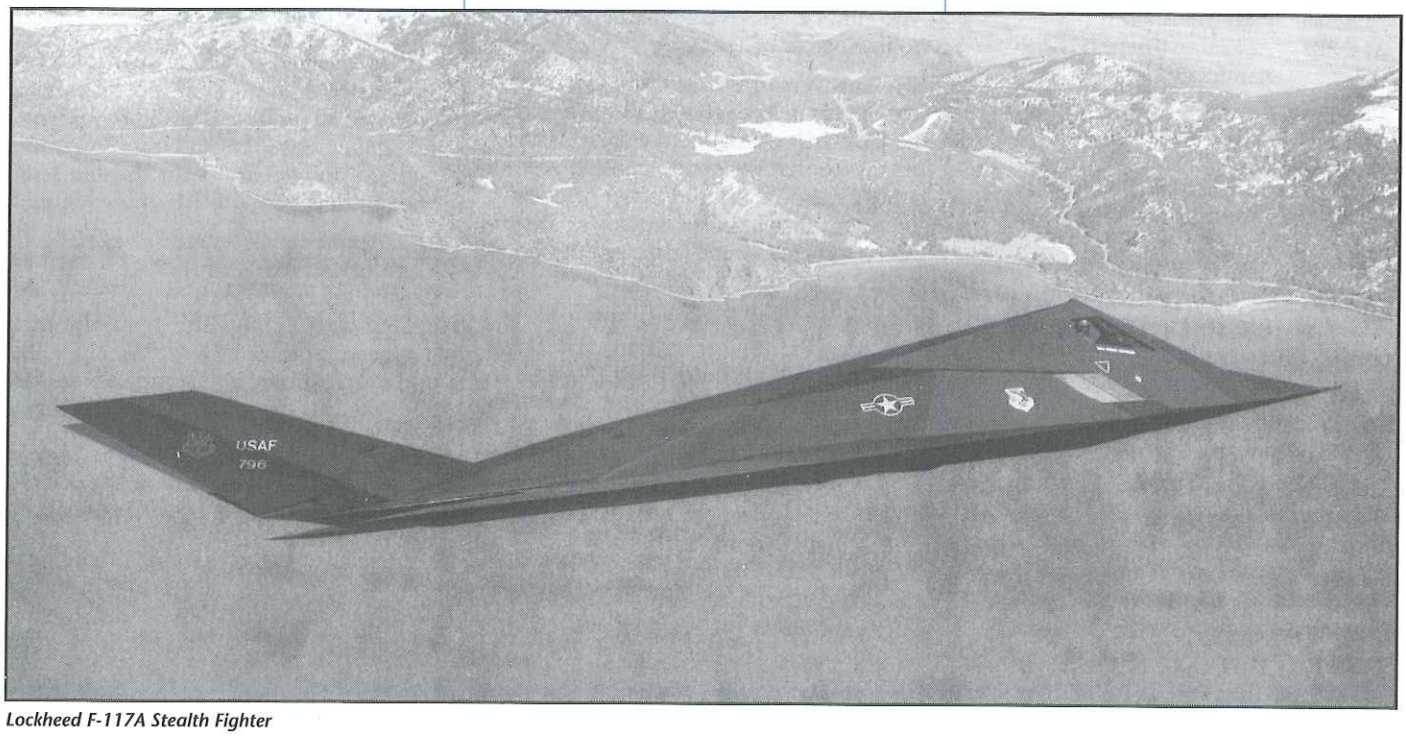
249. Advanced Communication Engineering (3)
The measure of information; noiseless coding; models of communication channels; channel capacity; discrete memoryless channels; error correcting codes; information sources; discrete channels with memory; continuous channels.

251. Antennas and Propagation (3)
Wave equation, plane waves, metallic boundary conditions; wave equation for the potentials Lorentz transformation; covariant formulation of electrodynamics; radiation from a moving charge; scattering and dispersion; Hamiltonian formulation of Maxwell's equations.

253. Advanced Asynchronous Machine Design (3)
Asynchronous machine design; primitive flow tables; static/dynamic hazards; state assignment; covers; partitions; decompositions; state identification and fault detection experiments; pulse mode circuits; iterative networks; introduction to hardware description languages.

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. Optical Communications (3)
Quantum measure of light, linear, elliptical, and circular polarization; optical waveguide equations, ray and mode theory; source and detector characteristics; at-



Lockheed F-117A Stealth Fighter

tenuation, dispersion, and noise effects; correlation, spectral density, noise equivalent bandwith, coding, modulation, multiplexing techniques; systems and link design.

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.

290. Independent Study (1-3; max total 6)
Prerequisite: graduate status in engineering or permission of instructor. Approved for *SP* grading.

291T. Topics in Electrical Engineering (1-3; max total 6)
Prerequisite: graduate status in engineering or permission of instructor. Selected electrical engineering subjects not in current courses.

Mechanical Engineering (M E)

211. Advanced Dynamics (3)
Dynamics of mechanical systems with emphasis on equations of motion. Kinematics of particles, energy and momentum methods, variational methods, LaGrange's method, kinematics and plane motion of rigid bodies, kinetics of rigid bodies in three dimensions, mechanical vibrations.

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 LaGrangian 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. Jet Engine Propulsion (3)
First-year graduate course in mechanics and thermodynamics of jet engine propulsion. Thermodynamics of fluid flow and engines, boundary layer theory, subsonic and supersonic inlets, combustors, fans, compressors, turbines, nozzles, inlet distortion, fuel controls, noise reduction, ramjets and scramjets.

224. Rocket Propulsion (3)
First-year graduate course in mechanics and thermodynamics of rocket engine propulsion. Nozzle theory and thermodynamics, heat transfer, flight performance, chemical rocket propellant performance, liquid propellants, solid propellants, rocket testing, advanced propulsion concepts.

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)
Prerequisite: M E 211 or permission of instructor. Continuation of M E 211. Von Karman theory, shear deformation, geometry and equilibrium of shells, theory of vibrations, vibrations of aircraft structures, coupling with the aerodynamic equations, flutter, ground and flight structural test techniques.

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.

233. Structural Analysis (3)
Graduate-level course in the principles of structural mechanics. Stress, strain and displacements, static and dynamic loads, energy methods, virtual work, discrete and continuous system analysis, finite element analysis, elastic beams, plates, and frames; single and multi degree-of-freedom modal analysis.

250. Astrodynamics (3)
Introductory course in astrodynamics. Two-body orbital mechanics, orbit determination, basic orbital maneuvers, rendezvous, ballistic missile trajectories, lunar and interplanetary trajectories, orbital perturbations, launch trajectories, reentry, spacecraft dynamics and attitude control.

290. Independent Study (1-3; max total 6)
Prerequisite: graduate status in engineering or permission of instructor. Approved for *SP* grading.

291T. Topics in Mechanical Engineering (1-3; max total 6)
Prerequisite: graduate status in engineering or permission of instructor. Selected mechanical engineering subjects not in current courses.

ENGINEERING Electrical and Computer Engineering

School of Engineering
Department of Electrical
and Computer Engineering
MEDHAT A. H. IBRAHIM, *Chair*
Engineering East Building, Room 254
(209) 278-2726

B.S. in Electrical Engineering
B.S. in Computer Engineering

The Department of Electrical and Computer Engineering offers a Bachelor of Science degree in Electrical Engineering and a Bachelor of Science degree in Computer Engineering. The Electrical Engineering Program is accredited by the Engineering Accreditation Commission of the Accreditation Board for Engineering and Technology (ABET). As a new program, the Computer Engineering Program has not yet been submitted to ABET for accreditation; plans are in place for such a submission at the appropriate time.

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 technical area courses, the student may emphasize the following areas of specialization:

a. Electronics and communications
b. Computers and digital systems
c. Power and control systems and energy conversion

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; 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 control systems (computer control, robotics, automated manufacturing, intelligent sensors).

Computer Engineering

Computer engineering is a discipline which allows the student to obtain expertise in the design, programming, and applications of computers. It prepares the graduate for professional practice or graduate studies. The program combines:

a. A strong emphasis on electrical engineering (primarily electronic circuits and systems)
b. A broad basis in mathematics, physical science, and general engineering
c. Fundamentals of computer science including programming methodology, software engineering, and operating systems
d. Introductory and advanced concepts in the design of computers and computer systems

A rich set of technical area courses is available to allow students to broaden their knowledge within any of several computer engineering areas.

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, intelligent controls, 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, in addition, has chapters of Tau Beta Pi, the Society of Women Engineers, the Society of Hispanic Engineers, and the Society of Black Engineers.

Co-op Program

The 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 and computer engineering and the campus co-op coordinator.

Faculty

Medhat A. H. Ibrahim, *Chair*

Daniel C. Bukofzer
Albert A. Heaney
Robert W. Hecht
John M. Johnson
Chung K. Liu
Eduard Muljadi
Larry D. Owens
Joseph C. Plunkett
Robert D. Regier
Elden K. Shaw

Faculty and Facilities

The faculty, comprised of academically well-qualified engineers, 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 microcomputer laboratory, a new CAD/CAM Laboratory, a microprocessor and digital systems laboratory, electronics laboratories, and an excellent power systems laboratory. In addition, students have access to several minicomputers, the campus mainframe computer, and recently installed engineering graphics workstations. A new solid state device and integrated circuits laboratory is near completion. The department has an excellent microwave and communications laboratory complete with shielded measurement rooms and r-f filters built into the walls.

Bachelor of Science Degree Requirements

Electrical Engineering Major — ***Units***

Major requirements 75

ECE 1, 70 or 71, 85, 85L, 90, 90L, 101, 114, 115, 118, 120L, 121, 121L, 124, 125, 126, 128, 128L, 136, 136L, 138, 138L, 155, 180 .. (54)
C E 29 or M E 29 ..... (3)
I E 160 ..... (2)
M E 26, 136 ..... (6)
Technical Area Courses ..... (10)

Select mandatory technical area courses from no more than two of the following groups and include at least one laboratory course from ECE 183A, B, C, D:

Electronics and Communications: ECE 134, 140, 144, 162, 166, 168, 171, 176, 183A, 183C
Computers and Digital Systems: ECE 106, 107, 132, 146, 148, 172, 173, 174, 183B
Power and Control Systems and Energy Conversion: ECE 151, 152, 153, 183D; M E 116

Additional requirements 15

Math 76, 77, 81, Math Elective (select from Math 107, 121, 124, 128, 181, or 182)

Additional General Education 49

CORE: Engl 1; Hist 11 or 12; Math 75; Pl Si 2 or 101; Spch 3, 7, or 8; I E 182W ..... (19)
BREADTH: Chem 1A; Biol 10; Phys 4A, 4B, 4BL, 4C; 3 units from Division 4 (select from H S 90, 124; Psych 61, 132, 171); Phil 10 and 120; Pl Si 120 ..... (30)
CAPSTONE: Satisfied by Phil 120 and Pl Si 120 from BREADTH ..... (0)

Total 139

Advising Notes

1. Courses in mathematics, the physical sciences, or engineering taken *CR/NC* are not counted toward fulfillment of degree requirements in electrical engineering.
2. Electrical engineering majors might consider a math minor (see faculty adviser for details).
3. Since the electrical engineering major curriculum is very demanding, some students not fully prepared in mathematics and the physical sciences may 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 3A and Chem 4 in lieu of Chem 1A. If needed, students may go to the Developmental Learning Resource Center in the Keats Building and request tutorial assistance.

Recommended Program

First Semester — ***Units***

ECE 1	Engineering Profession, Ethics, and Public Policy	1
ECE 70 or 71		3
Chem 1A	General Chem and Qualitative Analysis	5
Engl 1	Composition	3
Math 75	Mathematical Analysis I	4
		16

Second Semester

ECE 85, L	Digital Logic Design	4
M E 26	Engineering Graphics	3
Math 76	Mathematical Analysis II	4
Phil 10	Self, Religion, and Society	3
Phys 4A	Mechanics and Wave Motion	3
		17

Third Semester

ECE 115	Principles of Computer Architecture	2
Biol 10	Life Science	3
Math 77	Mathematical Analysis III	4
Phys 4B, L	Electricity, Magnetism and Heat	4
Spch 3, 7, or 8		3
		16

Fourth Semester

ECE 90, L	Principles of Electrical Circuits	4
ECE 118	Microprocessor Architecture and Programming	3
ECE 120L	Computer Sys Lab	1
C E or M E 29	Engineering Mech	3
Math 81	Applied Analysis	4
Phys 4C	Light and Modern Physics	3
		18

Fifth Semester

ECE 101	Network Analysis	3
ECE 114	Physical Electronics	3
ECE 126	Electromagnetic Theory and Appl I	3
ECE 128, L	Electronics I	4
I E 160	Engineering Economy	2
Mathematics Elective[1]		3
		18

Sixth Semester

ECE 121, L	Electromech Sys and Energy Conversion	4
ECE 124	Linear Electric Circuit and Sys Analysis	3
ECE 136, L	Electromagnetic Theory and Appl II	4
ECE 138, L	Electronics II	4
Phil 120	Contemporary Conflicts of Morals	3
		18

Seventh Semester

ECE 125	Random Signals and Stochastic Sys Analysis	3
ECE 155	Control Systems	3
I E 182W	Engineering Writing	3
Hist 11 or 12		3
Pl Si 120	International Politics	3
Technical Area Courses		3
		18

Eighth Semester

ECE 180	Senior Project	2
M E 136	Thermodynamics	3
Pl Si 2 or 101		3
Div. 4 Elective[2]		3
Technical Area Courses		7
		18

[1]Mathematics Elective: Select from Math 107, 121, 124, 128, 181, or 182.
[2]Select from H S 90, 124; Psych 61, 132, 171.

Bachelor of Science Degree Requirements

Computer Engineering Major	*Units*
Major requirements	**53**
ECE 1, 85, 85L, 114, 115, 118, 120L, 124, 128, 180	(22)
Computer Design Option	
ECE 174, 183B	(4)
C Sci 144, 150	(6)
Technical Area Design Courses	(9)
ECE 106, 107, 132, 148	
Technical Area Courses	(12)
ECE 125, 134, 138, 138L, 140, 146, 155, 172, 176	
Fundamental Engineering requirements	**9**
C E 29 or M E 29	(3)
ECE 90, 90L	(4)
I E 160	(2)
Additional requirements	**26**
C Sci 40, 41	(8)
Math 14, 76, 77, 81, 107	(18)
Additional General Education	**49**
CORE: Engl 1; Hist 11 or 12; Math 75; Pl Si 2; Spch 3, 7, or 8; I E 182W	(19)
BREADTH: Biol 10; Chem 1A; Phys 4A, 4B, 4BL, 4C; 3 units from Division 4 (select from H S 90, 124; Psych 61, 132, 171); Phil 10 and 120; Pl Si 120	(30)
CAPSTONE: Satisfied by Phil 120 and Pl Si 120 from BREADTH	(0)
Total	**137**

Advising Notes

1. Courses in mathematics, the physical sciences, or engineering taken *CR/NC* are not counted toward fulfillment of degree requirements in computer engineering.
2. Computer engineering majors might consider a math minor. (See faculty adviser for details.)
3. Since the computer engineering major curriculum is very demanding, some students not fully prepared in mathematics and the physical sciences may take more than the traditional 4 years to graduate. Students not fully prepared in mathematics and/or chemistry should consider taking Math 71 and 72 in lieu of Math 75, and Chem 3A and 4 in lieu of Chem 1A. If needed, students also may go to the Developmental Learning Resource Center in the Keats Building and request tutorial assistance.

Recommended Program

First Semester		*Units*
ECE 1	Engineering Profession, Ethics, and Public Policy	1
C Sci 40	Intro to Programming and Problem Solving	4
Chem 1A	General Chem and Qualitative Analysis	5
Engl 1	Composition	3
Math 75	Mathematical Analysis I	4
		17

Second Semester		
ECE 85, L	Digital Logic Design	4
Math 14	Intro to Discrete Structures	3
Math 76	Mathematical Analysis II	4
Phil 10	Self, Religion, and Society	3
Phys 4A	Mechanics and Wave Motion	3
		17

Third Semester		
ECE 115	Principles of Computer Architecture	2
C Sci 41	Intro to Data Structures	4
Math 77	Mathematical Analysis III	4
Phys 4B, L	Electricity, Magnetism and Heat	4
Pl Si 2	American Government and Institutions	3
		17

Fourth Semester		
ECE 90, L	Principles of Electrical Circuits	4
C E or M E 29	Engineering Mech	3
C Sci 150	Intro to Software Engr	3
Math 81	Applied Analysis	4
Phys 4C	Light and Modern Physics	3
		17

Fifth Semester		
ECE 118	Microprocessor Architecture and Programming	3
ECE 120L	Computer Systems Laboratory	1
ECE 124	Linear Electric Circuits and Systems Analysis	3
ECE 128	Electronics I	3
I E 160	Engineering Economics	2
I E 182W	Engineering Writing	3
Math 107	Intro to Probability and Statistics	3
		18

Sixth Semester		
ECE 174	Adv Computer Architecture	3
Biol 10	Life Science	3
C Sci 144	Intro to Operating Systems	3
Hist 11 or 12		3
Technical Area Design Courses[1]		6
		18

Seventh Semester		
ECE 114	Physical Electronics	3
ECE 183B	Digital Devices and Systems Lab	1
Phil 120	Contemporary Conflicts of Morals	3
Spch 3, 7, or 8		3
Technical Area Courses[2]		3
Technical Area Design Courses[1]		3
		16

Eighth Semester		
ECE 180	Senior Project	2
Pl Si 120	International Politics	3
Div. 4 Elective[3]		3
Technical Area Courses[2]		9
		17

[1]Select at least 9 units from the list of Technical Area Design Courses.
[2]Select at least 12 units from the list of Technical Area Courses or from the list of Technical Area Design Courses.
[3]Select from H S 90, 124; Psych 61, 132, 171.

COURSES

Electrical and Computer Engineering (ECE)

Note: Students may be expected to purchase supplementary materials for senior projects and special topic laboratory and activity classes.

1. Engineering Profession, Ethics, and Public Policy (1)
The electrical engineering profession and its career opportunities; engineering professionalism and ethics; ethics case studies, engineering code of ethics; introduction to engineering problem solving. (Former E E 1)

70. Engineering Computations Using C and Fortran (3)
Prerequisite: Students must take the ELM exam; students who do not pass the exam must record a grade of *C* or better in a college-taught intermediate algebra course; trigonometry. Use of Fortran and C computer languages in engineering analysis and/or design. A systematic development in program structure, specification, testing, and debugging. Cannot be taken for credit if ECE 71 has been taken previously. General Education CORE, Quantitative Reasoning. (Lab fee, $15) (Former E E 70)

71. Engineering Computations (3)
Prerequisite: Students must take the ELM exam; students who do not pass the exam must record a grade of *C* or better in a college-taught intermediate algebra course; trigonometry. Use of Pascal and Fortran 77 in engineering analysis and/or design. A

systematic development in program structure, specification, documentation, testing, and debugging. Cannot be taken for credit if ECE 70 has been taken previously. General Education CORE, Quantitative Reasoning. (Lab fee, $15) (Former E E 71)

85. Digital Logic Design (3)
Boolean algebra. Logic gates, number systems, combinatorial logic, minimization techniques, binary arithmetic. Design of combinatorial circuits using SSI and MSI. Flipflops, multivibrators, and counters. Introduction to sequential circuits and state machines. Synchronous state machine design. (Former E E 85)

85L. Digital Logic Design Laboratory (1)
Corequisite: ECE 85. Usage, design, and implementation techniques for SSI, MSI realization of combinatorial and sequential circuits. Experiments utilizing logic gates, Karnaugh maps, multiplexers, demultiplexers, latches, flipflops, counters and shift registers. Sequential state machine design. (Former E E 85L)

90. Principles of Electrical Circuits (3)
Prerequisite: ECE 70 or 71 or C Sci 40; Phys 4B; 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 90)

90L. Principles of Electrical Circuits Laboratory (1)
Prerequisite: ECE 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 90L)

101. Network Analysis (3)
Prerequisite: ECE 90. Topology in circuit analysis; mutual inductance; tuned and resonant circuits; Laplace transforms in circuit analysis; the transfer function; poles and zeros in the s-plane; Bode diagrams; two-port networks.

106. Switching Theory and Logical Design (3)
Prerequisite: ECE 85 or equivalent. Quine-McCluskey minimization; switching functions; finite and nonfinite state machines; state assignments; synchronous and asynchronous machines; incompletely specified sequential circuits; pulse-mode circuits. (Former E E 106)

107. Digital Signal Processing (3)
Prerequisite: ECE 71 or C Sci 40; ECE 85, 124. Data acquisition by computers, numerical evaluation of Fourier transforms, A/D and D/A conversion, digital filter design, programming, and emulation of a popular digital signal processor. (Former E E 107)

114. Physical Electronics (3)
Prerequisite: Phys 4C. 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 optoelectronic devices. (Former E E 114)

115. Principles of Computer Architecture (2)
Prerequisite: ECE 85 and either C Sci 40 or ECE 70 or ECE 71. Structural organization, hardware architecture and design of digital computer systems; binary representation of data; CPU, memory and I/O organization; register transfer and micro-operations; hardware/software design trade-offs. (Former E E 119; ECE 119)

118. Microprocessor Architecture and Programming (3)
Prerequisite: ECE 115. Hardware architecture and programming models of a microprocessor. Assembly Language program specification, development, testing and documentation. Modular programming, parameter passing, program libraries, macros. (Former E E 116; ECE 116)

120L. Computer Systems Laboratory (1)
Prerequisite: ECE 118 or concurrently. Experiments on computer architecture and systems; FPGA development; logic analyzers; serial communications; hardware and software development. (Former E E 119L; ECE 119L)

121. Electromechanical Systems and Energy Conversion (3)
Prerequisite: ECE 90, 90L. Principles of direct- and alternating-current machinery and other energy-conversion devices and associated apparatus. (Former E E 121)

121L. Electromechanical Systems and Energy Conversion Laboratory (1)
Corequisite: ECE 121. Experiments and computations on direct- and alternating-current machinery and on other energy-conversion devices and associated apparatus. (3 lab hours) (Former E E 121L)

124. Linear Electric Circuit and Systems Analysis (3)
Prerequisite: ECE 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. (Former E E 124)

125. Random Signals and Stochastic System Analysis (3)
Prerequisite: Math 81, ECE 124. Application of probability, discrete and continuous random variables, statistical characterization of random variables and their transformations, random processes signals and noise, correlations and power spectral densities, electrical engineering systems' response to stochastic inputs.

126. Electromagnetic Theory and Applications I (3)
Prerequisite: ECE 90 or concurrently. Electrostatics; boundary value problems; magnetostatics; time-varying fields; Maxwell's equations. (Former E E 126)

128. Electronics I (3)
Prerequisite: ECE 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. (Former E E 128)

128L. Electronics I Laboratory (1)
Prerequisite: ECE 128 or concurrently. Experiments on static and dynamic characteristics of solid state devices and electronic circuits; computer solutions as appropriate. (3 lab hours) (Former E E 128L)

132. Design of Digital Systems (3)
Prerequisite: ECE 115, 118. 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 132)

134. Communication Engineering (3)
Prerequisite: ECE 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. (Former E E 134)

136. Electromagnetic Theory and Applications II (3)
Prerequisite: ECE 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. (Former E E 136)

136L. Electromagnetic Theory and Applications Laboratory (1)
Corequisite: ECE 136. 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) (Former E E 136L)

138. Electronics II (3)
Prerequisite: ECE 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. (Former E E 138)

138L. Electronics II Laboratory (1)
Corequisite: ECE 138. Design oriented experiments to study the characteristics, limitations, and design trade-offs of circuits from ECE 138. Emphasis on circuit and system design to meet pre-established specifications. Design project included; computer solutions as appropriate. (3 lab hours) (Former E E 138L)

140. VLSI Circuit and System Design (3)
Prerequisite: ECE 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. (Former E E 140)

144. Integrated Circuit Design and Fabrication (3)
Prerequisite: ECE 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 ICs; laboratory demonstrations. (Former E E 144)

146. Computer Networking and Distributed Processing (3)
Prerequisite: ECE 115, 118. Analysis and design of modern computer networks. Topics to be introduced include routing, flow and congestion control, packet, message and circuit switching, and recovery. Examples of current implemented networks and network architectures. (Former E E 146)

148. Analysis and Design of Digital Circuits (3)
Prerequisite: ECE 85, 128. Analysis and design of solid state digital circuits utilizing various logic families suitable for integration (TTL, ECL, NMOS, CMOS, etc.): logic gates; multivibrators; ROM, PROM, and EPROM; SRAM and DRAM; PLDs, Gate Arrays, and other ASICs. (Former E E 148)

151. Electrical Power Systems (3)
Prerequisite: ECE 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. (Former E E 151)

152. Symmetrical Components and Short Circuit Analysis (3)
Prerequisite: ECE 121, 121L (or concurrently). Theory of symmetrical components and their use in power systems analysis; sequence impedances of system components; applications in fault calculations. (Former E E 152)

153. Power Electronics (3)
Prerequisite: ECE 121, 128. Characteristics, limitations, and circuit applications of power semiconductor devices; diode and phase controlled rectifier; DC-to-DC converters: DC-to-AC inverters; switching DC power supplies; power conditioners; uninterruptible power supplies; practical aspects of converter design. (Former E E 153)

155. Control Systems (3)
Prerequisite: Math 81. Analysis, design, and synthesis of linear control systems; modeling, performance evaluation, frequency response, and stability. (Former E E 155)

162. Analog Integrated Circuits and Applications (3)
Prerequisite: ECE 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. (Former E E 162)

166. Microwave Devices and Circuits Design (3)
Prerequisite: ECE 136. Microwave theory and techniques: slow-wave structures, S parameters, and microwave devices, including solid-state devices such as Gunn, IMPATT, TRAPATT, and BARITT diodes, and vacuum tubes

Discussing robotics research in anticipation of the intercollegiate Micromouse competitions are electrical and computer engineering professor Chung Liu and Micromouse Design Team member Wane Wier.

such as klystrons, reflex klystrons, traveling-wave tubes, magnetrons and gyrotrons. (Former E E 166)

168. Microwave Amplifier and Oscillator Design (3)
Prerequisite: ECE 136. Small-signal and large-signal amplifier designs such as high-gain, high-power, low-noise, narrow-band and broadband amplifiers; microwave oscillator designs such as high-power, broadband, Gunndiode and IMPATT oscillator designs; power combining and dividing techniques; reflection amplifier design and microwave measurements. (Former E E 168)

171. Quantum Electronics (3)
Prerequisite: ECE 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. (Former E E 171)

172. Sequential Machine and Automata Theory (3)
Prerequisite: ECE 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 172)

173. Digital Controls and Robotics (3)
Prerequisite: ECE 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. (Former E E 173)

174. Advanced Computer Architecture (3)
Prerequisite: ECE 115. Advanced computing architecture concepts: pipelining, coprocessing, and multiprocessing; analysis and design of cache and virtual memory systems; direct memory access, local and system bus architectures; instruction set design and coding; EDAC. (Former E E 174)

176. Computer-Aided Circuit Design (3)
Prerequisite: ECE 124, 128, 128L. Computer simulation of analog circuits. Computer-aided engineering of digital circuits including schematic capture and logic simulation. Computer-aided design of application specific integrated circuits including programmable logic devices, gate arrays, and standard cell devices. (Former E E 176)

180. Senior Project (2)
Prerequisite: senior standing in electrical and computer engineering or permission of instructor; 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. When taken in addition to ECE 183A, B, C, or D, this course satisfies the senior major requirement for the B.S. in Electrical Engineering and the B.S. in Computer Engineering. (Former E E 180)

183A. Electronic Circuits and Electrical Networks Laboratory (1)
Prerequisite: ECE 124, 138, 138L. Senior design laboratory. 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. When taken in addition to ECE 180, this laboratory satisfies the senior major requirement for the B.S. in Electrical Engineering and the B.S. in Computer Engineering. (3 lab hours) (Former E E 183A)

183B. Digital Devices and Systems Laboratory (1)
Prerequisite: ECE 85, 128. Senior design laboratory. Familiarization with a real-time microcomputer board, assembly language programming techniques, I/O interfacing, documentation, debugging, and testing. When taken in addition to ECE 180, this laboratory satisfies the senior major requirement for the B.S. in Electrical Engineering and the B.S. in Computer Engineering. (3 lab hours) (Former E E 183B)

183C. Physical Electronics and Electromagnetics Laboratory (1)
Prerequisite: ECE 114, 128, 128L, 136, 136L. Senior design laboratory. Solid state device and characterization; rf component design with stripline and microstrip techniques; electromagnetic signal analysis; noise reduction techniques; antenna pattern measurements; laser system design. When taken in addition to ECE 180, this laboratory satisfies the senior major requirement for the B.S. in Electrical Engineering and the B.S. in Computer Engineering. (3 lab hours) (Former E E 183C)

183D. Electrical Power and Control Systems Laboratory (1)
Prerequisite: ECE 121, 121L, 155 (or concurrently). Senior design laboratory. 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. When taken in addition to ECE 180, this laboratory satisfies the senior major requirement for the B.S. in Electrical Engineering and the B.S. in Computer Engineering. (3 lab hours) (Former E E 183D)

190. Independent Study (1-3; max see reference)
See *Academic Placement — Independent Study*. Approved for *SP* grading. (Former E E 190)

191T. Topics in Electrical and Computer Engineering (1-3; max total 6)
Prerequisite: permission of instructor. Investigation of selected electrical engineering subjects not in current courses. (Former E E 191T)

193. Electrical and Computer Engineering Cooperative Internship (3-4)
Prerequisite: permission of adviser. Engineering practice in an industrial or governmental installation over a period of about seven months duration. Each period must span a summer-fall or spring-summer interval. This course cannot be used to meet graduation requirements. *CR/NC* grading only. (Former E E 193)

ENGINEERING Mechanical and Industrial Engineering

School of Engineering
Department of Mechanical
and Industrial Engineering
WALTER V. LOSCUTOFF, *Chair*
Engineering East Building, Room 154
(209) 278-2368

B.S. in Mechanical Engineering
B.S. in Industrial Engineering

The Department of Mechanical and Industrial Engineering offers Bachelor of Science degrees in Mechanical Engineering and Industrial Engineering. Both 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 to:

1. provide students quality education in either the mechanical or industrial engineering disciplines
2. prepare students to enter professions in industry as qualified engineers or enter a program of graduate studies leading to higher degrees
3. provide opportunities for practicing engineers to enroll in refresher courses and for non-engineering graduates to earn a second degree, and
4. provide graduates with the knowledge, self-assurance, and motivation to continue developing in the engineering profession.

Faculty and Facilities

The department's faculty members have outstanding academic credentials which cover most major areas in mechanical and industrial engineering. In addition, most of the faculty have had distinguished careers in industry and are able, through their experiences, to help students develop the professional skills needed to solve engineering problems.

Excellent laboratory facilities emphasize computer interaction, the operation and use of instruments, and the experimental approach. The mechanical engineering laboratories are equipped with laser measurement systems, 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, aerospace, and other mechanical systems. The laboratory program also includes strong emphasis on computer-aided design.

Industrial engineering students gain valuable practical experience through state-of-the-art computer systems in conjunction with advanced robotics equipment used in the human factors, robotics, and manufacturing laboratories. Laboratory courses focus on computer-aided design, computer-aided manufacturing, computer-integrated manufacturing, materials handling, plant layout, and human factors engineering.

Career Opportunities

Rapid technological advanced in computers, robotics, and automation, combined with declining enrollments in engineering, have created a substantial demand for mechanical and industrial engineers. High-technology industries want mechanical and industrial engineers because of their technical versatility and adaptability to a broad range of engineering activities. Excellent opportunities exist in aerospace, energy, manufacturing and fabrication, machine and tool design, public transportation, electronics, and a host of other industries.

Co-op Program

The department participates in the Cooperative Education Program which allows the student to gain industrial experience — and recognize financial benefits — through projects with local companies.

Advising

It is the policy of the department that every student see his/her assigned adviser at least once during the academic year.

Faculty

Walter V. Loscutoff, *Chair*

Joseph R. Battenburg
Shyhming Chang
Zbigniew J. Czajkiewicz
McRae Jarrett
Dennis C. Kuzma
Hamo Lalehzarian
Prakash T. Mahajan
Satya D. Mahanty
Masud Mansuri
William W. Peng
John A. Seevers

Mechanical Engineering Program

Mechanical engineering is the use of basic science in the design and manufacture of components and systems. This requires the application of physical and mechanical principles in the development of machines, energy conversion systems, materials, and equipment for measurement and control. Knowledge of mathematics, physics, and chemistry lies at the core of this field. Application of this knowledge uses engineering technology — a disciplined way of thinking, modeling, and testing that enables development of new systems despite incomplete information and uncertainty.

The program in mechanical engineering provides basics in design and in fluid and thermal mechanics. All areas include statics, dynamics, materials, fluid mechanics, thermodynamics, and experimental methods. Application areas in design include mechanics of materials, applied mechanics, structural and manufacturing aspects of producing equipment, and vibrations. Application areas in fluid and thermal mechanics focus on energy conversion and include combustion, heat engines, refrigeration, and fluid flow.

Students should consult with their advisers to select the proper courses that emphasize their areas of interest.

Bachelor of Science Degree Requirements

Mechanical Engineering Major **Units**

Major requirements 73
- M E 1, 26, 31, 112, 116, 118, 131, 131L, 134, 136, 140, 144, 145, 154, 155, 156 ..... (41)
- C E 20, 121 ..... (6)
- ECE 70, 90, 90L ..... (7)
- I E 90, 110, 160 ..... (8)
- **Design Applications** ..... (5)
  - Select one area:
  - ***Energy:*** M E 158, 166
  - ***Machine Design:*** M E 143, 164
  - Any two courses may be taken with adviser approval
- **Technical Area Courses** ..... (6)
  - Depending on selected design application area, take 6 units from either Group A *or* B. Group C courses may be substituted for any *one* of the Group A or B courses.
  - *Group A (Energy):* M E 137, 146
  - *Group B (Machine Design):* M E 141, 142, 162
  - *Group C (General):* M E 180, 190; I E 161; ECE 121, 121L, 155

Additional requirements 12
- Math 76, 77, 81

General Education 50
- CORE: Engl 1; Hist 11 or 12; Math 75; Pl Si 2 or 101; Spch 3, 7, or 8; I E 182W ..... (19)
- BREADTH: Chem 1A; Phys 4A, 4AL, 4B, and 4C; Div. 2 (Bio. Proc.) 3 units: Biol 10 or 15 or Bot 10 or Zool 10; Art 13 or I E 125; Phil 1, 120; Pl Si 120 ..... (31)
- CAPSTONE: Satisfied by Phil 120 and Pl Si 120 from BREADTH .. (0)

Total 135

Advising Notes

1. Courses in mathematics, the physical sciences, or engineering taken ***CR/NC*** are not counted toward fulfillment of degree requirements in mechanical engineering.
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, 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 3A and 4 in lieu of Chem 1A. If needed, students also may go to the Developmental Learning Resource Center in the Keats Building and request tutorial assistance.

Recommended Program

First Semester **Units**

M E 1	Intro to Mechanical Engineering	1
Chem 1A	General Chem and Qual Analysis	5
Engl 1	Composition	3
Math 75	Mathematical Analysis I	4
Div. 2[1]	Biological Processes	3
		16

Second Semester

M E 26	Engineering Graphics	3
ECE 70	Engineering Computations Using C and Fortran	3
Math 76	Mathematical Analysis II	4
Phys 4A, L	Mechanics and Wave Motion	4
Phil 1	Intro to Philosophy	4
		18

Third Semester

M E 31	Engineering Materials	3
Math 77	Mathematical Analysis III	4
Phys 4B	Electricity, Magnetism and Heat	3
Pl Si 2[2]	Amer Gov't and Instit	3
Spch 3[3]	Fundamentals of Public Communication	3
		16

Fourth Semester

C E 20	Engineering Mechanics: Statics	3
ECE 90, L	Principles of Electrical Circuits	4
I E 90	Manufacturing Processes	3
Math 81	Applied Analysis	4
Phys 4C	Modern Physics	3
		17

Fifth Semester

M E 112	Engineering Mechanics: Dynamics	3
M E 136	Thermodynamics	3
C E 121	Mechanics of Materials	3
I E 160	Engineering Economy	2
I E 182W	Engineering Writing	3
Hist 11/12	American History	3
		17

Sixth Semester

M E 116	Fluid Mechanics	3
M E 118	Fluid Mechanics Lab	1
M E 134	Dynamics in Machine Design	3
M E 140	Adv Engineering Analysis	3
M E 144	Adv Mech of Materials	3
I E 125[4]	Human Factors in Engineering and Design	3
		16

Seventh Semester

M E 145	Heat and Mass Transfer	3
M E 154	Design of Machine Elements	3
M E 156	Adv Thermodynamics — Fluid Mechanics	3
I E 110	Statistical Analysis in Engineering	3
Technical Area Courses[5]		6
		18

See footnotes on next page.

Eighth Semester

M E 131, L	Advanced Engineering Materials	3
M E 155	Elements of Systems Design	3
Phil 120	Cont Conflicts in Morals	3
Pl Si 120	International Politics	3
Required Design Application Courses[6]		5
		17

[1]Biol 10 or 15 or Bot 10 or Zool 10.
[2]or Pl Si 101, American Constitution, Institutions and Ideals.
[3]or Spch 7, Persuasion, or Spch 8, Group Discussion.
[4]or Art 13, Design.
[5]Depending on application area,[7] select from either Group A or B. Group A (Energy): M E 137, 146; Group B (Machine Design): M E 141, 142, 162; Group C courses may be substituted for any *one* of the above with adviser approval. Group C (General): M E 180, 190; I E 161; ECE 121, 121L, 155.
[6]Select one application area. Energy: M E 158, 166; Machine Design: M E 143, 164. Any two may be taken with adviser approval.

COURSES

Mechanical Engineering (M E)

1. Introduction to Mechanical Engineering (1)
Introduction to engineering design; case studies in mechanical engineering; problem-solving using the engineering approach; introduction to engineering code of ethics, mechanical engineering profession, and career opportunities.

10. Engineering Skills (2)
Provides engineering students with experience in solving problems and presenting solutions in a logical manner, introduces students to subject areas common to most engineering disciplines and develops basic skills for solving problems through an engineering approach. ***CR/NC*** grading only; not applicable toward baccalaureate degree requirements.

26. Engineering Graphics (3)
Prerequisite: ECE 70 or 71 (or concurrently), Math 75 (or concurrently). Principles of orthographic projection, dimensioning, and descriptive geometry. Applications to the solution of engineering problems including the use of interactive computer graphics. (Two 3-hour lecture labs) (Lab fee, $15) (CAN ENGR 2)

29. Engineering Mechanics (3)
(Same as C E 29.) Prerequisite: Math 77 or concurrently; Phys 4A. Not open to mechanical or civil engineering majors. Study of fundamental principles of statics and dynamics by scalar and vector methods.

31. Engineering Materials (3)
Prerequisite: Chem 1A, Engl 1, Phys 4A. Fundamental nature and properties of engineering materials; structure of matter and its effect on mechanical, electrical, magnetic, and thermal properties. (CAN ENGR 4)

112. Engineering Mechanics: Dynamics (3)
Prerequisite: C E 20. Development of principles of kinematics and kinetics in engineering.

116. Fluid Mechanics (3)
Prerequisite: Chem 1A, M E 112 (or concurrently). Fundamentals of fluid mechanics as applied to engineering problems.

118. Fluid Mechanics Laboratory (1)
Prerequisite: I E 182W, M E 116 (or concurrently). Applications of experimental methods used in engineering practice to fluid systems. (One 3-hour lab)

131. Advanced Engineering Materials (2)
Prerequisite: M E 31, 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: I E 182W, 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, graphical, and computer solutions applied to design problems of machinery, mechanisms, and gears. Both closed- and open-ended homework problems plus a design project and report are required. (2 lecture, 3 lab hours)

136. Thermodynamics (3)
Prerequisite: Chem 1A, M E 112 (or concurrently). Fundamentals of thermodynamics and heat transfer as applied to engineering problems.

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. Advanced Engineering Analysis (3)
Prerequisite: Math 81, ECE 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, closed-form solutions of partial differential equations and the digital computer.

141. Failure Analysis (3)
Prerequisite: M E 131, 131L. Techniques and procedures used in analyzing mechanical failure such as fracture, fatigue, corrosion, and overload. Analysis techniques will utilize optical and electron fractography, chemical analysis, metallography, and heat treatment.

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 parameter systems; coupled systems; computer solutions.

143. Mechanical Design Laboratory (2)
Prerequisite: C E 121, I E 182W, M E 134. Application of theory and techniques of experimental stress analysis to the design of machine components, mechanical structures, and dynamic transducers. Group-design teams design and test a mechanical device or structure to simulate real-life client-engineer relationships. A final project report and an oral presentation are required. (1 lecture, 3 lab hours)

144. Advanced Mechanics of Materials (3)
Prerequisite: C E 121, ECE 70, Math 81. Advanced topics in mechanics of materials.

145. Heat and Mass Transfer (3)
Prerequisite: ECE 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.

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. (2 lecture, 3 lab hours)

154. Design of Machine Elements (3)
Prerequisite: M E 134, 144. Design of machine elements and components using theory learned in prerequisite courses. Both individual and team-type open-ended design projects are required. Use of computers for design is required. (2 lecture, 3 lab hours)

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.

156. Advanced Thermodynamics — Fluid Mechanics (3)
Prerequisite: M E 116, 136. Advanced topics in thermodynamics and fluid mechanics including analysis of solar and nuclear systems as applied to engineering problems.

158. Energy Systems Design Laboratory (2)
Prerequisite: M E 118, 145, 156; I E 100. Design of experiments to evaluate and/or simulate energy systems. Selection and calibration of instruments. Computer-aided data acquisition and data processing. Group projects and technical reports. (1 lecture, 3 lab hours) (Former M E 117; M E 157)

162. Computer-Aided Design (3)
Prerequisite: M E 140. Design of mechanical components and systems through the use of computers. Design packages such as AUTOCAD and I-DEAS. Emphasis is on simulation, system interaction, product manufacturability, and appearance. Individual and group design projects with written and oral presentations required.

164. Machine Design (3)
Prerequisite: M E 116, 136, 154, 155; I E 182W, 160 (or concurrently). Open-ended design problems of complete machine systems. Integration of prerequisite course material into final design project. Satisfies the senior major requirement for the B.S. in Mechanical Engineering. (Two 3-hour lecture-labs)

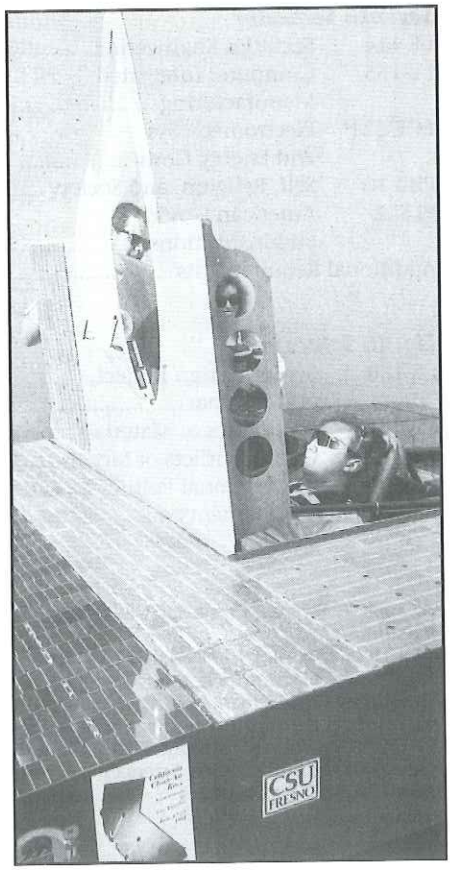
166. Energy Systems Design (3)
Prerequisite: M E 156; I E 182W. Design of conventional and alternative energy conversion systems; selection and integration of components of the system; use of codes and standards. Group project report required. Satisfies the senior major requirement for the B.S. in Mechanical Engineering.

180. Special Projects (2)
Prerequisite: senior standing in mechanical engineering, approved subject, I E 182W. 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*. Approved for ***SP*** grading.

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. ***CR/NC*** grading only.



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 Requirements

Industrial Engineering Major	***Units***
Major requirements	**63**
I E 75, 85, 90, 110, 111, 113, 114, 115, 127, 130, 160, 165, 180	(34)
C E 29 or M E 29, C E 121	(6)
ECE 70, 90, 90L, 121 (or 128)	(10)
M E 26, 31, 116, 118, 136	(13)
Additional requirements	**21**
Math 76, 77, 81	
Select at least one course from each of the following groups:	
Group A (Engineering Science): I E 112, 120	
Group B (Design): I E 145, 148, 155	
Group C (Administrative Science): I E 170; Mgt 104, 106; Psych 176	
General Education	**49**
CORE: Engl 1; Hist 11 or 12; Math 75; Pl Si 2 or 101: Spch 3, 7, or 8; I E 182W	(19)
BREADTH: Chem 1A; Phys 4A, 4AL, 4B, and 4C; Div. 2 (Bio. Proc.) 3 units: Biol 10 or 15 or Bot 10 or Zool 10; I E 125; Phil 10, 120; Pl Si 120	(30)
CAPSTONE: Satisfied by Phil 120 and Pl Si 120 from BREADTH	(0)
Total	**133**

Advising Notes

1. Courses in mathematics, the physical sciences, or engineering taken *CR/NC* are not counted toward fulfillment of degree requirements in industrial engineering.
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, 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 3A and 4 in lieu of Chem 1A. If needed, students also may go to the Developmental Learning Resource Center in the Keats Building and request tutorial assistance.

Recommended Program

First Semester		*Units*
I E 75	Intro to Industrial Engr	1
ECE 70	Engineering Computations Using C and Fortran	3
Chem 1A	General Chem and Qual Analysis	5
Hist 11/12	American History	3
Math 75	Mathematical Analysis I	4
		16

Second Semester		
I E 85	Computer Methods in Industrial Engineering	3
M E 26	Engineering Graphics	3
Engl 1	Composition	3
Math 76	Mathematical Analysis II	4
Phys 4A, L	Mechanics and Wave Motion	4
		17

Third Semester		
I E 110	Stat Anal in Engineering	3
C E/M E 29	Engineering Mechanics	3
M E 31	Engineering Materials	3
Math 77	Mathematical Analysis III	4
Phys 4B	Electricity, Magnetism and Heat	3
		16

Fourth Semester		
I E 90	Manufacturing Processes	3
I E 130	Production and Inventory Control	3
Math 81	Applied Analysis	4
Phys 4C	Modern Physics	3
Speech 3[1]	Fundamentals of Public Communication	3
		16

Fifth Semester		
I E 111	Work Measurement	3
I E 160	Engineering Economy	2
I E 182W	Engineering Writing	3
ECE 90, L	Principles of Electrical Circuits	4
Div. 2[2]	Biological Processes	3
		15

Sixth Semester		
I E 113	Operations Analysis	3
I E 115	Qual Contr and Reliability Engr	3
I E 125	Human Factors in Engr and Design	3
I E 127	Human Factors Engr Design Lab	1
M E 116	Fluid Mechanics	3
M E 118	Fluid Mechanics Lab	1
M E 136	Thermodynamics	3
		17

Seventh Semester		
I E 114	Facilities Engineering	3
I E 165	Computer Integrated Manufacturing	3
ECE 121[3]	Electromech Sys and Energy Conv	3
Phil 10	Self, Religion, and Society	3
Pl Si 2	American Gov't and Institutions	3
Additional Requirements[4]		3
		18

Eighth Semester		
I E 180	Senior Design Project and Seminar	3
C E 121	Mechanics of Materials	3
Phil 120	Cont Conflicts of Morals	3
Pl Si 120	International Politics	3
Additional Requirements[4]		6
		18

[1]or Spch 7, Persuasion, or Spch 8, Group Discussion.
[2]Biol 10 or 15 or Bot 10 or Zool 10.
[3]or ECE 128, Electronics I.
[4]Additional Requirements. Select a course from each group: Group A (Engineering Science): I E 112, 120. Group B (Design): I E 145, 148, 155. Group C (Administrative Science): I E 170; Mgt 104, 106; Psych 176.

COURSES

Industrial Engineering (I E)

10. Engineering Skills (2)
Provides engineering students with experience in solving problems and presenting solutions in a logical manner, introduces students to subject areas common to most engineering disciplines and develops basic skills for solving problems through an engineering approach. *CR/NC* grading only; not applicable toward baccalaureate degree requirements.

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)

85. Computer Methods in Industrial Engineering (3)
Prerequisite: Math 76 or concurrently. Application of existing microcomputer software and the development of new programs to solve frequently encountered problems in engineering practice. Includes programming in BASIC and "C" languages. (2 lecture, 3 lab hours)

90. Manufacturing Processes (3)
Prerequisite: M E 26, 31. Processing techniques, including casting, welding, forming, and machining; capabilities and limitations of these techniques. (2 lecture, 3 lab hours; field trips required)

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)
Prerequisite: I E 110 or concurrently. 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 85, 110. 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 85, 110, 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. (2 lecture, 3 lab hours)

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.

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, effects of noise, vibration, heat and illumination on human performance. General Education BREADTH, Division 4.

127. Human Factors Engineering Design Laboratory (1)
Prerequisite: I E 182W, I E 125 (or concurrently). Expands principles developed in the introductory human factors course for use in engineering design. (3 lab hours)

130. Production and Inventory Control (3)
Prerequisite: I E 85, 110. 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: I E 85 or permission of instructor. Study of fundamentals of manufacturing automated systems. Techniques and applications of computer to monitor and control industrial processes. Included topics are characteristics and applications of sensors and actuators, programming considerations, integration of CNC, CAD, CAM, etc. (2 lecture, 3 lab hours; field trips required)

148. Simulation of Industrial Systems (3)
Prerequisite: I E 110. 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)
Prerequisite: I E 85, 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. (2 lecture, 3 lab hours)

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.

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.

165. Computer-Integrated Manufacturing (3)
Review the role of computers in manufacturing automation. Evolution and implementation techniques. CIM perspective and integrating technology. Includes CAD/CAM, FMS, robotics, MRPII, MIS, etc. Economic and social impact of CIM. (2 lecture, 3 lab hours) (Former I E 191T section)

170. Engineering Management (3)
Prerequisite: junior standing. Study of modern management techniques in engineering. A systems approach to planning and controlling of product/production costing. The computational techniques and the behavioral aspects of management/engineering decision-making are considered.

180. Senior Design Project and Seminar (3)
Prerequisite: senior standing in industrial engineering or permission of instructor; approved subject; I E 182W or concurrently. A meaningful major design project which focuses on engineering practice and draws on past coursework, under the supervision of a faculty member. Final report and presentation is required, including evaluation of the design requirements, economic, and social considerations. Satisfies the senior major requirement for the B.S. in Industrial Engineering.

182W. Engineering Writing (3)
Prerequisite: Engl 1; junior standing. The use of critical thinking in the engineering problem-solving process and documentation of the process through letters, reports, and engineering specifications. The use of oral technical presentation techniques typical of the engineering practice. Meets the upper-division writing skills requirement for graduation.

190. Independent Study (1-3; max see reference)
See *Academic Placement — Independent Study*. Approved for ***SP*** grading.

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. ***CR/NC*** grading only.

English

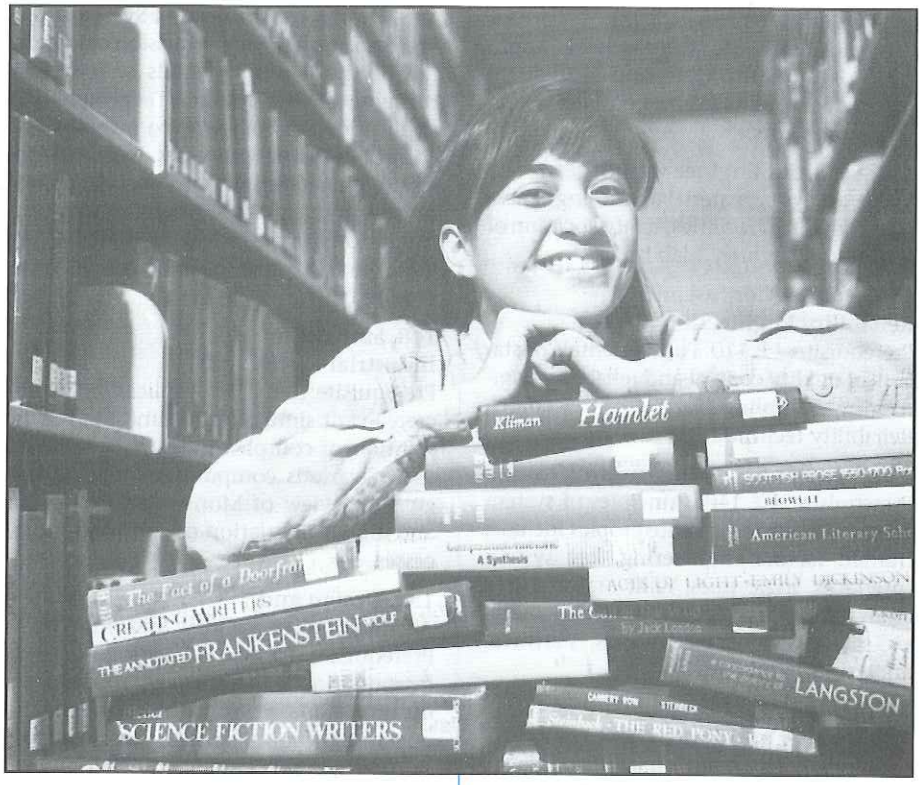
School of Arts and Humanities
Department of English
Craig Bernthal, *Chair*
Peters Business Building, Room 382
(209) 278-2553

B.A. in English
M.A. in English
Options:
Composition
Creative Writing
Literature
Nonfiction Prose
Minor in English
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 mythology and folklore, 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 with the credential coordinator each semester.



Faculty and Facilities

The English Department consists of 40 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 lecturers, part-time instructors and teaching assistants, 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 toward a degree, are placed in vocational positions requiring English skills. Job opportunities through this program have included 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

Craig Bernthal, *Chair*
Credential Coordinator: Linnea M. Alexander
Chair, Major Advising Committee: William H. Cowling

Cheng Lok Chua
Jacqueline Doyle
Lillian Faderman
James E. Frey
Magdalena Gilewicz
Susan Goodman
Corrinne Hales
Charles G. Hanzlicek
F. Andrew Hart
Laurel Hendrix
Christi Henson
Ruth Y. Jenkins
J. Lyn Johnson
John J. McDermott
H. Ray McKnight
Martin T. Paul
Jean E. Pickering
Stanley H. Poss
Judith A. Rosenthal
Reuben M. Sanchez Jr.
Joseph Satin
Andrew M. Simmons
Michael G. Tate
Clare-Marie Wall
James Walton
Lisa Weston
Liza Wieland
Steve Yarbrough
Eugene E. Zumwalt

Bachelor of Arts Degree Requirements

English Major — ***Units***

Major requirements **40**
Lower-division requirement:
Engl 20 ..... (4)
Approved upper-division English electives (see adviser) .. (24)
Upper-division requirement:
Engl 193T and/or 194T ..... (8)
Senior Project: Engl 195 ..... (4)
General Education **51**
Electives and remaining degree requirements **33-36***
(see *Degree Requirements*); may be used toward a dual major or minor
Total **124**

*This figure takes into consideration the fact that 3 units of Engl 20 may also be applied toward General Education BREADTH, Division 6.

Advising Notes

1. No course used to satisfy General Education CAPSTONE requirements or upper-division General Education 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* 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

Engl 189, 193T, or 194T 4
Other upper-division English courses 8
Other English courses (not including Engl 1) 8
Total **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 EHD 155A) ..... (1)
Engl 182 (taken concurrently with EHD 155B) ..... (1)
Engl 189 ..... (4)
Engl 193T or 194T ..... (4)
Ling 100 ..... (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, 250T, 261, 263, 265 ..... (4)
Ling 132 or 138 or Spch 140 or Drama 131 ..... (3)
Breadth Courses (choose the required number of units from each group): **15-17**
Engl 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; Ling 148; MCJ 107W; 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 (EHD 155B and 1 unit before beginning student teaching or concurrently with EHD 155A). CTET 161 must be completed before beginning student teaching (EHD 155B). It is normally offered only in the fall semester. For program planning consult the English Department's credential coordinator 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 GPA of 3.0 or better in their major and pass the verbal section of the GRE with a score of 500 or better.

(Foreign students must also score 600 or better on the TOEFL.) In the Literature and Composition options, the advanced GRE is required for diagnostic purposes only. 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.)*

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:

	Units
Engl 250T and/or 280T	12
Other courses in English (see specific requirements)	4
Engl 299 (Thesis)	2
Approved electives in English or other fields	12
Total	30

No more than 8 upper-division units will count toward the graduate degree.

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; 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
Engl 250T or 280T	8
Engl 261 and/or 263	8
Engl 299	2
Approved electives in English or other fields	12
Total	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.

Nonfiction Prose Option

	Units
Engl 250T and/or Engl 280T	8
Engl 265 (Expository Writing)	8
Engl 299 (Thesis)	2
Approved electives in English or other fields	12
Total	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.

Composition Option

Under the direction of a graduate adviser, each student prepares and submits a coherent program individually designed within the following framework:

	Units
Engl 250T	12
Engl 265	4
Engl 270	4
Engl 281	4
Ling 237 (Ling 132, 134, 135, or 146 may be substituted with prior approval by the department)	3
Engl 299 (Thesis — writing theory or pedagogy)	2
Engl 282	1
Total	30

Teaching Requirement. At some period before the completion of the M.A. degree composition option, the candidate must be engaged in teaching or coteaching a course with a strong writing component. While most candidates would be teaching in the English Department, other teaching assignments will apply with prior approval of the departmental graduate adviser.

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.

Certificate of Advanced Study in Composition

The certificate in composition is a course of study to accompany a M.A. in English.

Ling 237	3
Engl 270	4
Engl 281	4
Engl 282	1

Teaching Requirement. At some period before the completion of the Certificate in Composition, the candidate must be engaged in teaching or co-teaching a course with a strong writing component. While many candidates would be teaching in the English Department, other teaching assignments will apply with prior approval of the departmental graduate adviser.

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. Concurrent enrollment in English ARL may be required. 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. Approved for *SP* grading. *CR/NC* grading only; not applicable toward baccalaureate degree requirements.

ARL. Fundamental Writing Skills Lab (1-2; max total 2)
Laboratory for students who need individualized writing assignments and exercises. May be taken concurrently with English A. *CR/NC* grading only; not applicable toward baccalaureate degree requirements. (2-4 hours)

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; SAT-Verbal, 470 or above; CSU English Equivalency Examination, satis-

factory score; English Composition Examination of College Board Advanced Placement Program, 3, 4, or 5; ACT English Usage Test, 22 or above; College Board Achievement Test in English Composition with essay, 600 or above. Concurrent enrollment in Engl 1L may be required.

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. General Education CORE. (CAN ENGL 2)

(See *Credit by Examination* section for information on challenge to English 1.)

1L. Writing Skills Lab (1)
May be taken concurrently with Engl 1. Laboratory for students who need individualized writing assignments. *CR/NC* grading only. (2 hours)

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 only; not applicable toward baccalaureate degree requirements.

20. Introduction to Literature (4)
Prerequisite: Engl 1. Reading and close written analyses of short stories, novels, drama, and poetry. General Education BREADTH, Division 6. (CAN ENGL 4)

21. Critical Reading and Thinking (4)
Critical reading and written analyses of various kinds of writing. Practice in close analysis with attention to the adequacy and accuracy of evidence, the logical structure of argument and definition, common fallacies, persuasive and expressive language, and language as culture. General Education CORE, Critical Thinking.

30. Masterpieces (4)
Prerequisite: Engl 1. Discussion and written analyses of widely influential poetic, dramatic, and fictional works by British, American, and world authors, with special attention to the use, adequacy, and accuracy of evidence, logical structure of argument, common fallacies, and persuasive and expressive language. General Education CORE, Critical Thinking.

41. Poetry Writing (4)
Prerequisite: Engl 20. Beginning workshop in the writing of poetry; appropriate reading and analyses. General Education BREADTH, Division 4.

43. Fiction Writing (4)
Prerequisite: Engl 20. Beginning workshop in the writing of fiction; appropriate reading and analyses. General Education BREADTH, Division 4.

44. Prose Writing (4)
Prerequisite: Engl 1. Beginning workshop in forms of nonfiction prose writing: appropriate readings and analysis. Special attention to the use, adequacy, and accuracy of evidence, logical structure of argument, common fallacies, and persuasive and expressive language. General Education CORE, Critical Thinking.

50T. Studies in Literature (1-4; max total 8 if no topic repeated) (Same as W S 50T.) Prerequisite: Engl 1. Sections designated as emphasizing certain writers, types, or themes (for example, Shakespeare, The Poem, Literature of Protest, Women in Novels). Appropriate readings and analyses.

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. General Education BREADTH, Division 6.

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. General Education BREADTH, Division 6.

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. General Education BREADTH, Division 6.

105. Introduction to Literary Analysis (4)
The theory and practice of literary analysis. Examination of the concept of literary tradition; consideration of research methods; application of critical theory to textual analysis and the writing of literary criticism. Recommended for English majors.

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. General Education CAPSTONE Cluster course.

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. Noh drama, Lope de Vega, Erasmus, Montaigne, Castiglione. General Education CAPSTONE Cluster course.

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. General Education CAPSTONE Cluster course.

115W. Literature of the New Testament (3)
(See Phil 133W.) Meets upper-division writing skills requirement for graduation.

116. Literature of the Old Testament (4)
(See Phil 134.) General Education CAPSTONE Cluster course.

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. General Education CAPSTONE Cluster course.

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.

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 World War I (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 World War I to the present by such authors as Frost, Eliot, Anderson, Hemingway, O'Neill, Faulkner, Fitzgerald, Steinbeck, Stevens, Williams, and post-World War II 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-World War II 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 nonfiction 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. Mythology and Folklore (4)
Discussion and written analyses of the structure, content, and function of myth and folklore in world literature, with particular emphasis on the relationships among language, myth, and culture.

168T. Women and Literature (4; 12 units max of Engl 168T plus 169T toward English major) (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 (4; 12 units max of Engl 168T plus 169T toward English major; 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.

171. Biography and Autobiography (4)
Reading, discussion, and written analyses of selected biographical or autobiographical works, including such topics as literary biography, the autobiographical essay, memoirs, and issues of gender and ethnicity in biographical form. (Former Engl 183T section)

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. General Education CAPSTONE Cluster course.

175T. Lectures in Literature (1-4; max total 8 if no topic repeated)
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 if no topic repeated) (Same as W S 176T.) Discussion and close written analyses of selected topics, including such types as comedies, musicals, horror films, westerns, etc.

181. Literary Theory and Criticism (4)
A survey of literary theory, including Marxism, feminism, psychoanalysis, deconstruction, structuralism, and post-structuralism. Topics also include the history of literary criticism and the practice of interpretation. Discussion, lectures, written analyses.

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. ***CR/NC*** grading only.

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.

184. Chaucer (4)
Reading, discussion, and written analyses of the major works of Geoffrey Chaucer. (Former Engl 193T section)

185. English Internship Seminar (2)
Prerequisite: permission of instructor. Seminar to be taken concurrently with Engl 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.

186. Internship in English (2-6; max total 6)
Prerequisite: permission of instructor. No more than 2 units of 186 may apply to the English major. See also 185. Supervised work experience in public agencies and private industry to provide an opportunity to develop professional writing skills. Approved for *SP* grading. *CR/NC* grading only.

187. Milton (4)
Reading, discussion, and written analyses of the major works of John Milton. (Former Engl 193T section)

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*. Approved for *SP* grading.

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. English 193T should ordinarily not be taken until 3 upper-division courses in English have been completed.

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 Archetypes of Women. English 194T should ordinarily not be taken until 3 upper-division courses in English have been completed.

195. Senior Seminar in Literary Studies (4)
Prerequisite: senior standing; three upper-division English courses. Culminating experience in the study and analysis of literary themes and traditions, individual authors, criticism and theory, or film. Major paper required. Satisfies the senior major requirement for the B.A. in English. (Former Engl 193T section)

GRADUATE COURSES

(See *Course Numbering System.*)

English (Engl)

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.

270. Writing Workshop for Teachers (4)
Prerequisite: major or minor in English; permission of instructor. Workshop emphasizing writing theory. Study of current writing theory and pedagogical techniques will be integrated with discussions of writing produced during the course.

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).

281. Current Writing Theory (4)
Prerequisite: major or minor in English; permission of instructor. Designed to acquaint the student with current key issues in composition theory and the theoretical implications for course design and pedagogy.

282. Practicum in the Teaching of Writing (1)
Prerequisite: permission of instructor. Discussion of theoretical issues as they apply to the writing classroom. Normally taken concurrently with the composition option teaching requirement.

290. Independent Study (1-3; max see reference)
See *Academic Placement — Independent Study*. Approved for *SP* grading.

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. Approved for *SP* grading.

298. Project (2)
Prerequisite: See *Criteria for Thesis and Project*. 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. Approved for *SP* grading.

299. Thesis (2-6; max total 6)
Prerequisite: See *Criteria for Thesis and Project*. Preparation, completion, and submission of an acceptable thesis for the master's degree. Approved for *SP* grading.

IN-SERVICE COURSE

(See *Course Numbering System.*)

English (Engl)

300. English Colloquium (2; max total 6)
Credit is not applicable to degrees or major requirements in credentials. Prerequisite: teaching experience. Problems in composition, literature, or linguistics in relation to teaching.

Ethnic Studies

School of Social Sciences
Ethnic Studies Program
(*African American Studies, American Indian Studies*)
LILY B. SMALL, *Coordinator*
McKee Fisk Building, Room 243
(209) 278-2832

Minor in African American Studies
Minor in Ethnic 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 African American Studies and American Indian 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.

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 (e.g., African American Studies and Sociology).

The minor in Ethnic Studies or African American Studies offers students an excellent opportunity to gain an academic background of the major minority groups in America. In making career choices, students should find their academic credentials much more marketable when one of these minors is combined with their chosen major.

African American Studies

African American Studies represents a field of study and research based on vigorously innovative educational processes. The courses offered are interdisciplinary in nature and address issues that pertain to minorities in the American society. The program is structured to provide better service to the student population at CSU Fresno. This includes the historical contributions and the sociological, psychological, and economic problems that confront African Americans in the American society.

This program establishes concepts and tools for the survival of African American people and presents to all university students the understanding of the uniqueness of African American heritage, culture, and lifestyles. The philosophy and academic curriculum of the African American Studies Program were developed through a special relationship (mutual understanding and cohesiveness) established between the communities, students, and its faculty.

The African American Studies Program includes 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 program sponsors and supports various student organizations, e.g., Black Students' Business Association, Pan-African Student Union, 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 African American Studies Research Center is an ancillary unit housed within the African American Studies Program. The major objective of the research component is to provide a forum for a wide range of research on the African/African American experience. In doing so, it creates an open dialogue in which academics can interact to sustain and support a creative atmosphere for scholarly inquiry.

American Indian Studies

American Indian Studies is a discipline within ethnic studies, focusing on the indigenous cultures of ancient, historical, and contemporary America. American Indian cultures include American Indians and Arctic-Native people, as well as natives 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 are discussed within an interdisciplinary framework.

This program is intended to strengthen the position of American Indian individuals and communities in this region, as well as provide help to American Indian students and scholars. A second focus introduces native cultures and issues to all students. Courses include both the social sciences and the humanities, as well as specialized offerings in such fields as law and education.

Faculty

Lily B. Small, *Coordinator*

Delores J. Huff
Robert S. Mikell
James H. Rogers
Malik Simba

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 (Asian American Studies, African American Studies, Chicano and Latin American Studies, and American Indian Studies)	9
Approved Asian American Studies, African American Studies, Chicano and Latin American Studies, and American Indian Studies electives from one of the areas not used above	6
Total	21

A student intending to pursue a Minor in Ethnic Studies should see the coordinator for assignment to a faculty adviser who assists the student in planning his or her program.

African American Studies Minor

	Units
Eth S 1 or 2	3-6
Approved African American Studies career-oriented courses (upper division)	9
Approved African American Studies electives	6-9
Total	21

Note: For students interested in the general dimensions of the African American experience, the following courses are recommended:

Af Am 27, 36, 38, 130T, 135, 137, 140

For students interested in the following careers, the following courses are recommended:

Education: Af Am 38, 42, 110, 124, 130T, 135
Performing Arts: Af Am 21, 24, 27, 35, 121, 130T, 144, 189
Business: Af Am 38, 130T, 135, 136, 189, 190
Preprofessional (nursing, criminology, prelaw, etc.): Af Am 56, 130T, 135, 142, 144, 146, 189, 190
Writing: Af Am 15, 25, 127, 190
Social Sciences: Af Am 27, 38, 135, 140, 178, 189

Asian American Studies Minor

(See *Asian American Studies* in *Courses and Programs* section.)

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. General Education BREADTH, Division 9.

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.

104W. American Poverty (3)
Prerequisite: Engl 1, Af Am 25, or Eth S 1, and upper-division standing. Analysis of poverty in America. Students will receive guidance and criticism in preparing papers on poverty issues. Emphasis on research techniques, evaluation of evidence, documentation, bibliography, organization, style and mechanics of writing. Meets the upper-division writing skills requirement for graduation. (Former Eth S 4; Eth S 104)

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.

African American (Af Am)

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. (Former Bl S 15)

21 and 121. Black Gospel Choir (1; max total 8)
Performance of a variety of inspirational songs reflecting the African American cultural experience. Participation through rehearsals, activities, programs, and field trips. (Former Bl S 21 and 121)

24. African American Music (3)
The origin and evolution of African American music from the perspective of social and cultural history. Emphasis on slave songs, gospel, jazz, rhythm and blues, and soul music. General Education BREADTH, Division 5. (Former Bl S 24)

25. African American Literature (3)
Major authors, their works, themes, and movements in African American literature in America from colonial times to the present. General Education BREADTH, Division 9. (Former Bl S 25)

27. Introduction to African American Culture and Image (3)
Introduction to the social experience of African Americans in American life and to various images of that experience which have developed historically. General Education BREADTH, Division 9. (Former Bl S 27)

35. Art and Music of Africa (3)
Comprehensive study of African artistry and music. (Former Bl S 35)

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 African Americans to Africa. (Former Bl S 36)

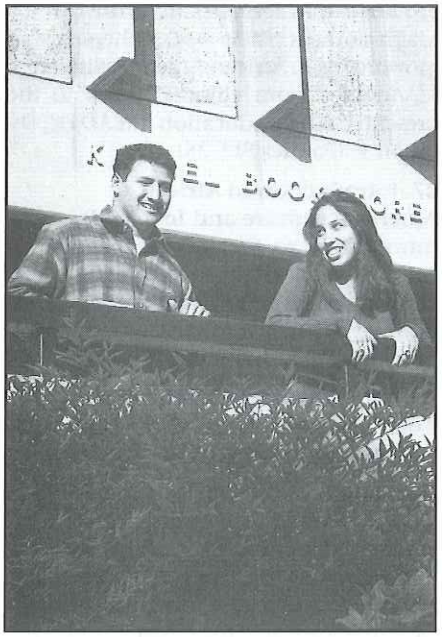
38. African American Sociology (3)
Basic principles sociology from the perspective of the African American experience. General Education BREADTH, Division 9. (Former Bl S 38)

40. Freshman Seminar for Minority Students (3)
Open to freshmen and transfer students. Designed to further student development in such areas as study skills, writing, oral presentations, and interaction with other students and faculty. Students are assigned a faculty mentor. (Former Af Am 50T section)

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 African Americans. (Former Bl S 42)

50T. Topics in African American Studies (1-3; max total 9)
Selected topics at the introductory level in African American Studies.

56. The African American Family (3)
Deals with the origin, development, and adaptations the African American family has created to sustain itself as a viable institution. Emphasis is on problems encountered and created by the American society and how the African American family handles these adversities. (Former Bl S 56)



60. Introduction to African American Theatre (3)
Study and practice in performance of African American drama and oral interpretation projects. Class will include poetry reading; dance performances; dramatic interpretations; comedic sketches. Previous experience not required. (Former Bl S 60)

92. African American Cuisine (1)
A cultural examination of the origin of soul food. Sociocultural emphasis upon food gathering and preparation, consumption of all-purpose hog and health considerations, and nutritional value of the soul food diet. Demonstrations and experimentation with gumbo, red beans and rice, collard greens, hot water cornbread, and sweet potato pie. (Course fee, $10) (Former Af Am 130T section)

93. Rap Music Genre (1)
Sociopolitical examination of rap music and its influence as a social movement. Emphasis on the lyrical presentation and the various styles of rap music such as hard core, social, afrocentric, regga-muffin, and commercial. Format includes lectures, videos, and live performances. (Former Af Am 130T section)

100A. African Dance (3)
Focuses on the history of African dance in the United States, uses of dance among Africans/African Americans. Activities include dance techniques; imagery/visualization, dance exercises; simple constructive rest techniques; African dance step techniques preparatory for advance class. (2 lecture, 2 activity hours) (Former Af Am 130T section)

100B. African Dance (3)
Prerequisite: 100A or permission of instructor. Teaches advance space orientation, advance imagery/visualization techniques; advance constructive rest; central/alignment; dance philosophy of Laban; choreography; specific African dances and dance performances. (6 lab hours)

110. The Educational System and the African American Community (3)
The effects of the educational system on African Americans. Analysis of the economical, sociological, and political foundations of education as they are related to African Americans. (Former Bl S 110)

124. The African American Experience in Children's Literature (3)
A survey of selected material: Children's books, tapes, cassettes; dealing with the African American experience in children's literature. (Former Bl S 124)

127. African American Creative Writers' Workshop (3)
An intensive reading and writing workshop in the African American experience. Selections and discussions from major literary artists, including: Hughes, Baldwin, Giovanni, Brooks, Ellison, Angelou, Gaines, and others. Students are required to write expository essays analyzing literature, poems, and short stories. (Former Bl S 127)

129. African American Literary Classics (3)
An intensive analysis of selected classical narratives in African American literature and culture. (Former Bl S 129)

130T. Topics in African American Studies (1-3; max total 9)
Major social problems confronting African Americans in America today; emphasis on welfare, education, legal systems, religious institutions, and economic institutions; effect on the African American segment of the population. (Former Bl S 130T)

135. The African American Community (3)
Analysis of the various lifestyles and cultural patterns of the African American community and spatial ghetto areas. Emphasis on unique cultural features of the family, religion, foods, music, art, and folkways. General Education CAPSTONE Cluster course. (Former Bl S 135)

136. African American Business Economic Development in the United States (3)
Introduction to African American business enterprises with special emphasis on the analysis and developments of African American business from early slave trade to present day. Relationship of economic forces to historical, political, and social change pertaining to African Americans. (Former Bl S 136)

137. African American Women (3)
(Same as W S 137.) An overview of the accomplishments of African American women in the United States; their contributions to American culture; African influence; African American women as defined by a dominant society vs. legitimate definition designed to encourage a

positive self-concept. General Education CAPSTONE Cluster course. (Former Bl S 137)

140. The African American Church (3)
History of the formation and development of African American religious institutions (Christianity, Islam, Judaism) in the African American community; their effect on the African American personality. (Former Bl S 140)

141. African American Health Care (3)
Investigation and analysis of major health problems and delivery services in the African American Community. (Former Bl S 141)

142. African American Child Rearing (3)
Specific and unique issues facing African American parents as their children journey through the development process. (Former Bl S 142)

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 African American/white race relations. General Education BREADTH, Division 9. (Former Bl S 144)

145. Life and Times of Martin Luther King Jr. (3)
Explores Dr. King's leadership in the nonviolent movement for racial equality and human dignity, from the Montgomery Bus Boycott to King's assassination (1955-68). Emphasis on philosophy, ideology. Format: lectures, films, slides, recorded speeches, and discussion. (Former Bl S 145)

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 equal employment and education, criminal justice, and political power. (Former Bl S 146)

150. South Africa (3)
An introductory analysis of the social, racial, political, and economic problems of people of South Africa, both past and present. (Former Bl S 130T section)

165. Advanced African American Theatre (3)
For students previously enrolled in Af Am 60. Advanced production and performance in the African American Theatre. (Former Bl S 165)

178. History of African Americans (3) (Same as Hist 178.) Evolution of African American 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 African American way of life. General Education BREADTH, Division 9 (Former Bl S 178)

189. Fieldwork in Community Relations (3; max total 6)
Supervised field observation, participation, and documentation in the operation of minority communities. (Former Bl S 189)

190. Independent Study (1-3; max see reference)
See *Academic Placement — Independent Study*. Approved for ***SP*** grading. (Former Bl S 190)

191. History of Allensworth (1)
An examination of the historical development of the African American town of Allensworth from its status as a town to its existence as a state historic park. Students will be exposed to various academic disciplines through lectures and a field trip to the park. (Former Af Am 130T section)

195. Diversity in the United States: Race and Gender Issues (3)
(See *CLS 195.*) (Former Eth S 195)

American Indian Studies (A I S)

5. American Indian History (3)
An interpretive survey of American Indian history from the native point of view including accounts of American Indian origin and the arrival of immigrants from Asia, Africa, and Europe. (Former N A S 5)

9T. Topics in American Indian Studies (1-3; max total 9 if no area repeated)
Selected topics at an introductory level in American Indian Studies. (Former N A S 9T)

50. Contemporary Life of the American Indian (3)
Current problems of American Indians and Arctic Natives resulting from culture conflict, acculturation, minority status, and governmental policy. General Education BREADTH, Division 9. (Former N A S 50)

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. (Former N A S 60T)

100. American Indian Religion (3)
American Indian 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. General Education CAPSTONE Cluster course. (Former N A S 100)

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. (Former N A S 101)

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. General Education BREADTH, Division 9. (Former N A S 103)

160. The Politics of Indian Education (3)
This seminar examines the interaction of politics, culture, and education, using case studies of federal financing of Indian education in the mission, Bureau of Indian Affairs, tribal, and public school systems. (Former N A S 60T section)

190. Independent Study (1-3; max see reference)
See *Academic Placement — Independent Study*. Approved for ***SP*** grading. (Former N A S 190)

195. Diversity in the United States: Race and Gender Issues (3)
(See *CLS 195.*) (Former Eth S 195)

"I have a new perspective of my life, the United States and the world."

Karen Wrigley
after participating in the university's China Semester

Foreign Languages and Literatures

School of Arts and Humanities
Department of Foreign Languages and Literatures
MAURICE C. GENDRON, *Chair*
San Ramon 4, Room 131
(209) 278-2386

B.A. in French
B.A. in German
B.A. in Russian
B.A. in Spanish
M.A. in Spanish
Minor in Classical Studies
Minor in French
Minor in German
Minor in Russian
Minor in Spanish
Single Subject Teaching Credential in French, German, Russian, and Spanish

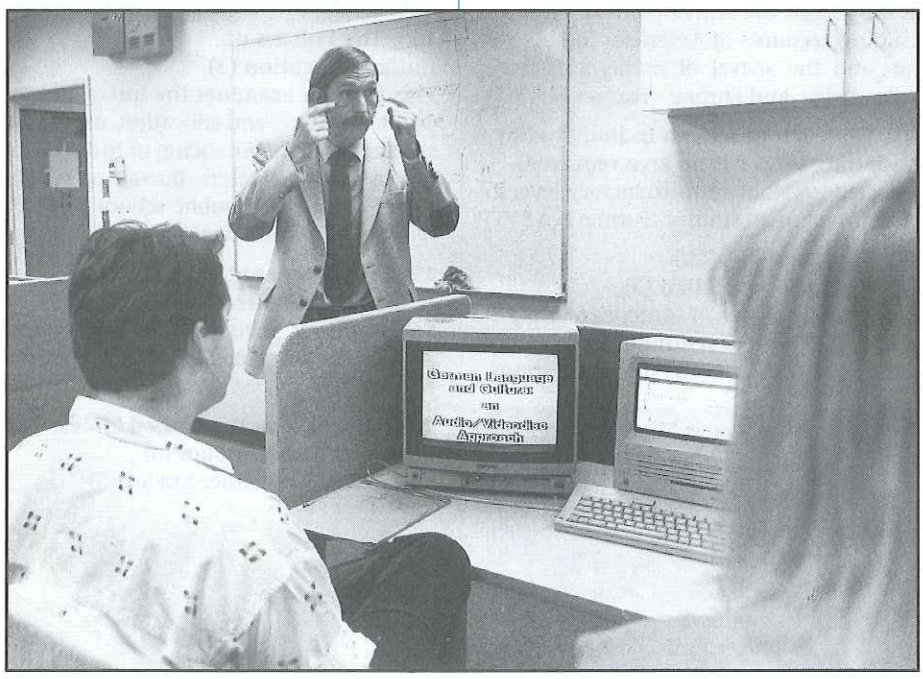
Because of increasing mobility in our modern world, it takes no time at all to travel to places where people speak a language other than English. Even in California scarcely a day goes by that you do not hear people conversing in a foreign language. If you visit or go to work in another country you will 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 and Literatures 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. 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, Russian, 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 Classical Studies with areas of interest in Latin, Greek, or Classics.

The Department of Foreign Languages and Literatures 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)*.

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 department office 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

Maurice C. Gendron, *Chair*
John M. Barta, Graduate Adviser
G. Ronald Freeman, Graduate Adviser
Adriana Slaniceanu, Graduate Adviser
Jacinta R. Amaral (Spanish)
John M. Barta (Portuguese, Spanish)
Luis F. Costa (Spanish)
David G. Engle (German)
G. Ronald Freeman (Spanish)
Maurice C. Gendron (French, Italian)
June M. Gill (French)
Victor D. Hanson (Classics)
Rose Marie Kuhn (French)
Margarita Lopez-Urrutia (Italian, Spanish)
David A. Ross (French)
Ignacio B. Santesteban (Spanish)
Keith E. Sauer (Spanish)
Adriana N. Slaniceanu (Italian, Spanish)
Bruce S. Thornton (Classics)
Pamela L. Vaughn (Classics)
Cosme M. Zaragoza (Spanish)

Credit Allowance in Foreign Language

Students who have taken one year of a foreign language in high school may not receive credit for a 1A course in that language. Students who have had two years of a foreign language in high school may not receive credit for a 1B course in that language. Students who have had three years of a foreign language in high school may not receive credit for a 2A course in that language. (Classical Greek and Latin excluded.)

Credit by Examination. Students who have taken one or more years of a language in high school may not challenge a 1A course in that language. Students who have taken two or more years of a language in high school may not challenge a 1B course in that language. Students who have taken three 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 6 and 7 are applicable to the General Education requirement: Division 6, Armenian 148; French 109, 148; Greek 148; German 148; Italian 148; Latin 148; Russian 148; Spanish 140, 142, 146. Division 7: Armenian 1A, 1B, 2A, 2B; French 1A, 1B, 2A, 2B; German 1A, 1B, 2A, 2B; Greek 1A, 1B; Italian 1A, 1B, 2A, 2B; Latin 1A, 1B; Portuguese 1A, 1B; Russian 1A, 1B, 2A, 2B; Spanish 1A, 1B, 2A, 2B, 4A, 4B. (See also *Department of Linguistics*.)

Bachelor of Arts Degree Requirements

French Major — ***Units***

Major requirements 32-46
(see Notes 1, 2, and 3 below)
Lower division: Fren 1A, 1B; select two: Fren 2A, 2B, 4, 5 (see Notes 3 and 4) ..... (14)
Upper division
Fren 101, 102, 109, 170 ..... (11)
Select three: Fren 110, 111, 112, 113 ..... (9)
Select four: Fren 120T, 132, 148, 149, 150, 160T (see Notes 4 and 5) ..... (12)
General Education 51
(see Notes 2 and 5)
Electives 27-47*
including other lower- and upper-division French courses, and remaining degree requirements (see *Degree Requirements*) may be used toward a dual major or a minor
Total 124

*This figure takes into consideration the fact that a maximum of two General Education BREADTH courses (6 units) from one department may be applied to satisfy French major requirements (see *General Education*). These courses may be selected from French 1A, 1B, 2A, 2B, and 109 in General Education BREADTH Divisions 6 and 7. Consult a French major faculty adviser for details.

Advising 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*), 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, 2A, 2B, 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***

Major requirements 32-46
(see Notes 1, 2, and 3)
Lower division: Germ 1A, 1B, 2A, 2B (see Note 2) ..... (14)
Upper division
Language and Culture
Germ 101 (twice), 103T, 150 ... (12)
Literature
Select four: Germ 112, 114, 116, 118A, 118B ..... (12)
German electives
Select two: Germ 103T, 137, 148, 150, 160T, 190 (see Note 3) ..... (6)
Germ 170 ..... (2)
General Education 51
Electives 27-47*
including other lower- and upper-division German courses, and remaining degree requirements (see *Degree Requirements*) may be used toward a dual major or a minor; see your German adviser for suggestions and details
Total 124

*This figure takes into consideration the fact that a maximum of two General Education BREADTH courses (6 units) from one department may be applied to satisfy German major requirements (see *General Education*). These courses may be selected from German 1A, 1B, 2A, 2B, and 148 in General Education BREADTH Divisions 6 and 7. Consult a German major faculty adviser for details.

Advising Notes

1. *CR/NC* grading is not permitted for courses in the German major.
2. 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.*) German majors who are able to enroll immediately in German 1B, 2A, 2B, or in an upper-division German course are not required to make up the lower-division units waived.

3. Only 3 units of literature courses in English translation may be applied to the German major. German 103T may only be repeated for credit toward the major if the topic has been changed; it may only count once toward the Single Subject Waiver Program in German. German 150 may be taken twice for credit toward the German major and the Single Subject Waiver Program in German.

Russian Major	***Units***
Major requirements	26-39
(see Notes 1 and 2)	
Lower division: Russ 1A, 1B, 2A, 2B (see Note 2)	(16)
Upper division	
Russ 101 (9 units), 118A, 118B	(15)
Russ 110, 148	(6)
Russ 170	(2)
General Education	51
Electives	34-50*
including other lower- and upper-division Russian courses, and remaining degree requirements (see *Degree Requirements*) may be used toward a dual major or a minor	
Total	124

*This figure takes into consideration the fact that 3 units of Russian 1A, 1B, or 2A, 2B may also be applied to General Education BREADTH Division 7 (see *General Education*). Consult a Russian major faculty adviser for details.

Advising Notes

1. *CR/NC* grading is not permitted for courses in the Russian major.
2. 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.*) 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***
Major requirements	36-50
(see Notes 1, 2, and 3)	
Lower division: Span 1A, 1B, 2A, 2B, 3, 4A, 4B, 5 (see Note 3)	(14)
Upper division	
Span 118 or 120, 122, 140, 142, 143, 170	(18)
Elect from 145, 147, 148T, 149, 150	(6)
Electives (exclude Span 110T)	(12)
General Education	51
(see Note 2)	
Electives	23-37*
remaining degree requirements and electives including units to be used toward a dual major or a minor	
Total	124

*This figure takes into consideration the fact that a maximum of two General Education BREADTH courses (6 units) from one department may be applied to satisfy Spanish major requirements (see *General Education*). These courses may be selected from Spanish 1A, 1B, 2A, 2B, 4A, 4B, 140, and 142 in General Education BREADTH Divisions 6 and 7. Consult a Spanish major faculty adviser for details.

Advising Notes

1. *CR/NC* grading is not permitted for courses in the Spanish major except for those taken Credit by Examination.
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.
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 lower-division courses, if any, may be waived. (Also see *Credit Allowance in Foreign Language.*) Spanish majors who are able to enroll immediately in Spanish 1B, 2A, 2B, 3, 4A, 4B, 5 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 21-24 units. Consult a departmental adviser for planning your program.

Armenian Studies

A minor with strong language concentration is offered under Armenian Studies.

Classical Studies

The 24-unit Classical Studies Minor allows for three areas of interest: Classics (Greek and Latin), Greek, and Latin. (See *Classical Studies.*)

French	***Units***
Lower-division courses	6-9
Upper-division courses	12-15
	21

German	
Germ 2A, 2B	0-6
Germ 101	3
Germ 50 or 150	3
German electives, upper division including at least one course in the series 112, 114, 116, 118A, 118B	9-15
	21

Russian	
Russ 1A, 1B, 2A, 2B	16
Russ 101	6
	22

Spanish	
Elect from Span 2A, 2B, 3, 4A, 4B, 5	0-9
Spanish electives, upper division	12-21
	21

Students interested in careers in translation are advised to take the following courses: Spanish 115 and 116. Those interested in interpreting should contact the department.

Credential Program

For Bilingual/Cross-Cultural Language and Academic Development Credentials, see *Education — Literacy and Early Education Department.*

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 (twice), 103T, 137, 150; four courses selected from Germ 112, 114, 116, 118A, 118B; plus 6 additional upper-division units selected from Germ 150 (a second time), 160T, 190.

The Single Subject Waiver Program in Russian consists of Russ 101 (9 units), 102, 103T (9 units), 110, 118A, 118B. 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, 139, 142, 143, 145, 147, 150.

Graduate Program

Within the Department of Foreign Languages and Literatures, the Master of Arts degree is available only in Spanish. Students interested in graduate study in French and German should refer to the options under the Master of Arts degree in Linguistics.

The Master of Arts degree program in Spanish language and literature serves several categories of students: those anticipating doctoral studies, those teaching or preparing to teach in high school and community college, and those interested in further study beyond the baccalaureate degree. For specific requirements, consult the departmental graduate committee chair. For general requirements, see *Division of Graduate Studies*.

Master of Arts in Spanish

The Master of Arts degree in Spanish is awarded upon satisfactory completion of a 30-unit program of study. For the culminating experience, students may select either a thesis/project or comprehensive examination.

Program Prerequisites. Admission to the M.A. degree program in Spanish requires a minimum 3.0 GPA and assumes an undergraduate major in Spanish but is open to others with a bachelor's degree who show intellectual promise and ability to perform at a satisfactory level during their graduate studies. Students lacking the B.A. in Spanish will be required to make up deficiencies prior to acceptance into the M.A. program.

(See also *Admission to Graduate Standing, Advancement to Candidacy, Program Requirements,* and *Criteria for Thesis and Project.*)

Admission Prerequisites. When making application for admission to the program, students must submit a copy of their GRE scores.

Program Requirements. In order to achieve classified standing, students must demonstrate an acceptable level of competence in Spanish by passing a written departmental examination. In addition, under the direction of the graduate adviser, students prepare a coherent program that will best meet their professional needs, within one of the following frameworks. Each student's program of study *must include at least 24 units of 200-level work.*

Thesis/Project Plan	***Units***
Graduate seminars in Spanish	18-24
Independent Study (Span 290)	0-6
Span 298 and/or 299	6
Electives	0-6
Elect from Span 137, 139, 142, 143, 145, 147, 148T, 149, 150	
Approved elective in related fields	0-3
Total	30

Comprehensive Examination Plan	
Graduate seminars in Spanish	18-30
Independent Study (Span 290)	0-6
Electives	0-6
Elect from Span 142, 143, 145, 147, 148T, 149, 150	
Approved elective in related fields	0-3
Total	30

Specific Requirements. The following areas must be covered by graduate or undergraduate courses and may be satisfied in undergraduate preparation: Peninsular Spanish literature (two courses including Span 142), Latin American literature (two courses including Span 143), Hispanic linguistics (one course).

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

For Chinese, Hebrew, Hmong, Japanese, and Sanskrit course listings, see *Linguistics Department.*

Armenian (Arm)

1A. Elementary Armenian (4)
Beginning course in conversational and written Armenian. Not open to students with one or more years of high school Armenian credit. General Education BREADTH, Division 7.

1B. Elementary Armenian (4)
Prerequisite: Arm 1A or permission of instructor. Second semester course in conversational and written Armenian. Not open to those with two or more years of high school Armenian credit. General Education BREADTH, Division 7.

2A. Intermediate Armenian (4)
Prerequisite: Arm 1A and 1B or permission of instructor. Review of grammar and emphasis on conversation and reading. General Education BREADTH, Division 7.

2B. Intermediate Armenian (4)
Prerequisite: Arm 2A or permission of instructor. Advanced conversation, composition, and reading. General Education BREADTH, Division 7.

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.

148. Masterpieces of Armenian Literature (3)
Literary masterpieces of Armenian Literature read and studied in English translation. May include works by Naregatsi, Toumanian, Charentz, Zarian, Siamanto, Varoujean, and other important literary figures. General Education BREADTH, Division 6. (Former Arm S 50T section)

190. Independent Study (1-3; max see reference)
See *Academic Placement — Independent Study*. Approved for ***SP*** grading.

Foreign Language (F L)

10. Critical Thinking: A Literary Approach (3)
Introduction to critical thinking concepts (structuring an argument, avoiding common fallacies, distinguishing fact from belief, etc.) as manifested in European literature since the Renaissance. Also, application of tools of critical analysis to talking and writing about literature. Taught in English. General Education CORE, Critical Thinking.

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.

190. Independent Study (1-3; max see reference)
See *Academic Placement — Independent Study*. Approved for ***SP*** grading.

French (Fren)

1A. Elementary French (4)
Beginning course in conversational and written French. Not open to students with one year or more of high school French credit. General Education BREADTH, Division 7.

1B. Elementary French (4)
Prerequisite: Fren 1A or permission of instructor. Second semester course in conversational and written French. Not open to those with two years or more of high school French credit. General Education BREADTH, Division 7.

2A. French for Communication (3)
Prerequisite: Fren 1B or equivalent. Second year course that emphasizes speaking and reading, and a review of basic French grammar. General Education BREADTH, Division 7. (Former Fren 2)

2B. French for Communication (3)
Prerequisite: Fren 2A or equivalent. Second year course that emphasizes speaking and reading skills. General Education BREADTH, Division 7. (Former Fren 3)

4. Reading and Writing (3)
Prerequisite: Fren 2B or equivalent. Opportunity to increase reading and writing skills in preparation for upper-division coursework in French.

5. Conversation (3; max total 6)
Prerequisite: Fren 2A or equivalent. May be taken concurrently with Fren 2A or 4. Development of listening and speaking skills. Exclusive use of French in an informal class atmosphere. Conversations on assigned topics, extemporaneous discussions.

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. (Fall semester)

102. Translation (3)
Prerequisite: Fren 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. (Spring semester)

120T. Topics in French Civilization (3; max total 6 if no topic repeated)
Prerequisite: Fren 101 or permission of instructor. 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: Fren 101 or 102. 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: Fren 4 or permission of instructor. Intellectual background of major literary movements and representative authors from the earliest period to the present. Selected readings. Taught in French. General Education BREADTH, Division 6. (Fall semester)

110. French Theater (3)
Prerequisite: Fren 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: Fren 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").

148. Masterpieces of French Literature (3)
Literary masterpieces of French literature read and studied in English translation. May include works by Moliere, Voltaire, Balzac, Hugo, Camus, and other important literary figures. General Education BREADTH, Division 6. (Former Fren 147)

149. Voices of Africa (3)
Study of representative works by such writers as Achebe, Senghor, and Mphahlele which reveal the attitudes of modern Africans toward their land, their traditions, and their encounter with the 20th century world. Course taught in English. General Education CAPSTONE Cluster course.

160T. Selected Topics in French Studies (1-3; max total 6 if no topic repeated)
Prerequisite: Fren 101 or permission of instructor. Topics chosen from French literature (genre, themes, movements), from French linguistics (History of the Language; Contrastive Analysis: English/French), or French Culture and Civilization.

170. Senior Seminar in French Studies (2)
Prerequisite: senior standing, permission of instructor, concurrent enrollment in another upper-division French course. Culminating experience integrating the student's critical thinking abilities with in-depth knowledge of French language, literature, culture. Students produce a project requiring extensive research and final written report. Satisfies the senior major requirement for the B.A. in French.

190. Independent Study (1-3; max see reference)
See *Academic Placement — Independent Study*. Approved for ***SP*** grading.

GRADUATE COURSES

(See *Course Numbering System.*)

French (Fren)

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. Approved for ***SP*** grading.

290. Independent Study (3; max total 6)
See *Academic Placement — Independent Study*. Approved for ***SP*** grading.

299. Thesis (2-6; max total 6)
Prerequisite: See *Criteria for Thesis and Project*. Preparation, completion, and submission of an acceptable thesis for the master's degree. Approved for ***SP*** grading.

COURSES

German (Germ)

1A. Elementary German (4)
Beginning course in conversational and written German. Not open to students with one year or more of high school German credit. General Education BREADTH, Division 7.

1B. Elementary German (4)
Prerequisite: Germ 1A or permission of instructor. Second semester course in conversational and written German. Not open to those with two years or more of high school German credit. General Education BREADTH, Division 7.

2A. Intermediate German (3)
Prerequisite: Germ 1B or permission of instructor. Third semester course emphasizing reading, conversation, writing, and the linguistic mastering of varied situations. General review of grammar and syntax. General Education BREADTH, Division 7.

2B. Intermediate German (3)
Prerequisite: Germ 2A or permission of instructor. Fourth semester course emphasizing reading, conversation, writing, and general linguistic competence. General review of grammar and syntax. May be taken concurrently with Germ 50 or 150. General Education BREADTH, Division 7.

8T. Selected Topics in German (1; max total 2)
Prerequisite: Germ 1A or permission of instructor. Language experience outside classroom stressed in oral topics. Problem vocabulary and grammar topics. *CR/NC* grading only.

50. Conversation (3; max total 6)
Prerequisite: Germ 2B or concurrently or permission of instructor. Conversation on prepared topics, brief talks by students, short scenes from plays, sharpening of listening skills and oral expression. Preparation for "survival" in German speaking countries. (Spring semester)

AREA I: Language and Culture

101. Composition (3; max total 6)
Prerequisite: Germ 2B or permission of instructor. Development of written expression through intensive practice, vocabulary building, grammar and syntax review, cooperative work on improving composition, analysis of varying styles. To be taken twice for the major. (Fall semester)

103T. German Culture and Civilization (3; max total 6 if no topic repeated)
Studies in principal aspects of German (also Austrian and Swiss) history, thought, customs, institutions, film, arts, music, folklore, contemporary life; influence on Western civilization. Taught in English.

150. Advanced Conversation (3; max total 6)
Prerequisite: Germ 2B or concurrently or permission of instructor. Intensive practice in advanced oral German to cultivate ease within a number of speech situations. Emphasis on current affairs in Germany, Austria, and Switzerland. (Spring semester)

AREA II: Literature

112. German Literature to 1750 (3)
Prerequisite: Germ 2B or permission of instructor. In-depth studies of German literature prior to 1750: Medieval, Renaissance, Reformation, Baroque, Enlightenment; including such authors as Wolfram, Walther von der Vogelweide, Luther, Grimmelshausen. Critical analysis of texts, lecture, discussion, student reports.

114. German Literature through the Classical Age (3)
Prerequisite: Germ 2B or permission of instructor. From the beginnings to Goethe's death in 1832, concentrating on the Classical Age (Lessing, Schiller, Goethe). Critical analysis of texts, lecture, discussion, student reports.

116. Nineteenth Century Literature (3)
Prerequisite: Germ 2B or permission of instructor. Investigates major 19th century authors such as Brentano, Tieck, Hoffmann, Büchner, Stifter, Keller, Raabe, Fontane. Critical analysis of texts, lecture, discussion, student reports.

118A. Modern Literature: 1890-1945 (3)
Prerequisite: Germ 2B or permission of instructor. Investigates Classical Modernity (1890-World War II), including such authors as Kafka, Rilke, Mann, Brecht, Musil. Critical analysis of texts, lecture, discussion, student reports.

118B. Contemporary Literature: 1945-present (3)
Prerequisite: Germ 2B or permission of instructor. Investigates the Postmodern Age (World War II to the present), including such author as Grass, Böll, Frisch, Handke, Bernhard, Wolf. Critical analysis of texts, lecture, discussion, student reports.

148. Masterpieces of Germanic Literature (3)
Masterpieces of German, Austrian, Swiss, and Scandinavian literature read and studied in English translation. May include works by Goethe, Kafka, Mann, Brecht, Strindberg and other important literary figures. General Education BREADTH, Division 6. (Former Germ 146T section)

160T. Topics in German Studies (1-3; max total 12 if no topic repeated)
Intensive analysis, discussion, and evaluation of significant facets of German life through the study of specific movements, literary problems, themes, films, cultural artifacts, music, institutions, epochs, folklore, and regions.

170. Senior Seminar in German Studies (2)
Prerequisite: senior standing, permission of instructor, concurrent enrollment in another upper-division German course. Culminating experience integrating the student's critical thinking abilities with in-depth knowledge of German language, literature, culture. Students produce a project requiring extensive research and final written report. Satisfies the senior major requirement for the B.A. in German.

190. Independent Study (1-3; max see reference)
See *Academic Placement — Independent Study*. Approved for *SP* grading.

GRADUATE COURSES

(See *Course Numbering System.*)

German (Germ)

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*. Approved for *SP* grading.

COURSES

Greek (Grk)

1A. Elementary Greek (3)
An introduction to the fundamentals of Classical and New Testament Greek, with practice in reading and writing the Greek language. Background study: Greek culture and its relevancy to the modern world. General Education BREADTH, Division 7.

1B. Elementary Greek (3)
Prerequisite: Grk 1A or permission of instructor. Second semester course in Classical and New Testament Greek; completion of the fundamentals of Greek grammar, emphasis on translation practice and composition skills. General Education BREADTH, Division 7.

10. The Rise of Rationalism: 5th C. Athens (3)
The origins of argumentation, logic, rhetoric, inductive thinking, and the role of literature in 5th C. Athens, as reflected in selections from Plato, Thucydides, Euripides, and the orators. Discussions and lectures. Conducted in English. General Education CORE, Critical Thinking.

131T. Greek Literature (3; max total 12 if no topic repeated)
Prerequisite: Grk 1B. Concentration on a major Classical Greek poet or prose author. Translation and discussion. Research reports on literary, historical, and textual problems.

148. Masterpieces of Classical Greek Literature (3)
Analysis of selected works of major Greek poets, writers, and thinkers from Homer to Lucian. Lectures, discussions, reports on readings. Conducted in English. General Education BREADTH, Division 6.

190. Independent Study (1-3)
See *Academic Placement — Independent Study*. Approved for ***SP*** grading.

Italian (Ital)

1A. Elementary Italian (4)
Beginning course in conversational and written Italian. Not open to students with one year or more of high school Italian credit. General Education BREADTH, Division 7.

1B. Elementary Italian (4)
Prerequisite: Ital 1A or permission of instructor. Second semester course in conversational and written Italian. Not open to those with two years or more of high school Italian credit. General Education BREADTH, Division 7.

2A. Intermediate Italian (3)
Prerequisite: Ital 1B or permission of instructor. Review of grammar and syntax; composition; oral practice, reading of short stories and plays. General Education BREADTH, Division 7.

2B. Intermediate Italian (3)
Prerequisite: Ital 2A or permission of instructor. Oral and written composition; reading of short stories, novels, biographies. General Education BREADTH, Division 7.

5. Conversation (3; max total 6)
Prerequisite: Ital 1B. May be taken concurrently with Italian 2A or 2B. Development of listening skills and oral fluency through discussion, vocabulary exercises, and conversations on assigned topics.

148. Masterpieces of Italian Literature (3)
Literary masterpieces of Italian literature read and studied in English translation. May include works by Dante, Boccaccio, Petrarch, Boiardo, Tasso, Ariosto, Manzoni, and other important literary figures.

160T. Selected Topics in Italian Studies (3; max total 9 if no topic repeated)
Topics chosen from Italian literature (genre, themes, movements, particular authors), from Italian culture or civilization, or from Italian cinema.

190. Independent Study (1-3; max see reference)
See *Academic Placement — Independent Study*. Approved for ***SP*** grading.

Latin (Latin)

1A. Elementary Latin (3)
An introduction to the fundamentals of the Latin language, grammar, and its practical relation to Romance languages and English. Background study: Roman culture and its relevance to the modern world. General Education BREADTH, Division 7.

1B. Elementary Latin (3)
Prerequisite: Latin 1A or permission of instructor. Second semester course in Latin; completion of the fundamentals of Latin grammar, emphasis on translation practice and composition skills. General Education BREADTH, Division 7.

31. Latin and Greek for English Vocabulary (3)
Examination and analysis of the Latin and Greek roots which form over 60 percent of our English vocabulary. Development of skills which will enable students to dissect unfamiliar words and better understand familiar ones.

131T. Latin Literature (3; max total 12 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. General Education CAPSTONE Cluster course.

148. Masterpieces of Latin Literature (3)
Analysis of selected works of major Roman authors from Plautus to St. Augustine. Lectures, discussions, readings. Conducted in English. General Education CAPSTONE Cluster course.

190. Independent Study (1-3; max see reference)
See *Academic Placement — Independent Study*. Approved for ***SP*** grading.

Portuguese (Port)

1A. Elementary Portuguese (4)
Beginning course in conversational and written Portuguese. Not open to students with one year or more of high school Portuguese credit. General Education BREADTH, Division 7.

1B. Elementary Portuguese (4)
Prerequisite: Port 1A or permission of instructor. Second semester course in conversational and written Portuguese. Not open to those with two years or more of high school Portuguese credit. General Education BREADTH, Division 7.

Russian (Russ)

1A. Elementary Russian (4)
Beginning course in conversational and written Russian. Not open to students with one year or more of high school Russian credit. General Education BREADTH, Division 7.

1B. Elementary Russian (4)
Prerequisite: Russ 1A or permission of instructor. Second semester course in conversational and written Russian. Not open to those with two years or more of high school Russian credit. General Education BREADTH, Division 7.

2A. Intermediate Russian (4)
Prerequisite: Russ 1B as determined by examination. Review of grammar and syntax; composition; oral practice; reading of short stories. Conducted in Russian. General Education BREADTH, Division 7.

2B. Intermediate Russian (4)
Prerequisite: Russ 2A as determined by examination. Oral and written composition. Conducted in Russian. General Education BREADTH, Division 7.

101. Composition, Translation, and Applied Linguistics (3; max total 9)
Prerequisite: Russ 2B. Prose composition and practice of the finer points in grammar and syntax; problems and techniques of translation from English to Russian and Russian to English; relationships of oral/written aspects and contrasts with American English for teaching strategies.

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)
(A) Russian folklore and folk arts. (B) Russian fine arts. (C) The evolution of Russian culture from 1917 to the present.

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. Twentieth Century Literature (3)
Prerequisite: Russ 2B. Study and analysis of Russian literature until 1917 including works by authors such as Annenski, Merezhkovsky, Bryusov, and Block. Outside readings.

118B. Twentieth Century Literature (3)
Prerequisite: Russ 118A. Study and analysis of Soviet Russian literature from the Revolution through Socialist Realism including works by authors such as Bely, Gumilev, Akhmatova, Kuzmin, Evgeny, Zamyatin, and Zochenko. 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.

148. Masterpieces of Russian Literature (3)
Literary masterpieces of Russian literature read and studied in English translation. May include works by Pushkin, Tolstoy, Dostoyevski, Solzhenitzyn, Pasternak, Sholokhov, and other important literary figures. General Education BREADTH, Division 6. (Former Russ 148A-B)

170. Senior Seminar in Russian Studies (2)
Prerequisite: senior standing, permission of instructor, concurrent enrollment in another upper-division Russian course. Culminating experience integrating the student's critical thinking abilities with in-depth knowledge of Russian language, literature, culture. Students produce a project requiring extensive research and final written report. Satisfies the senior major requirement for the B.A. in Russian.

190. Independent Study (1-3; max see reference)
See *Academic Placement — Independent Study*. Approved for ***SP*** grading.

Spanish (Span)

1A. Elementary Spanish (4)
Beginning course in conversational and written Spanish. Not open to students with one year or more of high school Spanish credit. General Education BREADTH, Division 7.

1B. Elementary Spanish (4)
Prerequisite: Span 1A or permission of instructor. Second semester course in conversational and written Spanish. Not open to those with two years or more of high school Spanish credit. General Education BREADTH, Division 7.

2A. Spanish for Communication (3)
Intended for those with two years of high school Spanish. Second year course that emphasizes speaking and reading skills. General Education BREADTH, Division 7.

2B. Spanish for Communication (3)
Intended for those with three years of high school Spanish. Second year course that emphasizes speaking, reading, and writing skills. General Education BREADTH, Division 7.

3. Reading and Writing (3)
Prerequisite: Span 1B, 2A or 2B. Opportunity to increase reading and writing skills in preparation for upper-division coursework in Spanish.

4A. Spanish for the Bilingual Student (3)
For the native speaker of Spanish who has intensive life experience using the Spanish language. Grammar is stressed, but speaking, reading, and writing skills are also further developed. General Education BREADTH, Division 7.

4B. Spanish for the Bilingual Student (3)
Prerequisite: Span 3 or permission of instructor. For students from a bilingual background who have previous formal study of Spanish. Emphasis on productive writing skills, advanced reading comprehension and grammar. General Education BREADTH, Division 7.

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. *CR/NC* grading only.

10. Spanish in Context (3 or 6)
Prerequisite: two years of high school Spanish, Span 1B or permission of instructor. Intended for those who are enrolled in our summer study abroad program. Emphasizes speaking, reading, and cultural interaction with members of the community. (Summer only)

AREA I. Bilingual Studies

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, 2B or 4A, 4B. Examination of children's stories, poems, rhymes, and songs written, composed, or available in Spanish. Practice in the techniques of storytelling. 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.

112. Reader's Theater in Spanish (3)
Prerequisite: Span 3 or 4B. Dramatic readings of prose and poetry selections performed by students in front of the class. Discussion focuses on a critical reading of the text and preparation of the performance. Public presentations and recordings optional.

113. Patterns of Spanish (3)
Prerequisite: Span 3 or 4B. 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 3 or 4B. 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.

118. Spanish Composition for Bilinguals (3)
Prerequisite: Span 3 or 4B. 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 3 or 4B. 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 3 or 4B. Special emphasis on grammar review and development of writing skills. Analysis of grammatical constructions.

123. Advanced Conversation and Reading (3)
Prerequisite: Span 3 or 4B. Reading and discussion of current periodicals, newspapers, and magazines that reflect the cultural patterns of the Spanish-speaking countries.

124. Oral and Written Expression (3)
Prerequisite: Span 2B, 3, 4B, or 10. Systematic analysis of students' ability to express themselves, both orally and in writing. Development of vocabulary, pronunciation, and grammatical structures. (Summer only)

AREA III. Hispanic Culture

125. Hispanic Culture (3)
Prerequisite: Span 3 or 4B. Examination of the cultural patterns of Spain and Spanish America through readings, lectures, films, and other media. Frequent written and oral reports by students.

129. Mexican Culture (3)
Prerequisite: Span 2B, 3, 4B, or 10. Examination of Mexican cultural patterns. May include use of data-gathering questionnaires, reading, and oral interview. (Summer only)

AREA IV. Spanish Linguistics

137. Applied Spanish Linguistics (3)
Prerequisite: Span 3 or 4B. 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 3 or 4B. 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 3 or 4B. Readings and appreciation of Hispanic literature to familiarize the student with fiction and poetry as art forms. General Education BREADTH, Division 6.

142. Introduction to Spanish Literature (3)
Prerequisite: Span 3 or 4B. 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. General Education BREADTH, Division 6.

143. Introduction to Spanish-American Literature (3)
Prerequisite: Span 3 or 4B. 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 3 or 4B. Study of the works of such major Mexican literary figures as Sor Juana, Gutiérrez Nájera, Azuela, and Fuentes.

146. Masterpieces of Spanish Literature (3)
Major literary masterpieces of Spanish and Latin American literature read and studied in English translation. May include Cervantes, Lorca, Neruda, Fuentes, Borges, and other important literary figures. General Education BREADTH, Division 6.

147. Twentieth Century Spanish-American Literature (3)
Prerequisite: Span 3 or 4B. Intensive study of selected Spanish-American works including writings of Azuela, Fuentes, Carpenter, 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 3 or 4B. Reading and analysis of the works of one major Hispanic author such as Cervantes, Unamuno, Neruda.

149. The Golden Age (3)
Prerequisite: Span 3 or 4B. A study of Spanish Renaissance Man and his environment. His sociopolitical, esthetic, and literary ideas are studied through readings in Garcilaso, San Juan de la Cruz, and other authors. (Former Span 149T)

150. Twentieth Century Spanish Literature (3)
Prerequisite: Span 3 or 4B. A study of Spanish Existential Man. His sociopolitical, esthetic, and literary ideas are studied through readings in Unamuno, Ortega y Gassett, Lorca, José Hierro, and other authors. (Former Span 150T)

170. Senior Seminar in Spanish Studies (3)
Prerequisite: senior standing, permission of instructor, 20 upper-division units of Spanish coursework 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. Satisfies the senior major requirement for the B.A. in Spanish.

190. Independent Study (1-3; max see reference)
See *Academic Placement — Independent Study*. Approved for ***SP*** grading.

GRADUATE COURSES

(See *Course Numbering System.*)

Spanish (Span)

202. Literary Theory and Criticism (3)
Prerequisite: Spanish major or permission of instructor. Theory and practice of literary analysis. Application of research, bibliographical and critical methods to literary texts.

204. Spanish Syntax (3)
Prerequisite: Spanish major or permission of instructor. An analysis of the grammatical structures of the Spanish language. Includes contrastive analysis of Spanish and English syntax.

206T. Hispanic Linguistics (3; max total 9 if no topic repeated)
Prerequisite: Spanish major or permission of instructor. In-depth analysis on *one aspect* of the Spanish language through the study of such topics as the history of the Spanish language, Spanish dialects, linguistic field studies, Spanish semantics. (Former Span 220T)

210. Spanish American Short Story (3)
Prerequisite: Spanish major or permission of instructor. Study of the short story as an art form in Latin America and analysis of short stories of such writers as Quiroga, Arreola, Rulfo, Bombal, Borges and Cortázar.

214. Generation of '98 (3)
Prerequisite: Spanish major or permission of instructor. Advanced analysis of the literature of Spain written at the time of the final collapse of Spain's empire. Includes works by Azorín, Baroja, Unamuno, Valle-Inclán, Machado, Ortega, and Jiménez.

215. Hispanic Women Writers (3)
Prerequisite: Spanish major or permission of instructor. Discussion and close written analysis of poetry, novels, theater and essays written by Hispanic women from 1535 to present.

216. Masterpieces of Hispanic Theater (3)
Prerequisite: Spanish major or permission of instructor. Discussion and close written analysis of peninsular and Spanish American theater masterpieces, historical milieu and cultural context.

218T. Topics in Hispanic Literary Studies (3; max total 6 if no topic repeated)
Prerequisite: Spanish major or permission of instructor. Hispanic literary topics such as Hispanic Realism, Novel and Cinema, Violence in Hispanic Literature, Novel of Dictatorship, Novel of the Indian in Latin America.

219T. Spanish Colloquium (1; max total 3 if no topic repeated)
Prerequisite: Spanish major or permission of instructor. Forum in which professors, graduate students, and visiting lecturers will present research on a variety of Hispanic authors and topics.

222. Cervantes (3)
Prerequisite: Spanish major or permission of instructor. In-depth study of Don Quixote and selected Novelas ejemplares. Includes discussion of works, lectures, and written research.

224. Major Hispanic Novelists (3)
Prerequisite: Spanish major or permission of instructor. Research and in-depth study of the novels of a major Hispanic novelist. Discussion and written analysis of the novels of *one* of the following novelists: Vargas Llosa, Fuentes, García Márquez, Galdós, Cela, Goytisolo.

226. Major Hispanic Poets (3)
Prerequisite: Spanish major or permission of instructor. Research and in-depth study of the poetry of a major Hispanic poet. Discussion and written analysis of the poetry on *one* of the following poets: Machado, Lorca, Darío, Neruda.

290. Independent Study (2-3; max see reference)
See *Academic Placement — Independent Study*. Approved for ***SP*** grading.

298. Project (3-6; max total 6)
See *Criteria for Thesis and Project*. 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. Approved for ***SP*** grading.

299. Thesis (3-6; max total 6)
Prerequisite: See *Criteria for Thesis and Project*. Preparation, completion, and submission of an acceptable thesis for the completion of the master's degree. Approved for ***SP*** grading.

IN-SERVICE COURSES

(See *Course Numbering System.*)

Spanish (Span)

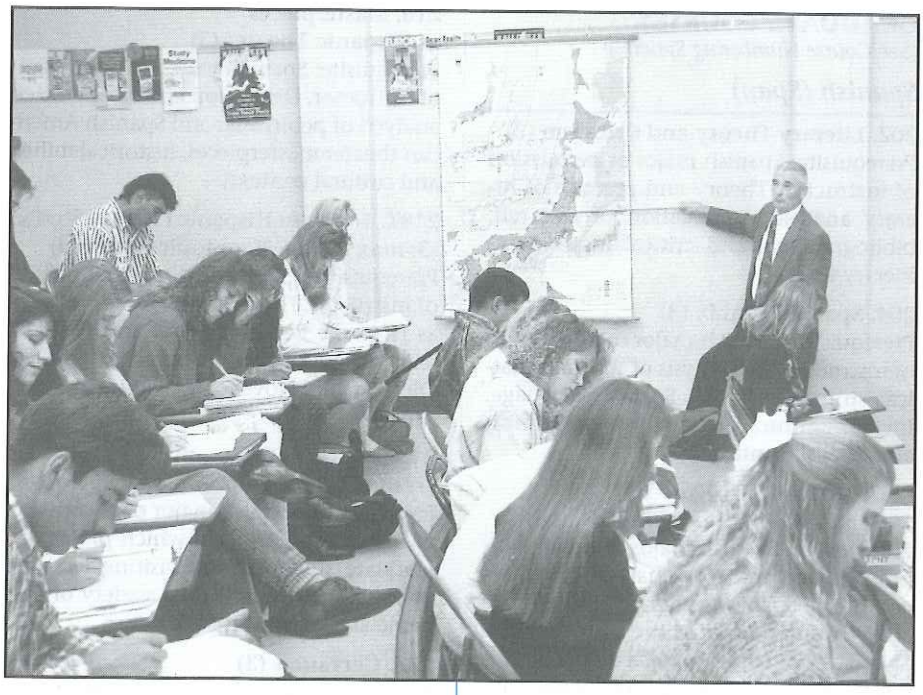
301. Conversation and Composition Review (2; max total 8 if no language repeated)
For elementary and secondary school teachers or those planning to travel abroad. Prerequisite: bachelor's degree or teaching credential; permission of instructor. Conversation and composition to improve audio-lingual and writing skills in the foreign language.

304. Theory and Practice (2; max total 8)
Prerequisite: permission of instructor. Not open to students with credit in two or more years of college Spanish. Basic elements of the language; modern methods of foreign language instruction in the elementary school; repeatable in sequence — pronunciation, methods, phonetics, advanced methods.

Geography

School of Social Sciences
Department of Geography
LAWRENCE E. ESTAVILLE JR., *Chair*
Science Building, Room 182
(209) 278-2797

B.A. in Geography
M.A. in Geography
Minor in Geography
Minor in Urban Studies



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, the ways in which nature has conditioned the human occupance of the earth, and the 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 provide 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 knowledge 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 major facets of the discipline are represented as are a number of 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 weather station.

The department has a computer laboratory for mapping, Geographic Information Systems (GIS), and a variety of other applications. The department is also well-equipped for fieldwork.

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, GIS, 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. 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. Finally, teaching is a major occupation for individuals with training in geography. The department welcomes inquiries about career opportunities.

Faculty

Lawrence E. Estaville Jr., *Chair*
Chi Kin Leung, *Graduate Adviser*
Wayne V. Merchen, *Planning Graduate Adviser*
Robert E. Lee, *Undergraduate Adviser*

Russel C. Fey
James S. Kus
George N. Nasse
Stanley F. Norsworthy
Joyce A. Quinn
Jerry C. Towle
Paul Vander Meer

Bachelor of Arts Degree Requirements

Geography Major

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
Major requirements	42
Lower-division courses: Geog 2, 4, 5, 7	(12)
Upper-division breadth requirements (see *Advising Notes*)	(30)
General Education	51
Electives and remaining degree requirements (See *Degree Requirements*); may be used toward a dual major or minor	31-37*
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*). The applicable courses include Geog 2, 4, 5, and 7. Consult the department chair or faculty adviser for additional details.

Advising Notes

1. Geography majors can select either a *Technical* or a *General* emphasis for their major.

   For the *Technical emphasis*, select:
   a. 12 units from Geographic Techniques: Geog 100 required; select two courses from Geog 101, 109, 110
   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 Regional Geography courses
   d. 3 units of electives from upper-division Geography courses, including Geog 188T, 190, 192, 194, and 195.

   For the *General emphasis*, select:
   a. 4 units: Geog 100 or Geog 101
   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. 2 units of electives from the upper-division Geography courses, including Geog 188T, 190, 192, 194, and 195.
2. No more than 3 units of Geog 195 may be applied to the geography major.
3. No course used to satisfy General Education CAPSTONE requirements may be used to satisfy geography major requirements.
4. *CR/NC* grading is not permitted in the geography major with the exception of Geog 192 and 195.
5. General Education and elective units may be applied to a second major or a minor (see *Dual Major* or departmental minor). Consult the appropriate department chair, program coordinator, or faculty adviser for further information.
6. It is strongly recommended that students interested in professional careers complete coursework in Geographic Techniques and City and Regional Planning (if applicable) and complete a minor in a related field.
7. 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.
8. 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, GIS, 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, 4, 5, or 7	9
Elect from upper-division geography*	12
Total	21

*No more than 3 units earned in Geog 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* for the Single Subject Waiver Program in Social Science.

Urban Studies Minor (Interdisciplinary)

The Urban Studies Minor provides exposure to the analysis of urban and regional problems and serves as an excellent supplement to other academic degree programs offered throughout the university. A special major in the urban studies may be designed to meet the needs of students with an interest in this area.

Coordinator: Wayne V. Merchen, Professor of City and Regional Planning, Geography Department.

Faculty Advisers: Mary A. Ludwig, Anthropology Department; Edward E. Nelson, Sociology Department; Adewole A. Umoja, Political Science Department.

Required Courses	*Units*
Concepts and Issues*	9
Anth 108, Geog 160, or Soc 163	(3)
Pl Si 181	(3)
C R P 100	(3)
Methods and Techniques*	6-9
Select from the following list of courses: C R P 103, 135; Geog 101, 110; Pl Si 90; Soc 175	
Electives	3-6
With the approval of a program adviser, elect 3-6 units with no more than 3 lower-division units from the following list of courses: Af Am 135; Anth 108, 172; B A 120, 154; C R P 103, 110T, 111, 135, 149T, 190, 192; CLS 3; Crim 2, 10; Econ 40, 50; Eth S 1, 104W; Fin 180, 186; Geog 101, 107, 108, 109, 128, 146, 160; Hist 137; Pl Si 90, 103, 160, 163; Soc 2, 25, 111, 131, 163. 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 the coordinator, substitute additional units from the electives list for the units required here.

Graduate Program

The Department of Geography offers two plans leading to the Master of Arts degree in Geography: ***Plan A*** is the Technical Track and ***Plan B*** is the General Track. Each plan has a thesis or nonthesis option and requires the completion of 30 units of graduate work. The Technical Track prepares students for direct entry into private or public employment, while the General Track prepares students to teach geography in community colleges. Both plans prepare students for doctoral programs in geography or related fields.

The Department of Geography and the School of Education and Human Development cooperate in providing a Master of Arts in Education Curriculum and Instruction with an emphasis in Geographic Education for elementary and secondary teachers (12 units of graduate geography coursework).

The Department of Geography recognizes the new and rapidly expanding technical dimensions, especially Geographic Information Systems (GIS), in geography and its allied disciplines and thus offers graduate courses in city and regional planning and works closely with the on-campus, state-of-the-art GeoInformation Processing Systems (GeoIPS) Laboratory in offering the graduate courses in remote sensing and image processing. The Department of Geography also cooperates with other departments in the School of Social Sciences, particularly Anthropology, to tailor programs of study to meet individual student needs.

Master of Arts Degree Requirements

Students entering the Master of Arts degree program in Geography must have a B.A. or B.S. in Geography or a bachelor's degree in a related discipline that includes 12 semester units of upper-division geography with a minimum GPA of 3.0 and competence in computer applications, statistics, or cartography. All entering graduate students should be well prepared in geographic techniques at the undergraduate level and are required to take a geography diagnostic examination for advising purposes.

(See also the *Admission to Graduate Standing, Advancement to Candidacy, Program Requirements,* and *Criteria for Thesis and Project.*)

For specific requirements, consult a departmental graduate adviser or the department chair; for general requirements, see the *Division of Graduate Studies* section in this catalog.

Under the supervision of the department's Graduate Committee, each student submits an approved program that includes 9 units of graduate core seminars and either Plan A or B.

Plan A: Technical Track	***Units***
Graduate Core Seminars	
Geog 200, 230, and Geog 206T or Geog 260T	
Select thesis or nonthesis	**30**
Thesis Course Plan	
Geog 200-series courses including 9 core units	(12)
Geog 100- and 200-series electives	(6)
Technical courses in other disciplines	(6)
Thesis, Geog 299	(6)
or	
Nonthesis Course Plan	
Geog 200-series courses including 9 core units	(12)
Geog 100- and 200-series electives	(6)
Technical courses in other disciplines	(9)
Project, Geog 298	(3)
Total	**30**

Plan B: General Track	***Units***
Graduate Core Seminars	
Geog 200, 230, and Geog 206T or Geog 260T	
Select thesis or nonthesis	**30**
Thesis Course Plan	
Geog 200-series courses including 9 core units	(12)
Geog 100- and 200-series electives	(6)
Courses in other disciplines	(6)
Thesis, Geog 299	(6)
or	
Nonthesis Course Plan	
Geog 200-series courses including 9 core units	(12)
Geog 100- and 200-series electives	(6)
Courses in other disciplines	(9)
Project, Geog 298	(3)
Total	**30**

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. General Education BREADTH, Division 8. (CAN GEOG 4)

4. World Geography (3)
Cultural and physical features; economic development; resources; man-land relationships. The approach is by continents and/or cultural regions. General Education BREADTH, Division 8.

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. General Education BREADTH, Division 3.

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. General Education BREADTH, Division 3.

Geographic Techniques (Geog)

100. Cartography (4)
Introduction to the field. History of mapmaking, map projections, theory of map communication. Practical experience in compilation, generalization, symbolization, and design to produce original pen-and-ink drafted maps. Teaches the skill of presenting tabular data in map form. (2 lecture, 4 lab hours) (Lab fee, $15)

101. Computers in Geography (4)
Introduction to computer applications in geography. Fundamental concepts of computers, word processing, programming, database, statistical analysis, computer mapping, remote sensing, and GIS applications. No computer and statistical experiences required. (2 lecture, 4 lab hours) (Lab fee, $15) (Former Geog 188T section; Geog 103)

102. Computer Cartography (4)
Prerequisite: Geog 101 or permission of instructor. Map design and production in a computer environment: business graphics, desktop publishing, computer-aided design, thematic mapping, three-dimensional surfaces, and graphic programming. (2 lecture, 4 lab hours) (Lab fee, $15) (Former Geog 188T section)

104. Map Interpretation (4)
Prerequisite: Geol 1, Geog 7, or permission of instructor. Reading and interpretation of USGS-type topographic maps. Emphasis on interpretative inference concerning both physical and cultural landscapes. (2 lecture, 4 lab hours)

105. Aerial Photograph Interpretation (4)
Prerequisite: Geol 1 or Geog 7; Geog 101 or equivalent. Aerial photography, videography, and multispectral scanner technology; image interpretation; computer-based digital processing; monitoring and mapping of terrain features; georeferencing (GPS); GIS applications. (2 lecture, 4 lab hours) (Lab fee, $15)

106. Advanced Aerial Photo Interpretation and Remote Sensing of Environment (4)
Advanced techniques of remote sensing, e.g., hyperspectral and radar imaging; advanced computer-based digital processing; advanced monitoring and mapping of terrain features; advanced GIS applications. (2 lecture, 4 lab hours) (Lab fee, $15)

107. Introduction to Geographic Information Systems (4)
Prerequisite: Geog 101 or equivalent. Fundamental concepts of acquisition, structure, manipulation, and analysis of data in a GIS environment. Practice in the design, management, and implementation of GIS. (2 lecture, 4 lab hours) (Lab fee, $15) (Former Geog 188T section)

108. Spatial Analysis in Geographic Information Systems (4)
Prerequisite: Geog 107. Spatial analysis and modeling in a GIS environment. Spatial geometry, pattern analysis, terrain analysis, path analysis, network analysis, surface modeling, spatial autocorrelation, spatial regression, spatial classification, and spatial interpolation. (2 lecture, 4 lab hours) (Lab fee, $15) (Former Geog 188T section)

109. Technical Field Geography (4)
Prerequisite: senior standing or permission of instructor. Gathering and analysis of data pertaining to topics in physical or human geography. Includes an on-campus seminar to discuss issues and concepts. (1 lecture, 4-8 field hours)

110. Basic Quantitative Techniques (4)
Introduction of elementary statistical principles and techniques: probability theory, sampling, descriptive statistics, spatial statistics, hypothesis testing, correlation analysis, bivariate regression, and forecasting. (3 lecture, 2 lab hours) (Lab fee, $15)

Physical-Environmental Geography (Geog)

111. Meteorology (3)
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.

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. Microclimatology (3)
(Same as Plant 134.) Prerequisite: Geog 5 or equivalent. Micrometeorological influences on local climates including natural ecosystems and varying agricultural canopies. Local climate influences on wildlife, domestic animals, and humans. Manipulation of local climate including frost protection, irrigation and wind sheltering. Microclimates of non-uniform terrain and urban environment.

117. Plant Geography (3)
Study of earth's plant cover; world floras; dispersal and migration; environmental effects on distributions; plant communities; major vegetation regions.

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.

"Geographic Information Systems (GIS) is a wonderful computer technology that geographers use to help solve economic, social, and environmental problems."

Lawrence Estaville
Chair, Department of Geography

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. General Education CAPSTONE Cluster course.

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.

130. Economic Geography (3)
An examination of the spatial patterns and processes of human economic activities at various geographical scales: population demand and resource supply, agricultural land-use patterns, industrial locations, city systems, regional changes, international trade and investments, and world development. (Former Geog 3)

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. General Education CAPSTONE Cluster course.

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, endan-gered species, the management of lands for the purpose of preservation, and related topics.

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. General Education CAPSTONE Cluster course.

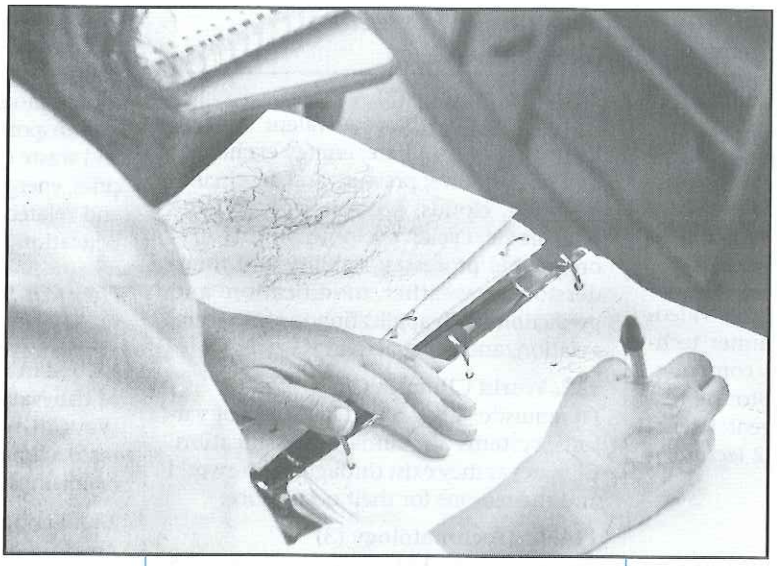
161. Historical Geography of the United States (3)
Regional settlement of the United States; peopling of physiographic regions, creation of economic (cultural) regions, and geographic factors related to broad trends in American history.

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. American Ethnic Geography (3)
Geographical analysis of selected American ethnic groups to include their cultural hearths, cultural landscapes, cultural evolutions, migrations, and current spatial distributions. Economic, social, and political correlates will be explored.

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. General Education CAPSTONE Cluster course.

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.

172. Ancient Peru (3)
The geography of Ancient Peru. The physical landscape and human modification of that landscape over time. Emphasis on the origin of agriculture and the rise of urbanism in the Andean Region. General Education CAPSTONE Cluster course. (Former Geog 170T section)

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 Commonwealth of Independent States — Formerly USSR (3)
Comprehensive study of the economic, cultural, physical, and political geographic foundations of the Commonwealth of Independent States, followed by intensive study of selected regions. General Education CAPSTONE Cluster course.

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. General Education CAPSTONE Cluster course.

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. General Education CAPSTONE Cluster course.

183T. Australia, New Zealand, and Pacific Islands (3)
Geographic relationships of natural and cultural features to social and economic development.

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*. Approved for *SP* grading.

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. *CR/NC* grading only.

194. History and Theory of Human Geography (3)
Prerequisite: Engl 1. A survey of the development of human geography, with emphasis on 20th century geographic thought. Discussion of the major themes and approaches that have been dominant in this field at various times.

195. Field Geography (1-6; max total 6)
Prerequisite: permission of instructor. Weekend, semester break, or summer field trips. *CR/NC* grading only.

GRADUATE COURSES

(See *Course Numbering System.*)

Geography (Geog)

200. Methods in Geographic Research and Writing (3)
Prerequisite: permission of instructor. Intensive library work, manuscript preparation, and small group interaction to impart strategies, methods, and skills for proper geographic research and writing. (Lab fee, $15)

203T. Seminar in Economic Geography (3; max total 6)
Prerequisite: Geog 130 or 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 6)
Prerequisite: Geog 5 or 7 and an upper-division Physical Geography course or 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.

210T. Seminar in Geographic Techniques (3; max total 12)
Prerequisite: Geog 107 and 108 or permission of instructor. Detailed examination of principles, concepts, and theories of such geographic techniques as geographic information systems (GIS), remote sensing, quantitative analysis, and field methods. (Lab fee, $15)

230. Seminar in Contemporary Geographic Thought (3)
Current theories of geography and their evolution.

260T. Seminar in Human Geography (3; max total 6)
Prerequisite: Geog 2 and an upper-division Human Geography course or 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)
Prerequisite: Geog 4 and an upper-division Human Geography course or permission of instructor. 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 total 6)
See *Academic Placement — Independent Study*. Approved for *SP* grading.

292. Directed Readings in Geography (1-3; max total 6)
Prerequisite: graduate standing. Supervised reading in a selected geographic topic. *CR/NC* grading only.

298. Project (3)
Prerequisite: See *Criteria for Thesis and Project*. Preparation, completion, and submission of an acceptable project for the master's degree. Approved for *SP* grading.

299. Thesis (6)
Prerequisite: See *Criteria for Thesis and Project*. Preparation, completion, and submission of an acceptable thesis for the master's degree. Approved for *SP* grading.

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. General Education CAPSTONE Cluster course.

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)

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.

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.

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. General Education CAPSTONE Cluster course.

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 formu-

lation and problem solving needed to achieve a quality environment.

190. Independent Study (1-3; max total see reference)
See *Academic Placement — Independent Study*. Approved for ***SP*** grading.

192. Directed Readings (1-3; max total 6)
Prerequisite: permission of instructor. Supervised readings in a selected field related to city and regional planning. (Former C R P 191)

City and Regional Planning (C R P)

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.

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. (Lab fee, $15)

203. Practicum in Community Planning (3)
Prerequisite: permission of instructor. Studio and field project design and implementation methods; supervised projects. Application of theories and principles to a team project. (Lab fee, $15)

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.

212T. Seminar Topics in Urban and Regional Development (3)
Prerequisite: C R P 200. Selected topics in the application of public policy to the solution of urban and regional problems, including the renewal of blighted areas, the conservation and preservation of historic areas, the development and financing of new communities.

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.

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.

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.

239T. Seminar Topics in Environmental Planning (1-3; max total 6)
Prerequisite: permission of instructor. Selected topics in environmental planning, including land, air, and water resources; consideration of federal, state, and local environmental laws and policies; case studies.

250. Seminar in Transportation Planning (3)
Prerequisite: permission of instructor. A systems view of transportation; alternative modes; interrelationships with urban structure; models; policy implications.

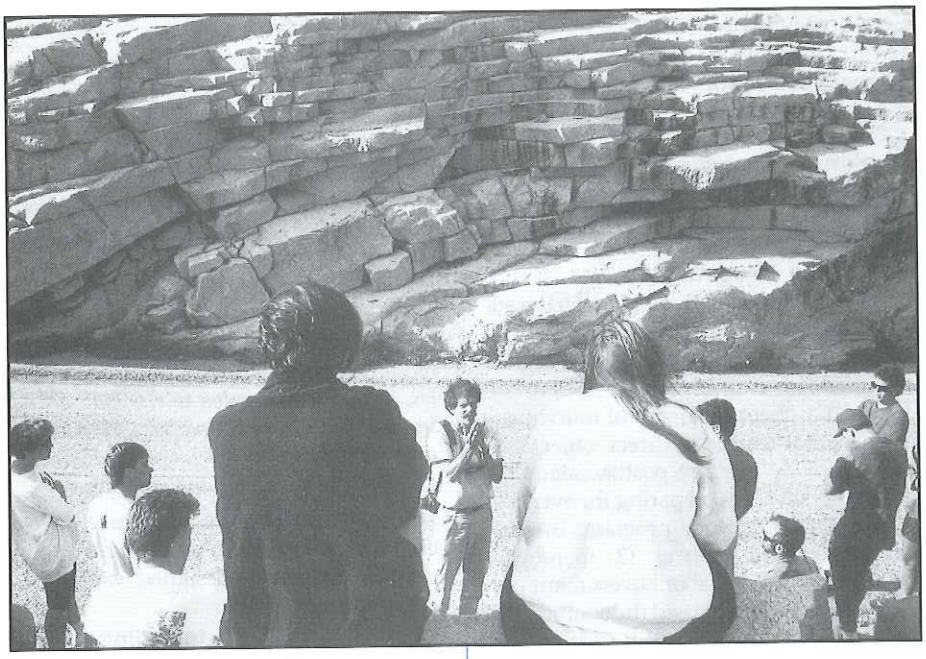
260T. Seminar: Topics in Urban Development Process (1-3; max total 9)
Prerequisite: permission of instructor. Selected topics such as theory of regional and urban spatial organization; theory of modeling and gaming simulation; application of modeling and simulation techniques to the urban development process; case studies, supervised projects.

280T. Internship in Planning (2-4; max total 4)
Prerequisite: permission of instructor. 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. Approved for ***SP*** grading.

290. Independent Study (1-3; max see reference)
See *Academic Placement — Independent Study*. Approved for ***SP*** grading.

292. Directed Readings in City and Regional Planning (1-3; max total 6)
Prerequisite: graduate standing. Supervised reading in a selected city and regional planning topic. Approved for ***SP*** grading.

Geology



Why study geology? What is it?
Continents adrift and colliding
Energy resources and waste disposal
Fossils and evolution
Surface and underground waters
Volcanoes and earthquakes
Mountain building and erosion
4.6 billion years of earth history

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, which is especially well suited for primary and secondary teachers.

Coursework and research emphasize field and laboratory investigations of geologic problems. Our field orientation takes advantage of the university's proximity to the Sierra Nevada, the California Coast Ranges, coastal California, and the desert provinces. 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 department's close relationship with state agencies and the private sector enables many students to pursue internships or part-time work in geology while they complete their degrees.

The Bachelor of Science degree prepares students for employment in petroleum geology, mineral exploration, land-use planning, hydrology, and engineering geology, or for teaching earth science or physical science at the secondary level. The Master of Science program provides 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.

Our applied geology option specializes in engineering geology, hydrogeology (physical or chemical) or exploration geology fields, which have the strongest employment potential.

Students may also participate in coursework and research in marine geology and oceanography offered through Moss Landing Marine Laboratories in Monterey Bay. Consult the chairs of the Geology and Biology departments. See *Moss Landing Marine Laboratories, Biology Department.*

Facilities and Support

Department equipment includes:

- X-ray fluorescence spectrometer and X-ray diffractometer
- Polarizing microscopes for transmitted and reflected light petrography
- 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 preparing thin and polished sections
- Microcomputers and peripherals
- IBM and SUN engineering workstations
- Field and laboratory equipment for water chemistry studies
- Field geophysical instruments: 12 channel seismograph, single channel seismograph DC resistivity meter, magnetometer/gradiometer, laptop computer
- Two four-wheel drive vehicles and three other field vehicles

Equipment available elsewhere on campus includes:

- Atomic absorption-flame emission spectrometers
- Ion and gas chromatographs
- Electron microscopes
- Mass and magnetic resonance spectrometers

School of Natural Sciences
Department of Geology
ROBERT D. MERRILL, *Chair*
McLane Hall, Room 284
(209) 278-3086

B.S. in Geology
M.S. in Geology
Option: Applied Geology
Minor in Geology

Faculty

Robert D. Merrill, *Chair*
Undergraduate Advisers: All full-time faculty
Graduate Adviser: C. John Suen

Jon C. Avent
Arthur H. Barabas
Bruce A. Blackerby
Roland H. Brady
Frederika J. M. Harmsen

Undergraduate Program

Geology Major. The bachelor's degree with a major in geology consists of a total of 130 units including 4-6 units of geology. For general degree requirements see *Degree Requirements*. Students planning graduate study are advised to meet the foreign language requirements of the institutions they plan to attend.

High School Preparation. Adequate high school preparation for a major in geology will facilitate the progress of students 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

Geology Major	*Units*
Major requirements	**45-46**
Lower-division requirements Geol 1 or 15, 12 and 13 concurrently, 30	(11-12)
Upper-division requirements Geol 100, 101, 102, 104, 106, 107, 108A, 108B; two of the following: Geol 105, 110, 122	(28)
Upper-division geology electives (see *Note 2*)	(6)
Additional requirements	**29-32**
Chem 1A, 1B; Math 75, 76, or 71, 72, 76; Math 77 or 101 or C Sci 20 or 40; Phys 2A, 2B	
General Education	**45***
Electives and remaining degree requirements (see *Degree Requirements*); may be used toward a minor	**7-11**
Total	**130**

* Of the 51 required General Education units, 6 are satisfied by Chem 1A, 1B (Division 1) and Math 75 (CORE) if intermediate algebra was completed in high school (see *General Education*). Consult the Geology Department or your faculty adviser for details.

Advising 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 ***Credit/No Credit*** *Grading*).
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 and 160.
5. General Education and elective units may be used toward a dual major or minor (see *Dual Major* 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 of approved coursework 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 postbaccalaureate 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.

Graduate Studies in Applied and Environmental Geology. In addition to classical geology, the graduate program also offers a course of study in applied and environmental geology. The curriculum is usually interdisciplinary, involving coursework in the departments of Geology, Civil Engineering, Chemistry, Soil Sciences, and others. Three emphases of studies in applied geology are offered: (1) engineering and geotechnical geology, (2) hydrogeology (having physical or chemical options), and (3) ore deposits. Students are considered to be in the applied geology field if their chosen thesis topics or interests are best described as being within one of the above emphases. Many students of applied geology undertake theses involving support and supervision from the private sector or regulatory agencies.

University requirements are satisfied through satisfactory completion of core courses and specialty courses in the curriculum emphasis. The following core courses are required of all students studying applied geology:

Geol 114 Engineering Geology (3 units)
Geol 117 Hydrogeology (3 units)
Geol 124 Geochemistry (3 units)
Geol 299 Thesis Research (3-6 units)

Each of the three emphases has a flexible, suggested curriculum which is available upon request.

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*. (See also *Admission to Graduate Standing, Advancement to Candidacy, Program Requirements, Foreign Language Requirements,* and *Criteria for Thesis and Project.*)

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
Specific requirements (see below)	**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)
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. General Education BREADTH, Division 1. (3 lecture, 2 lab hours) (CAN GEOL 2)

1E. Physical Geology for Civil Engineers (4)
Geologic processes and materials that affect design, construction, and operation of engineering developments. Includes origin of rock, soil, and geologic structures. Causes and effects of earthquakes, floods, volcanic eruptions, coastal processes, landslides, and subsidence. (3 lecture, 2 lab hours)

2. Evolution of Life and Continents (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. General Education BREADTH, Division 1. (3 lecture, 2 lab hours)

3. Geology Field Trip (1)
Extended weekend field trip to areas of geologic interest including Yosemite National Park, Death Valley, or coastal California. May be repeated. Nonmajors encouraged. ***CR/NC*** grading only. (Field trip fee may be required.)

12. Mineralogy (3)
Geol 13 concurrent in the geology major. Prerequisite: high school chemistry. Properties, relationships, uses origin of minerals; determination of common minerals by physical and other tests. Field trips may be required. (2 lecture, 3 lab hours)

13. Crystallography (1)
Geol 12 concurrent in the geology major. Prerequisite: trigonometry. Symmetry, structure, standard nomenclature, reference systems of crystals. (3 lab hours)

15. The Earth and Its History (5)
Portion of *Man/Woman 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 fieldwork. General Education BREADTH, Division 1. (Field trip fee is required.)

30. Introductory Field Methods (2)
Prerequisite: Geol 1 or 15, Math 5. Introduction to methods and instruments used in geologic fieldwork. ***CR/NC*** grading only. (6 lab/field hours) (Weekend field trips required; field trip fee may be required.)

100. Optical Mineralogy (2)
Prerequisite: Geol 12, 13. Optical properties of minerals; identification of minerals by optical methods. Theory and use of petrographic microscope. (1 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. Weekend field trips required. (3 lecture, 3 lab hours)

102. Sedimentary Petrology (3)
Prerequisite: Geol 30, Geol 100, 101 (or concurrently). Origin, classifications, textures, and structures of sedimentary rocks; examination of samples in hand specimen and thin section. Weekend field trips required. (2 lecture, 3 lab hours)

104. Scientific Writing (2)
Prerequisite: satisfactory completion of upper-division writing requirement. Organizing and writing the scientific report. Topics include researching; critical evaluation of literature; presenting technical material including maps, charts, illustrations; peer reviews. Oral presentation and term paper required. (1 lecture, 3 lab hours) (Former Geol 104W)

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. Field trips may be required. (2 lecture, 3 lab hours)

106. Structural Geology (3)
Prerequisite: upper-division writing skills requirement must be satisfied; Geol 30, Phys 2A. Phys 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. Field trips required. (2 lecture, 3 lab hours)

107. Advanced Field Methods (3)
Prerequisite: Geol 30, 101, 102, 104, 106. Field trips to areas of diverse geology; observation, description, and mapping of geologic phenomena. Includes written reports of areas selected for study. Students should contact the department for details. (9 lab hours usually including fieldwork on weekends or during January intercession and spring vacation) (Field trip fee may be required.)

108A. Field Geology (4)
Prerequisite: senior standing or permission of instructor; Geol 107; Geol 108B concurrently. Geologic reconnaissance and mapping in field groups. *Usually conducted in early summer.* When taken concurrently, Geol 108A and 108B satisfy the senior major requirement for the B.S. in Geology. Approved for ***SP*** grading. (Field trip fee may be required.)

108B. Field Geology — Reports (1)
Prerequisite: senior standing or permission of instructor; Geol 108A concurrently. Written presentation of fieldwork conducted in Geol 108A. When taken concurrently, Geol 108A and 108B satisfy the senior major requirement for the B.S. in Geology. Approved for ***SP*** grading. (1 lecture hour)

110. Invertebrate Paleontology (3)
Prerequisite: Geol 2 and Zool 10. Invertebrate structures and development of prehistoric animals; introduction to stratigraphic importance of fossils. Field trips may be required. (2 lecture, 3 lab hours)

114. Engineering Geology (3)
Prerequisite: Geol 1 or 15 and trigonometry. Introduction to techniques and theory of geotechnical investigations. Includes field and lab techniques in soil and rock mechanics, rock logging, geophysics, slope stability, engineering hydrogeology, stereo analysis, seismic engineering. Recommended for students in geology or civil engineering. Field trips required. (2 lecture, 3 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. Field trips may be required. (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. Field trips may be required. (2 lecture, 3 lab hours)

117. Hydrogeology (3)
Prerequisite: Geol 1 or 15; Math 72 or 76, and Geol 124 recommended. The hydrologic cycle; surface water processes; stream flow and hydrograph; properties of porous geologic materials; principles of groundwater flow; water wells; geology of groundwater occurrence; water quality and pollution. Field trip required. (2 lecture, 3 lab hours)

122. Stratigraphy (3)
Prerequisite: Geol 30, 102. Stratigraphic principles and recognition of stratigraphic units. Emphasis on tectonostratigraphic concepts. (2 lecture, 3 lab/field hours)

124. Geochemistry (3)
Prerequisite: one year of college chemistry and Geol 1 or 15; Geol 12 and 101 recommended. Chemistry applied to earth processes and evolution. Reactions involved in origin and transformations of natural waters, rocks, and minerals. Crystal chemistry and behavior of elements and isotopes. Field trip required; laboratory project. (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, Rocks, and Fossils (3)
Not applicable to the geology major. Primarily for students who are not majoring in geology. Recognition, origin, importance, and uses of common and significant minerals, rocks, and fossils. (2 lecture, 3 lab hours)

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. (Field trip fee may be required.)

168. Geology of California (3)
Prerequisite: prior geology course or equivalent background; Geog 168 recommended. Emphasis on the evolution of California's diverse geologic provinces and the geologic environments, hazards, and resources that influence human habitation of one of the most geologically varied regions of the United States. Not applicable to the geology major. General Education CAPSTONE Cluster course.

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. Field trips required. (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. Field trips may be required. (2 lecture, 3 lab hours)

190. Independent Study (1-3; max see reference)
See *Academic Placement — Independent Study*. Approved for ***SP*** grading.

GRADUATE COURSES

(See *Course Numbering System.*)

206. Depositional Systems (3)
Prerequisite: Geol 101 and 105. Investigation of modern and ancient depositional systems. (2 lecture, 3 lab hours)

210. Analysis of Faults and Earthquakes (3)
Prerequisite: Geol 106 and 107. Includes plate tectonic theory; kinematics and dynamics of fracturing and faulting; formation and propagation of seismic waves; recognizing and quantifying seismic potential; remote sensing and geophysics in applied fault studies. Field projects and oral presentations required. (2 lecture, 3 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)

217. Hydrogeology and Environmental Geology Seminar (2-3)
Prerequisite: Geol 117 or 124 or 169. Topics may include: local water problems, groundwater contamination, water law, environmental regulations and policies, hazardous and nuclear waste disposal and management. Readings from technical books, journals, and government publications. Independent study and oral presentation required.

220. Groundwater Hydrology (3)
Prerequisite: Geol 117. Math 77 recommended. Principles of flow through porous and fractured media; groundwater hydraulics in the saturated and unsaturated zones; contaminant transport; introduction to groundwater models. (2 lecture, 3 lab hours)

224. Geochemistry of Natural Waters (3)
Prerequisite: Geol 124. Chemical evolution of natural waters through water-rock interactions, mixing, evaporation, and contamination. Modeling using solution chemistry, equilibrium thermodynamics, and kinetics. Field methods, laboratory analysis, and computer manipulation of data. Field trip required; library and laboratory projects. (2 lecture, 3 lab hours) (Former Geol 250T section)

251T. Topics in Engineering Geology (1-3)
Prerequisite: major or minor in geology; permission of instructor. Advanced studies in areas such as slope stability, ground water monitoring, drilling and core logging, water sampling, hazardous waste site investigations, and geophysical instrumentation.

271. Volcanology (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, 1B. Identification, classification, and interpretation of metamorphic and metasomatic rocks using the petrographic microscope and other techniques. Field trips may be required. (2 lecture, 3 lab hours)

290. Independent Study (1-3; max total 6)
See *Academic Placement — Independent Study*. Approved for ***SP*** grading.

299. Thesis (2-6)
Prerequisite: See *Criteria For Thesis and Project*. Preparation, completion, and submission of an acceptable thesis for the master's degree. Approved for ***SP*** grading.

Gerontology

School of Health and Social Work
Interdisciplinary Gerontology Program
GLEN C. DOYLE, *Director*
San Ramon 4, Room 109/111
(209) 278-5216

Minor in Gerontology
Certificate in Gerontology

Gerontology is the study of aging. Our nation's steadily increasing older population is creating a unique demand for well educated individuals to understand the field of aging and competent professionals to work with elders.

The Interdisciplinary Gerontology Program offers a minor and a certificate in gerontology. Both are designed to prepare students to meet unmet and urgent needs in this rapidly developing field. The Interdisciplinary Gerontology Program attracts undergraduate students from all academic areas, e.g., reentry students, graduate students within social science and health professions, service providers, and elders seeking greater understanding of this stage of life.

The study of gerontology is based upon many important theories and concepts of aging, which are presented through an organized course of study. Core — gerontology and cross listed interdisciplinary — courses are designed to present comprehensive biological, psychological, cultural and sociological theories related to the lifelong aging process. Concepts related to the influence of heritage, ethnicity, wellness, exercise and creativity are evaluated. Information related to Healthy People 2000, services and resources; housing and environment; disabilities and rehabilitation; federal, state and local agencies; social policies and programs for elders is presented. Students have the opportunity to develop empathy for older adults as they explore communication and interaction with elders in a social setting. Current research findings are presented and research opportunities are available.

Advisory Council and Program Faculty

The Interdisciplinary Gerontology Program Advisory Council provides overall curricular decisions, coordination, and collaboration. The Council is composed of representatives from the schools of Agriculture Sciences and Technology, Arts and Humanities; the Sid Craig School of Business and Administrative Sciences; Education and Human Development; Health and Social Work; Natural Sciences; and Social Sciences.

Many members of the council teach gerontology courses in both the minor and certificate programs. Advisory Council members are: Judith Allender (Nursing), Carl Carmichael (Speech Communication), Donald Coleman (Educational Research, Administration, and Foundations), Benjamin Cuellar (Social Work Education), William Fasse (Child, Family, and Consumer Sciences), John Franz (Employee Assistance Program), Andrew Hoff (Recreation Administration and Leisure Studies), Phil Kimble (Psychology), Vicky Krenz (Health Science), Joanne Laslovich (Physical Therapy), Rose Lyon (Physical Education and Human Performance), David Natharius (Speech Communication), Elizabeth Nelson (Sociology), Matthew Sharps (Psychology), Ken Shipley (Communicative Disorders), and Lily B. Small (Ethnic Studies).

The Gerontology Program is responsible for the Gerontology Minor, Gerontology Certificate, interdisciplinary courses, Summer Institute on Aging, Gerontology Club, Elderfest, and Elderhostel. The program is closely related to the Friendly Visitor Service, the Central California Comprehensive Alzheimer's Disease Center, the Rohlfing Lecture Series, and the Geriatric Nursing Project and Resource Center.

Career Opportunities

The emergence of employment opportunities in the field of gerontology has developed in response to the needs of a steadily increasing older population. Many occupational roles are available in different sites. These include but are not limited to: federal, state, county, and city agencies, senior citizen centers, adult day care centers, skilled nursing facilities, intermediate care facilities, acute care hospitals, medical centers, senior housing sites, retirement communities, home health agencies, hospices, legislative bodies, and community planning agencies. New programs are developing in Eldercare, case management, and consultation in business.

There is an increased recognition of the importance of designing and providing specialized programs in the private sector. Knowledgeable people work as consultants in: banks, travel agencies, large corporations, insurance companies, educational agencies, publishing and broadcasting agencies, and department stores. The field is wide open for creative and innovative individuals.

Gerontology Minor

The Interdisciplinary Minor in Gerontology (study of aging) is open to students in any major. It is especially designed to serve undergraduate majors in business, 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 21-24 semester units of credit. The total is to be determined by the student's major adviser and the director of the Interdisciplinary Gerontology Program. The following list indicates the course requirements of the minor:

	Units
Basic course	3
Geron 10	
Required	3
Geron 103 or 150	
Core	9
Select three of the following courses: Geron 111, 115, 117, 125, 148, 166	
Electives	3
Select from any of the above courses or Geron 180T, 185; IntD 160; Nurs 134; W S 117	
Internship	3-6
Geron 185	
or	
Independent Study	0-3
Geron 190	
Total	21-24

Basic and core courses offered in the minor may be beneficial to a student's understanding of the aging process and correcting misconceptions about characteristics of aged individuals.

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 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
IntD 160	
Electives	9
Geron 103, 111, 115, 117, 125, 148, 150, 166, 180T; Nurs 134*	
Total	12

* Permission of instructor.

For further information, call or write:

Glen C. Doyle, Director
Interdisciplinary Gerontology Program
School of Health and Social Work
2365 E. San Ramon
Fresno, CA 93740-0102
(209) 278-5216

COURSES

Gerontology (Geron)

10. Introduction to Aging Studies (3)
An introduction to gerontology; theories, concepts, perspectives and research in the study of aging; psychological, physiological, and sociological changes; and cultural, ethnic and political issues. Intergenerational and multicultural activities. General Education BREADTH, Division 4.

103. Maturity and Old Age (3)
(See Psych 103.)

111. Heritage and Aging (3)
Designed to explore various facets of aging. Covers the combined influence and effect of various aspects, including birth, year; cultural heritage; ethnicity, historical/political events; literature, theater, music and visual arts; science and technology. General Education BREADTH, Division 4.

115. Health Issues of Aging (3)
(See H S 115.)

117. Resource Management of Aging (3)
(See CSH 117.)

118. Women and Aging (3)
(See W S 118.)

125. Social Services for the Aging (3)
(See S Wrk 125.)

148. Biophysical Aspects of Aging (3)
(See P E 148.)

150. Communication and Aging (3)
(See Spch 150.) (Former Spch 188T section)

166. Social Gerontology (3)
(See Soc 166.)

180T. Topics in Gerontology (1-3; max total 9)
Various topics in the field of aging. Content varies from semester to semester.

185. Internship in Gerontology (1-6; max total 6)
Prerequisite: upper division or graduate standing and permission of instructor. Supervised work experience in gerontology. May be coordinated with student's major, e.g., *business and gerontology*. ***CR/NC*** grading only.

190. Independent Study (1-3; max see reference)
See *Academic Placement — Independent Study*. Approved for ***SP*** grading.

HEALTH AND SOCIAL WORK Interdisciplinary Courses

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.

Certificate in Alcohol/Drug Studies

A certificate of special study will be awarded to those students who successfully complete a minimum of 12 units of interdisciplinary academic coursework in the area of alcohol and drug abuse. Students seeking the certificate must:

1. have completed two years of college or two years of experience related to the field of alcohol/drug abuse, and
2. be regularly enrolled in the university.

All coursework must be completed with a grade of *C* or better in each of the 9 required units and the 3 units of electives. The following list includes the course requirements for the certificate:

	Units
Requirements	9
H S 110: Habit Forming Substances	
H S 111: Alcohol and Alcoholism	
S Wrk 129: Treatment of Chemical Dependency	
Elective(s)	3
Crim 141: Alcohol, Drugs, and Criminality	(3)
S Wrk 122T: Counseling the Family of the Alcohol/Drug Abuser	(3)
W S 150T: Women, Children, and Alcohol	(1)
W S 150T: Women and Alcohol	(1)
Crim 190, H S 190, S Wrk 190, or W S 190: Independent Study on selected aspects of alcohol/drug abuse	(1)
Total	12

For further information you may contact the Department of Social Work Education at (209) 278-3992.

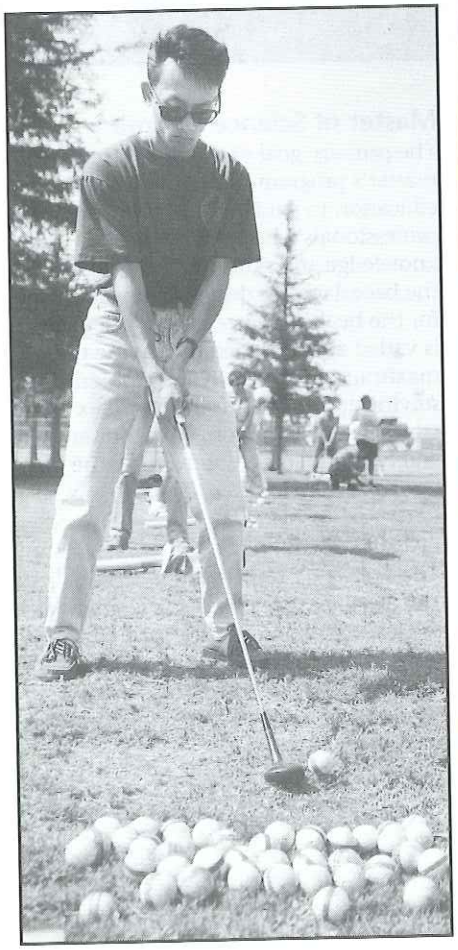
School of Health and Social Work
RICHARD D. FORD, *Dean*
McLane Hall, Room 191
(209) 278-4004

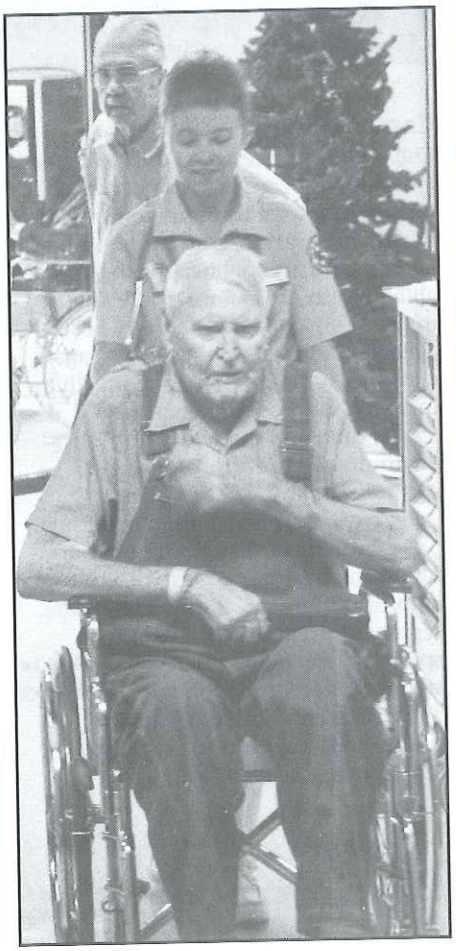
Certificate in Alcohol/Drug Studies

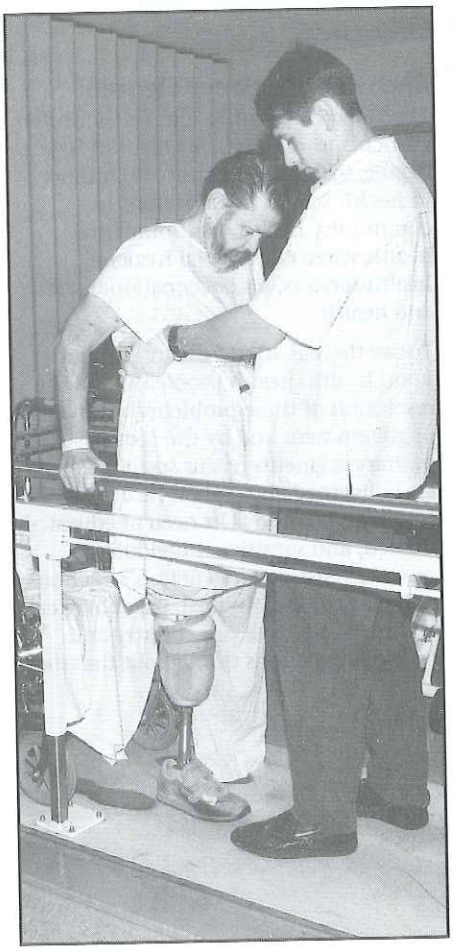
COURSE

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.







Health Science

School of Health and Social Work
Department of Health Science
RONALD C. SCHULTZ, *Chair*
McLane Hall, Room 196
(209) 278-4014

B.S. in Health Science
Options:
Community Health
Environmental Health Science/
Industrial Hygiene
Health Services
Occupational Safety and Health

M.S. in Health Science
Options:
Environmental Health Science
Health Education
Health Services Administration
Master of Public Health

Minor in Health Science

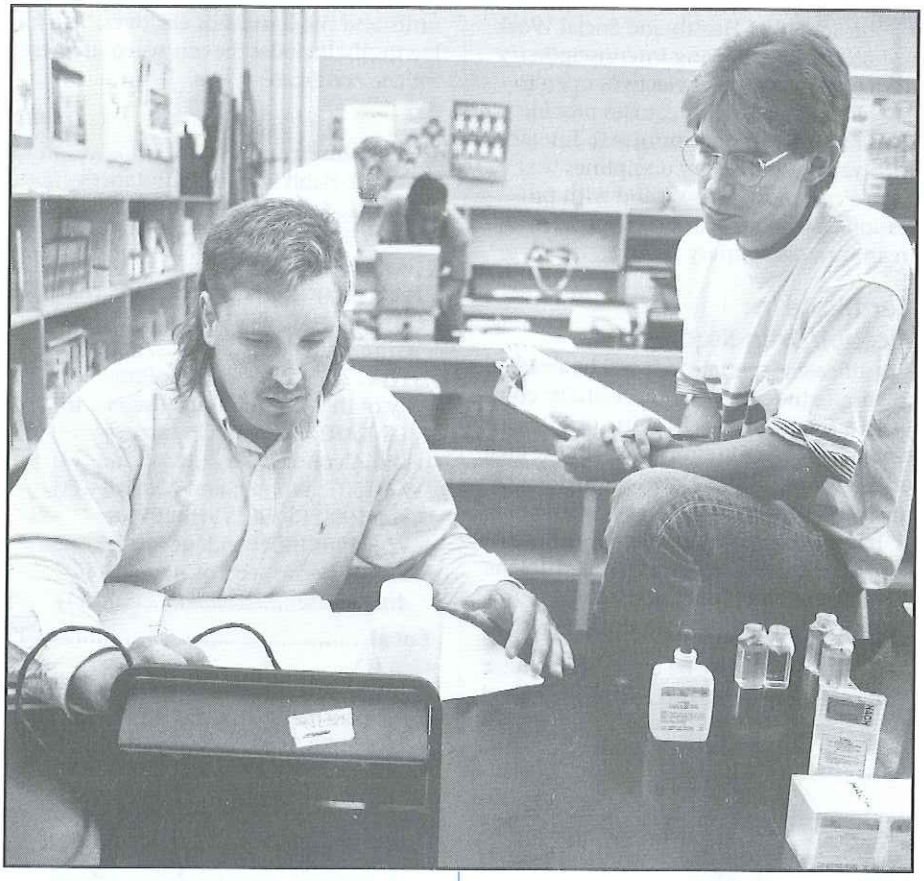
Single Subject Teaching Credential

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/industrial hygiene, health services, and occupational safety and health.

Today there is an 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 cater to the physical, psychological, and social needs of our country and developing nations throughout the world.



Career Opportunities

The options are designed to provide basic education for careers in environmental health, industrial hygiene, community health, occupational safety, public health, occupational health, and the allied health professions. Individuals may be employed by voluntary health agencies, hospitals, public health agencies, and in the private sector including industry and insurance companies. Career titles and specializations include: environmental control officer, risk control specialist, health industry sales, hazardous materials management, loss control specialist, health educator, safety and health specialist, health care administration, safety officer/manager, registered environmental health specialist, secondary teaching, university teaching, safety products sales, substance abuse, industrial hygienist, health promotion, environmental analyst, and disease control officer.

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. Coursework 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. Students must consult with Professor Sherm Sowby concerning admission to this program.

Faculty

Ronald C. Schultz, *Chair*

Sanford M. Brown
Wayne N. Clark
Lucky O. Ehigiator
Terri A. Hamilton
John G. Hardgrave
Vickie D. Krenz
Nathan E. Liskey
Donald L. Matlosz
Jeannine M. S. Raymond
Sherman K. Sowby
Christopher J. Tennant
Michael J. Waite

Community Health Advisers: Terri A. Hamilton, Vickie D. Krenz, Nathan E. Liskey, Sherman K. Sowby

Environmental Health Science/Industrial Hygiene Advisers: Sanford M. Brown, Wayne N. Clark, Ronald C. Schultz, Christopher J. Tennant

Health Services Adviser: Lucky O. Ehigiator, Donald L. Matlosz

Occupational Safety and Health Adviser: Michael J. Waite

Credential Adviser: Sherman K. Sowby

Bachelor of Science Degree Requirements

Health Science Major

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, students 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 choose to specialize in two or more areas of community health whereas others may meet the requirements for environmental health science/industrial hygiene and supplement this with occupational safety and health coursework. Still others may complete all requirements for two options such as environmental health science/industrial hygiene and occupational safety and health.

A major in health science consists of a minimum of 39 units. To complete the major for the B.S. degree, students must complete the health science core (15), one of the options outlined below (24-27), and any additional requirements in related fields as specified. Students are encouraged to complete the additional requirements prior to the major courses as they may meet General Education requirements, and they provide a foundation for the courses in health science.

The General Education requirement, special course requirements, and electives, which may include a minor, complete the 82-85 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.

Classes offered in the Health Science Department may require field assignments.

Degree Requirements

Health Science Core (15 units)
H S 92, 100, 109, 161, 163

Elect one option below (24-27 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. Upon completion of the degree, students would be eligible to take the certified test to become a Certified Health Education Specialist (CHES).

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 (24 units)*
H S 104, 110, 124, 131, 133, 135

Elect 6 units from: H S 48, 105, 111, 112, 115, 126, 129, 130, 152T, 182; Nutr 53, 54

Additional requirements (18 units)
H S 90; Biol 10 or 110; Chem 3A, 3B; PhyAn 33

Environmental Health Science/ Industrial Hygiene Option

The environmental health science/industrial hygiene option prepares an individual for registration as an Environmental Health Specialist (REHS) and provides a balanced theoretical and applied understanding of the concepts and principles of industrial hygiene. The graduates of the program are employed by environmental health programs, industry, government, and research organizations.

The curriculum includes basic science courses, core courses in health science, and foundation courses in chemistry, biology, and health science, including epidemiology, toxicology, environmental health, and industrial hygiene. Graduates of this option will be academically prepared to contribute significantly to the improvement and maintenance of environmental health and the healthful working environments.

The curriculum is designed to permit admission to master's and doctoral degree programs in environmental health and industrial hygiene at major universities throughout the country. The program is accredited by the National Environmental Health Association and approved by the State Department of Health Services.

Environmental Health Science/ Industrial Hygiene Option

Requirements (27 units)*
H S 105, 147, 160, 162, 165, 167, 168; 6 units approved electives

Additional requirements (23 units)
H S 90; Biol 10; Chem 3A, 4, 105; Micro 20 and an approved biology course with lab (see your adviser)

Those students who desire to become registered as an Environmental Health Specialist (REHS) and students wanting to meet minimum standards of many industries for employment as an industrial hygienist must complete H S 175 and must include among their electives and General Education selections the following courses: Chem 8, Math 70, and Phys 2A, 2B. Consult the departmental adviser concerning substitutions, electives, and additions. (Approved by the State of California Department of Health Services and accredited by the National Environmental Health Association.)

*H S 92 may also be applied to satisfy the General Education CORE mathematics requirement if intermediate algebra was completed in high school.

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 more information, see the departmental adviser.

Health Services Option

Requirements (24 units)*

H S 151; H S 154 or Pl Si 181 or Mgt 104; Econ 131; Mktg 100

Elect 12 units from: H S 104, 115, 129, 143, 168, 185F; HRM 150; IS 103; Mktg 132, 138; Soc 147

Additional requirements (15 units)

Acct 3; Econ 40 and 50; H S 90, 182

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 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 (27 units)*

H S 48, 105, 143, 145, 147, 160, 168, 182; 3-unit approved elective

Additional requirements (20 units)

H S 90, 185F (3 units); Chem 3A, 3B or 8; Fin 143; Phys 10

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 Science 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.

* H S 92 may also be applied to satisfy the General Education CORE mathematics requirement if intermediate algebra was completed in high school.

Credential Program

The Single Subject Waiver Program in Health Science consists of the following. For assistance in program planning, consult the credential adviser.

Single Subject Waiver Program in Health Science Requirements

H S 48, 90, 92, 100, 104, 109, 110, 124, 131, 135, 161, 163; Biol 10 or 110; Chem 3A, 3B; CFS 39 or Psych 155; Nutr 53 or 54; Phys 33; Spch 8 or 114 (60 units)

The professional education program as outlined by the School of Education and Human Development (38 units) must also be completed.

Certificate in Alcohol/Drug Studies

The Department of Health Science is participating in a certificate of special study awarded to those students who successfully complete a minimum of 12 units of interdisciplinary academic coursework in the area of alcohol and drug abuse. (For complete details, see *Health and Social Work Interdisciplinary Courses* in this catalog.)

Master of Public Health Degree Program

The program is designed to prepare students in the broad area of public health. It includes preparation in the public health core and in one of the following options: Environmental/Occupational Health, Health Promotion, or Health Administration. Each option includes an internship and a culminating experience.

The MPH program admits students who demonstrate high academic ability and promise, and have the professional values and ethics appropriate to maintaining professional standards in the field. Applicants are expected to have a high degree of academic and professional preparation for this program and the ability to make significant contributions to the program.

Admission to the MPH program is a two-phase process. The first phase requires that a candidate meet the graduate divisions requirements for admission to the university, and the second phase is the admission to the MPH program.

A. Admission to the university: A candidate must have achieved an undergraduate GPA of 2.5 on the last 60 units and submit official copies of university transcripts, and scores on the GRE.

B. Admission to the MPH program: Candidates for admission to the program will be selected based on the following:
   1. Academic ability and preparation as demonstrated by:
      a. GPA in the major
      b. scores on the GRE
      c. official transcripts, and
      d. completion of all prerequisites.
   2. Professional capabilities as demonstrated through:
      a. three letters of recommendation (from employers and at least one from a former faculty member)
      b. a statement of purpose on Application B, and
      c. an oral interview.

Once admitted to the program the student will be assigned to a faculty adviser in the option selected, and under the adviser's direction the student will follow a pattern of study designed to be completed in three years of late afternoon and evening study. Admission commences during the fall semester, and each student is admitted for a specific term. If a student is admitted and is unable to start the program, he or she will have to reapply for admission to another term.

The MPH program is designed around the following framework:

	Units
Public Health Core	18
Option	12
Elective	3
Field Experience	4
Project	4
Total	**41**

For additional information, please contact the Health Science Department at CSU Fresno; 2345 E. San Ramon Ave.; Fresno, CA 93740-0030; (209) 278-4014.

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: (l) a satisfactory undergraduate grade point average (2.5 overall and 3.0 in the major or on the last 60 units); (2) Graduate Record Examination scores;

(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.*)

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: H S 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:

- Preparation 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.

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)

48. First Responder and Emergency Care (3)
American Red Cross First Responder and Emergency Care course. Priorities of care, injuries, medical emergencies, crisis intervention, and casualty incidents. Includes bleeding, shock, fractures, poisoning, emergency childbirth, CPR. Certification for meeting requirements. (2 lecture, 2 lab hours)

90. Contemporary Health Issues (3)
Significance of basic health problems applicable to the young adult and to society. General Education BREADTH, Division 4.

92. Public Health Statistics (3)
Prerequisite: Students must take the ELM exam; students who do not pass the exam must record a grade of *C* or better in a college-taught intermediate algebra course. Introduction to descriptive and inferential statistics as applied to evaluation and research in allied health. Central tendency and dispersion; central limit theorem; hypothesis testing; ANOVA; correlation, nonparametric methods. Interpretations of public health statistics. General Education CORE, Quantitative Reasoning. (2 lecture, 2 lab hours) (Lab fee, $15) (Former H S 102)

100. Community Health (3)
Prerequisite: H S 90. Public health services as they affect the community; investigation and analysis of community health problems.

104. International Health (3)
Prerequisite: H S 90. History and evaluation of programs of international health organizations; health problems on a world scale.

105. Injury Control and Assessment (3)
Human and environmental hazards as they relate to injuries; includes injury causation analysis and assessment. Areas of study cover transportation, consumer products, human factors, fire, industry and accident statistics.

109. Epidemiology of Disease (3)
Modern concepts and principles of epidemiology; interaction of all agents, host, and environmental factors of communicable and noncommunicable diseases; problems of the aged.

110. Habit Forming Substances (3)
The misuse and abuse of chemical substances by humans; includes the psychological, social, and physiological effects.

111. Alcohol and Alcoholism (3)
Physical, mental, and social factors related to the consumption of alcoholic beverages; the development of alcohol dependence.

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.

115. Health Issues of Aging (3)
(Same as Geron 115.) Basic principles and concepts of the aging process; includes the physical, social, emotional, and mental components of health. Benefits of health promotion and preventive action for the aging are also explored.

120. Elementary School Health Science Education (3)
Designed for the multiple subject teacher credential candidate (nonhealth science major) to meet current California legislative requirements including CPR Certification. Focus upon the methods, processes, and content used in the elementary schools for the teaching of health science. Student evaluation based on expected competencies.

121. Secondary School Health Science Education (2)
Designed for the single subject teacher credential candidate (nonhealth science major) to meet current California legislative requirements including CPR certification. Focus upon the methods, processes, and content used in the secondary schools for the teaching of health science. Student evaluations based on expected competencies.

124. Human Sexuality (3)
A multi-faceted approach to the study of sexuality as a natural human function. Involves the biological, psychological, cultural, and sociological components of the human experience. General Education BREADTH, Division 4.

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.

129. Rural Health (3)
Health problems of rural areas including community medical services, medical facilities, federal, state, and local legislation and administrative problems.

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.

131. Principles of Health Education (3)
Study of the foundations, theories, systems, and principles of health education. Includes an analysis of social, medical, and environmental factors on health-related behaviors.

133. Health Education Methods (3)
Theory and practice of health education. Study of concepts and practices relating to the skills and methods in community health education. (Former H S 152T section)

135. Introduction to Human Disease (3)
Prerequisite: H S 90; Phys 33. Concepts and principles of disease and dysfunction of the human body. Detection, diagnosis, treatment, etiology, pathogenesis, and prevention.

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.

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.

147. Evaluation of the Occupational Environment I (3)
General principles of investigation for chemical and physical hazards commonly encountered in the occupational environment. Sampling strategies, quantitative analysis, combustible gases, organic vapors, and non-ionizing radiation. (2 lecture, 2 lab hours)

148. Evaluation of the Occupational Environment II (3)
Prerequisite: H S 147. Concepts and principles of investigative analytical methods for hazards commonly encountered in the occupational environment. Ionizing radiation, noise, metals, and particulates including asbestos. (2 lecture, 2 lab hours)

149. Control of the Industrial Environment (3)
Prerequisite: H S 147, 168. Concepts and principles of controlling physical and chemical compounds in the industrial environment. (2 lecture, 2 lab hours)

151. Health Law and Legislation (3)
The theory and practice of managing inspection-based enforcement programs in health care and environmental health areas, with emphasis on legislation, procedure, and cases relating to public health.

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.

154. Health Care Administration (3)
Organizational design and managerial principles as they apply to the private sector of health care.

160. Principles of Toxicology (3)
Basic principles and concepts of toxicology with a particular emphasis on the regulation of environmental and industrial toxicants for man/woman.

161. Environment and Human Health (3)
General principles of environmental health with a particular emphasis on the interaction between man/woman and the environment. Environmental epidemiology, water, wastewater, air, solid waste, ionizing radiation, and noise.

162. Environmental Health (3)
Basic principles and concepts of environmental health with a particular emphasis on health hazards, communicable disease control, contamination control, food protection, rodent control, managing special environments, planned environments, and environmental health organizations.

163. Public Health Administration (3)
Principles of public health administration, fundamentals of organization, and administration in public health.

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.

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. (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.

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. General Education CAPSTONE Cluster course.

175. Environmental Internship (3-6; max total 6)
Prerequisite: completion of 21 units of the environmental health science/industrial hygiene 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. *CR/NC* grading only.

182. Computers for the Health Professions (3)
Introduction to the basic use and practical application of personal and mainframe computers in health-related professions. Laboratory use of computers covers word processing, SPSS, data entry, data management, principles of programming, and use of on-line databases. (2 lecture, 2 lab hours) (Lab fee, $15) (Former H S 152T section)

185F. Fieldwork 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. *CR/NC* grading only.

188. Health Education Internship (3-6; max total 6)
Prerequisite: completion of 24 units with a minimum of a 3.0 GPA in the major or demonstration of competency in area of assignment. Provide formal practical experience in health education. The internship may be with the CSUF Student Health Service Peer Education Program, a governmental agency, a voluntary agency, private institution, or a combination, depending upon the student's need. *CR/NC* grading only.

190. Independent Study (1-3; max see reference)
See *Academic Placement — Independent Study*. Approved for *SP* grading.

GRADUATE COURSES

(See *Course Numbering System.*)

Health Science (H S)

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.

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.

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. Fieldwork 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. Approved for *SP* grading. *CR/NC* grading only.

290. Independent Study (1-3; max see reference)
See *Academic Placement — Independent Study*. Approved for *SP* grading.

298. Project (2-4; max total 4)
Prerequisite: advancement to candidacy for M.S. degree in Health Science. See *Criteria for Thesis and Project.* 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. Approved for *SP* grading.

299. Thesis (2-4; max total 4)
Prerequisite: See *Criteria for Thesis and Project.* Preparation, completion, and submission of an acceptable thesis for the master's degree. Approved for *SP* grading.

IN-SERVICE COURSE

(See *Course Numbering System.*)

Health Science (H S)

302. Selected Topics in Health (1-3; repeatable with different topics)
Topics in community health, environmental health, health services, and occupational safety and health for teachers, health professionals, and others.

History

School of Social Sciences
Department of History
JOHN C. KENDALL, *Chair*
Social Science Building, Room 101
(209) 278-2153

B.A. in History
M.A. in History
Minor 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.

Students of history are engaged in a journey through time in which they 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 personalities of individuals are shaped through the totality of their 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 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.

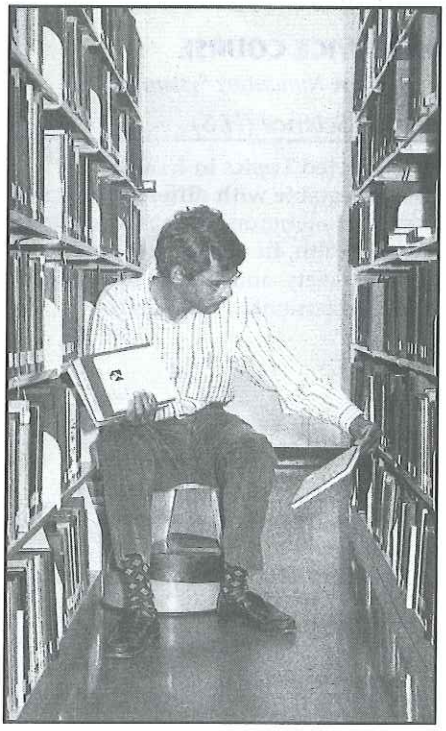
The history department offers a major and minor in history for the Bachelor of Arts degree, a graduate program leading to the Master of Arts, and courses for use in the teaching credential program. It participates in the nondepartmental social science major and in the interdisciplinary programs and minors in Armenian studies, Asian studies, classical studies, Latin American studies, Russian area studies, and women's studies.

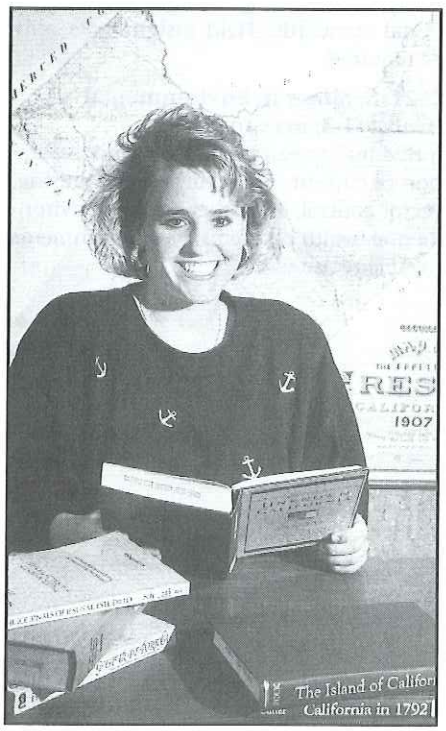
History courses may also be used as electives toward graduation in most other majors, and the History Department encourages students to take minors and second majors in other fields as well.

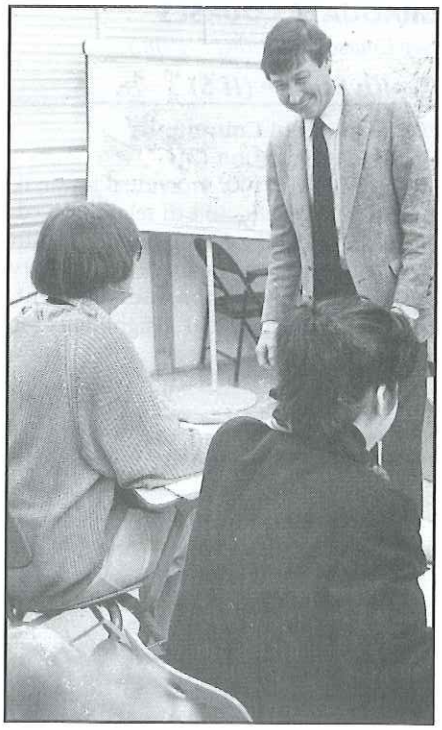
Career Opportunities

History majors are trained to read with comprehension and to compare and analyze both written and oral material. In addition they must know how to evaluate evidence and sources, how to critique the writing of others, and how to do research and writing on their 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*
Undergraduate Adviser: John C. Kendall
Graduate Adviser: Robert J. Dinkin
Social Science Credential Adviser: Jeronima Echeverria

D. Loy Bilderback
Roger C. Bjerk
John W. Bohnstedt
James M. Brouwer
Sidney H. H. Chang
Warren E. Gade
H. Marshall Goodwin Jr.
Diane Harris
David C. Hudson
David N. Jones
W. Hudson Kensel
Peter J. Klassen
Jesus Luna
Robert M. Smetherman
Ephraim K. Smith Jr.

Bachelor of Arts Degree Requirements

History Major	***Units***
Major requirements	**42**
Lower-division requirements (select four): Hist 1, 2, 3, 5, 6, 7, 8	(12)
Upper-division requirements Hist 100 and 27 additional history upper-division units. Included among the latter is a Senior Seminar (see Hist 121B, 132B, 135B, 143B, 171B, 172B, 175B; open only to those with senior standing)	(30)
General Education	**51**
Electives and remaining degree requirements (see *Degree Requirements*); may be used toward a dual major or minor	**31-37***
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*). These courses may be selected from Hist 1, 2, and 101. Consult the history department chair or faculty adviser for additional details.

Advising 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* 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 three fields listed below. At least one course must be selected in each field, but no more than 18 units in one field. At least one course must deal primarily with history prior to 1700.

Fields

Western Hemisphere: Hist 101, 137, 153, 160, 162, 165, 166, 169T, 171A, 171B, 172A, 172B, 173, 174, 175A, 175B, 177, 178, 179T, 180, 181, 182, 183, 184, 185, 186, 188, 189, 190, 198.

European: Hist 103, 111, 112, 116, 119T, 120, 121A, 121B, 122, 124T, 125, 126, 129T, 130, 131, 132A, 132B, 133, 134, 135A, 135B, 136, 138, 140, 141, 142, 143A, 143B, 145, 147, 149T, 150, 151, 190, 198.

Asian, African, and Middle Eastern: Hist 107, 108A, 108B, 109T, 110, 114, 115, 157, 190, 191, 192, 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* for the Single Subject Waiver Program in social science.

American History Requirement

The American history requirement for graduation may be fulfilled by passing (a) the Advanced Placement Examination (see *Advanced Placement*) 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 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 before receiving classified standing.

Master of Arts Degree Requirements

(See *Division of Graduate Studies*.)

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:** 15 units, consisting of Hist 200 (3 units) Hist 210 or 220 (3 units) Hist 230, 235, 242, or 245 (3 units) Hist 250, 260, or 270 (3 units) Hist 280T (3 units).

B. **Six units from among** 100-level history courses and/or Hist 210, 220, 230, 235, 242, 245, 250, 260, and 270 (except Hist 100, 190, 198). With the approval of the departmental graduate adviser, up to 6 units of related courses in other departments may be substituted.

C. **Three units from among** Hist 290 and 292. Those taking the Examination Option must take Hist 290.

Thesis Option: 6 units of Hist 299A-B.

Examination Option: 6 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.

Group I:
a) Ancient History
b) Medieval History
c) Early Modern Europe to 1815
d) Modern Europe since 1789

Group II:
a) The United States to 1865
b) The United States since 1865

Group III:
a) Latin America
b) Asia
c) Africa

Comprehensive examinations are given during the first week in November and the first week in April of each year. In addition students must write formal comprehensive bibliographic essays on each of the three fields on which they are being examined. For other specifics, consult the department graduate adviser; for general requirements see the *Division of Graduate Studies*.

Foreign Language Requirement. All graduate students of the Department of History must pass a reading competency examination in at least one foreign language approved by the graduate adviser before being advanced to candidacy. For further information, consult the department graduate adviser.

COURSES

History (Hist)

1. Western Civilization 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. General Education BREADTH, Division 6. (CAN HIST 2)

2. Western Civilization 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. General Education BREADTH, Division 6. (CAN HIST 4)

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.

8. Republics of Latin America (3)
Rise of the modern Hispanic American states since 1800: political, social, economic development.

11. American History to 1865 (3)
Meets the American history requirement. The formation of the Union and the development of American society to 1865. General Education CORE. (CAN HIST 8)

12. American History from 1865 (3)
Meets the American history requirement. The development of American society since 1865. General Education CORE. (CAN HIST 10)

100. Introduction to Historical Method (3)
Not open to students with credit in Hist 100W. Prerequisite: Engl 1, upper-division standing. 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. (Former Hist 100W)

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. General Education BREADTH, Division 9.

102T. Topics in Women's History (3; max total 6 if no topic repeated)
(See W S 102T.)

103. History of Early Christianity (3)
Not open to students with credit in Hist 103A or 103B. Early Christianity from the first century to eve of Reformation. General Education CAPSTONE Cluster course. (Former Hist 103A; Hist 103B)

107. Modern Middle East (3)
Analysis of Middle Eastern history since Muhammad, with emphasis upon the 19th and 20th centuries. The Middle East under European imperial domination; nationalist movements and revolutions; the Arab-Israeli conflict; the Middle East in contemporary world politics. (Former Hist 109T section)

108A. Armenian History I: Ancient and Medieval (3)
(Same as Arm S 108A.) 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)
(Same as Arm S 108B.) 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. General Education CAPSTONE Cluster course.

112. Ancient Rome (3)
The early history of Rome and the evolution of Roman society, politics, and culture through the republican and imperial periods. General Education CAPSTONE Cluster course.

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. General Education CAPSTONE Cluster course.

116. Greek and Roman Religion (3)
Analysis of the religious ideas, customs, and practices of ancient Greeks and Romans from the time of Homer to the establishment of Christianity. General Education CAPSTONE Cluster course.

119T. Studies in Ancient History (1-3; max total 6 if no topic repeated)
Intensive study of special topics.

120. Byzantine History (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.

121A. The Middle Ages (3)
Not open to students with credit in Hist 121. Prerequisite: Hist 1 or permission of instructor. Medieval Europe from the fall of the Roman Empire in the West to the Renaissance. "A" section may be taken without taking "B" section.

121B. The Middle Ages (3)
Prerequisite: senior standing or permission of instructor; Hist 100 and 121A. Discussion and analysis of central themes and issues in the field; senior seminar. Satisfies the senior major requirement for the B.A. in History.

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. General Education CAPSTONE Cluster course.

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.

132A. Europe in the 19th Century (3)
Not open to students with credit in Hist 132. Prerequisite: Hist 2 or permission of instructor. 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. "A" section may be taken without taking "B" section.

132B. Europe in the 19th Century (3)
Prerequisite: senior standing or permission of instructor; Hist 100 and 132A. Discussion and analysis of central themes and issues in the field; senior seminar. Satisfies the senior major requirement for the B.A. in History.

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.

135A. European Cultural History (3)
Not open to students with credit in Hist 135. Analysis 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 worldwide influence. "A" section may be taken without taking "B" section. General Education CAPSTONE Cluster course.

135B. European Cultural History (3)
Prerequisite: senior standing or permission of instructor; Hist 100 and 135A. Discussion and analysis of central themes and issues in the field; senior seminar. This course does not fulfill a General Education requirement. Satisfies the senior major requirement for the B.A. in History.

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 are 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.

143A. The Soviet Union (3)
Not open to students with credit in Hist 143. The political, economic, and social history of the Soviet Union since 1917. "A" section may be taken without taking "B" section. General Education CAPSTONE Cluster course.

143B. The Soviet Union (3)
Prerequisite: senior standing or permission of instructor; Hist 100 and 143A. Discussion and analysis of central themes and issues in the field; senior seminar. This course does not fulfill a General Education requirement. Satisfies the senior major requirement for the B.A. in History.

145. Spain and Portugal (3)
Development of the Iberian Peninsula from prehistoric to modern times.

147. Eastern Europe (3)
An analysis of the history of East Central Europe and the Balkans.

149T. Studies in Modern European History (1-3; max total 6 if no topic repeated)
Intensive study of special topics.

150. England to 1485 (3)
Structure of the British government, society, and economic life from Roman times to The War of the Roses.

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 1485 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. General Education CAPSTONE Cluster course.

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.

162. South America (3)
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. General Education CAPSTONE Cluster course.

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.

171A. Early American History, 1607-1789 (3)
Not open to students with credit in Hist 171. Prerequisite: Hist 11 or permission of instructor. 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. "A" section may be taken without taking "B" section.

171B. Early American History, 1607-1789 (3)
Prerequisite: senior standing or permission of instructor; Hist 100 and 171A. Discussion and analysis of central themes and issues in the field; senior seminar. Satisfies the senior major requirement for the B.A. in History.

172A. United States History, 1789-1865 (3)
Not open to students with credit in Hist 172. Prerequisite: Hist 11 or permission of instructor. Political, economic, social, and cultural developments from the beginning of the Republic through the Civil War. "A" section may be taken without taking "B" section.

172B. United States History, 1789-1865 (3)
Prerequisite: senior standing or permission of instructor; Hist 100 and 172A. Discussion and analysis of central themes and issues in the field; senior seminar. Satisfies the senior major requirement for the B.A. in History.

173. United States History, 1865-1914 (3)
The development of an increasingly urban and industrialized society from Reconstruction to the eve of World War I.

174. United States History, 1914-1945 (3)
Not open to students with credit in Hist 174A. The United States in world affairs; political, economic, social, and cultural developments and problems from 1914 to 1945.

175A. United States History, 1945-Present (3)
Not open to students with credit in Hist 174B. Prerequisite: Hist 12 or permission of instructor. The United States in world affairs; political, economic, social, and cultural developments, and problems from 1945 to present. "A" section may be taken without taking "B" section.

175B. United States History, 1945-Present (3)
Prerequisite: senior standing or permission of instructor; Hist 100 and 175A. Discussion and analysis of central themes and issues in the field; senior seminar. Satisfies the senior major requirement for the B.A. in History.

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 African Americans (3)
(See Af Am 178.) General Education BREADTH, Division 9.

179T. Studies in United States History (1-3; max total 6 if no topic repeated)
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.

181. Westward Movement to 1848 (3)
Not open to students with credit in Hist 181A. 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. (Former Hist 181A)

182. Westward Movement Since 1848 (3)
Not open to students with credit in Hist 181B. Patterns of exploitation; role of the federal government in the West: land policy, Indian policy; problems of communication; economic growth. (Former Hist 181B)

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. General Education CAPSTONE Cluster course.

184. American Diplomatic History to 1898 (3)
Not open to students with credit in Hist 184A. Principles, ideals, and policies of the United States in diplomatic relations from 1775 to 1898. (Former Hist 184A)

185. American Diplomatic History, 1898-Present (3)
Not open to students with credit in Hist 184B. Principles, ideals, and policies of the United States in diplomatic relations as a great world power in the 20th century. (Former Hist 184B)

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. General Education CAPSTONE Cluster course.

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.

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 1860s to the present.

190. Independent Study
(1-3; max see reference)
See *Academic Placement — Independent Study*. Approved for ***SP*** grading.

191. Modern Far East, 1843-1949 (3)
Not open to students with credit in Hist 191A. 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. (Former Hist 191A)

192. Modern Far East, 1949-Present (3)
Not open to students with credit in Hist 191B. 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. (Former Hist 191B)

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.*)

History (Hist)

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 History (3)
Intensive reading and discussion/analysis of significant historical literature and problems in the history of the ancient Mediterranean, classical Greece, and Rome.

235. Seminar: Interpretations in Medieval History (3)
Intensive reading and discussion/analysis of significant historical literature and problems in Medieval history.

242. Seminar: Interpretations in Early Modern European History (3)
Intensive reading and discussion/analysis of significant historical literature and problems in Early Modern European history, 1450 to 1815.

245. Seminar: Interpretations in Modern European History (3)
Intensive reading and discussion/analysis of significant historical literature and problems in European history since 1789. (Former Hist 240)

250. Seminar: Interpretations in Latin American History (3)
Intensive reading and discussion/analysis of significant historical literature and problems in Latin American history.

260. Seminar: Interpretations in African History (3)
Intensive reading and discussion/analysis of significant historical literature and problems in African history.

270. Seminar: Interpretations in Asian History (3)
Intensive reading and discussion/analysis of significant historical literature and problems in Asian history.

280T. Research Seminar (3)
Prerequisite: 6 units from among Hist 200, 210, 220, 230, 235, 242, 245, 250, 260, and 270 or approval of graduate adviser. 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*. Approved for ***SP*** grading.

***292. Directed Readings**
(1-3; max total 6 if no area repeated)
Prerequisite: permission of 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*. 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. Approved for ***SP*** grading.

IN-SERVICE COURSE

(See *Course Numbering System.*)

History (Hist)

300. Topics in History
(2; max total 8 if no topic repeated)
Selected topics in various fields of history, e.g., European, The Americas, United States, non-Western.

*Maximum total for Hist 290 and 292 combined is 9 units if no area repeated.

HUMANITIES Interdisciplinary Minor

School of Arts and Humanities
Office of the Dean
Music, Room 186A
(209) 278-3056

Humanities Interdisciplinary Minor

The Humanities Interdisciplinary Minor 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

Kathryn L. Bumpass
George E. Diestel
Victor Hanson
David T. Natharius
Manuel Pena
Bruce S. Thornton
Pamela L. Vaughn

Humanities Interdisciplinary Minor	***Units***
Hum 10, 11, 12, or 14	3
IntD 104, 108, 110, 112, or 116	6
IntD 123, 124, or 130	3
Hum 140 or 150	3
Electives (select from remaining humanities courses or from other pertinent courses approved by the faculty adviser)	6
Total	21

COURSES

Humanities (Hum)

1T and 101T. Topics in Humanities (1-4)
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. General Education BREADTH, Division 6.

11. Introduction to the Humanities (3)
Interrelationships among art, literature, music, and philosophy, from the 17th century Age of Reason to the present. General Education BREADTH, Division 6.

12. Introduction to Asian Humanities (3)
Interrelationships among the verbal and nonverbal arts, the wisdom literature, and the religions of India, China, and Japan. General Education BREADTH, Division 6.

14. Introduction to the Humanities: Pre-Columbian America (3)
Interrelationships among the visual arts, literature, myth, and philosophy in the Pre-Columbian civilizations of the Americas. General Education BREADTH, Division 6.

140. Tradition and Change in China and Japan (3)
(Same as Anth 186.) 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. General Education CAPSTONE Cluster course.

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 lifestyles, world views, and experiences; the development of their intellectual, aesthetic, and spiritual traditions; and their current aspirations and problems. General Education CAPSTONE Cluster course.

190. Independent Study (1-3; max see reference)
See *Academic Placement — Independent Study*. Approved for ***SP*** grading.

CAPSTONE: Interdisciplinary (IntD)

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.

108. Humanities in Classical Athens (3)
An examination of the unique cultural environment of the ancient city, its art, architecture, literature, social and political structures, and their interrelationships as manifested in fifth century Athens.

110. Humanities in Republican and Imperial Rome (3)
An examination of the unique cultural environment of the ancient city, its art, architecture, literature, social and political structures, and their interrelationships as manifested during Republican and Imperial Rome.

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.

118. Folklore in Modern Life (3)
An examination of the role of folklore in modern life, its power to communicate critical issues through expressive culture, e.g., jokes, legends, folksongs, graphic arts, and festival; focus on the intellectual currents influencing the study of folklore provides interdisciplinary perspective.

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 World War I.

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 World War I 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.

IN-SERVICE COURSE

(See *Course Numbering System.*)

Humanities (Hum)

300T. Topics in Humanities (1-3; max total 12 if no topic repeated)
Selected areas in humanities.

Liberal Studies

The aim of a liberal education is to produce humanized citizens. Such an education seeks to develop in students an appreciation and understanding of the arts, the sciences, the humanities, and the various cultures that compose the area serviced by California State University, Fresno. A study of the liberal arts teaches ways of thinking, exploring, understanding, and seeing the world from the perspective of others.

The primary mission of the Liberal Studies Program is to provide a strong knowledge-based education in the liberal arts that will provide subject matter preparation for elementary teaching or foundation preparation for other professions such as law, medicine, journalism, and various fields of public service. A special 12-unit noncredential Liberal Arts Option is available in the program for students not pursuing a career in elementary school teaching (see *Liberal Studies Major Core* on the next page).

The liberal studies major requirements, as described in this catalog, became effective at the beginning of the 1991 fall semester. Students beginning their college work at that time or later, or not qualifying for a previous catalog, must follow this major. Any students qualifying for a previous liberal studies major program can find a description of those requirements in the appropriate CSU Fresno catalog. Students following the requirements for a previous major, and intending to enter the Professional Education Program leading to a Multiple Subjects (K-6) credential, must complete those requirements by the beginning of the 1994 fall semester. After that date any previous liberal studies major will not serve as a waiver major.

Faculty

Because of the nature of the degree program, faculty represent a broad cross-section of academic disciplines. At present, 45 different departments offer courses that can be applied toward this major. The initial point of contact is the Liberal Studies Office, located in the Ed/Psych Building, Room 111, 278-3974.

Credential Programs

Liberal studies students who wish to complete a credential program that will lead to authorization to teach in an elementary school must follow a specific course of study. Students may wish to use their electives to begin work on one of the following credentials:

Preliminary Multiple Subject Credential. This program is called Option I and is taken by most liberal studies students. It requires the completion of the liberal studies major and 30 units of additional units of Professional Education Core courses.

Cross-Cultural Language and Academic Development (CLAD) and Bilingual Cross-Cultural Language and Academic Development (BCLAD) Credentials. These credential programs are being developed, and will replace the current Bilingual/Cross-Cultural Emphasis program in 1993-94. The emphasis of the CLAD/BCLAD credential is to prepare teachers to work with limited English proficient students. The CLAD authorization will certify teachers to provide instruction for English language development and specifically designed academic instruction, delivered in English, to students. The BCLAD will authorize teachers to provide academic instruction to limited English proficient students in their primary language. For specific details, see the CLAD/BCLAD coordinator, Finian McGinn, Industrial Technology 242.

Preliminary Multiple Subject Credential — Early Childhood Education Emphasis. This program is called Option II and requires that students complete a liberal studies major and 30 units of Professional Education Core courses designed specifically for early childhood education teachers.

Preprofessional Program. Liberal studies students who are interested in obtaining a strong academic foundation that will serve as entry to other people-oriented (nonteaching) professions, such as journalism, law, medicine, etc., can follow the specially designed Non-Credential Liberal Arts Option within the Liberal Studies Major Core (see next page). This program should be planned in consultation with the liberal studies adviser.

Career Opportunities

Liberal studies majors preparing for careers in elementary teaching should expect to find a favorable job market. Recent statistical reports for the Central Valley provide evidence that the area population is continuing to grow along with the number of school-aged children. This pattern of growth, along with

School of Education and Human Development
JACQUES S. BENNINGA, *Coordinator*
CAROLYN BOTTA, *Adviser*
WILLIAM MEYER, *Adviser*
Ed/Psych Building, Room 111
(209) 278-3974

B.A. in Liberal Studies
Multiple Subject Credential (Option I)
CLAD/BCLAD Credential (expected approval, 1993-94)
Early Childhood Education (Option II)

anticipated attrition from the teaching profession, provides ample support of a continuing need for well-prepared, credentialed elementary teachers.

Liberal studies majors not planning careers in teaching will find that a number of area employers are seeking prospective employees with a broader vision of the world, not normally provided by a narrow specialization. Opportunities are available in people-oriented jobs such as public relations, personnel, medicine, etc.

As liberal studies candidates prepare for entrance into the teaching profession or other people-oriented careers, they are provided expert assistance from the campus Career Development and Employment Services Office. Assistance in preparing placement files, preparing for job interviews, and searching for suitable employment is readily available for each candidate.

Program Advisement

Liberal studies majors are expected to attend a group orientation during their first semester on campus. Students may sign up for orientation at the Liberal Studies Office in EdP 111 or call the office at 278-3974. These orientations, which are scheduled regularly each term, enable students to understand major requirements and ensure effective planning of their coursework. Students seeking individual advisement (customarily following the group orientation) should visit or call the Liberal Studies Office. It is helpful to bring the official evaluation form and grade reports when meeting with an adviser. All students should request a senior evaluation from the Evaluations Office upon completion of 90 units (cumulative) of coursework.

Freshmen. Follow the catalog description for General Education and select from appropriate categories.

Transfer Students. Select courses from the Liberal Studies Major Core and Content Requirements. The official university evaluation of coursework from the Evaluations Office will be mailed and will arrive near the end of the first term of enrollment. Attend a group orientation as soon as possible to ensure a smooth transition into the Liberal Studies Program.

The Liberal Studies degree program consists of eight main program components:

General Education

1. University General Education CORE
2. General Education BREADTH
3. General Education CAPSTONE (upper division)

Liberal Studies Major

4. Core
5. Content
6. Upper-Division Concentration
7. Liberal Studies Project
8. Electives

Bachelor of Arts Degree Requirements

Liberal Studies Major	***Units***
General Education	**51**
CORE	(18)
BREADTH	(27)
CAPSTONE (upper division)	(6)
Major Core	**14-15**
C Sci 5, 7; IS 50	(2-3)
Options (select one)	
Multiple Subject Teaching Credential	
P E 152	(3)
CFS 39 or Psych 101	(3)
CFS 133, Psych 169, or RLS 125	(3)
Art 179, Ling 146, Music 153, or Spch 114	(3)
Non-Credential Liberal Arts	
Department approved coursework	(6)
Independent Study	(6)
Content	**28**
Arts/Humanities	
Engl 101, 102, or 103	(4)
One course from Art 179; Art Hist 10, 11; Dance 160; Drama 136, 137, 138; Engl 41, 43; Hum 10, 11, 12; Ling 132, 138, 146; Music 74, 153, 155; Spch 114; or any foreign language	(3)
Social Science	
Geog 4	(3)
Hist 11 (if not taken in G.E. Core)	(0-3)
Econ 165; Hist 1, 2, 12	(3-6)
Mathematics/Science	
Math 5, 41, or 43; or higher level	(3)
Biol 100, 110; Chem 1; Geog 5; Geol 1; or Phys 10; or higher level	(3)
Ethnic/Gender/Culture	
Select from **two** departments (one must be CLS) Af Am 195, As Am 195, CLS 195, A I S 195, or W S 195	(3)
Af Am 144; As Am 110; CLS 116, 143, 152; A I S 103; W S 131 or 135	(3)
Upper-division concentration	**12**
Information and major approval forms are available in the Liberal Studies Office or in the Liberal Studies Program Handbook.	
Senior Project: EHD 115	**3**
Electives	**15-16**
Total	**124**

Advising Notes

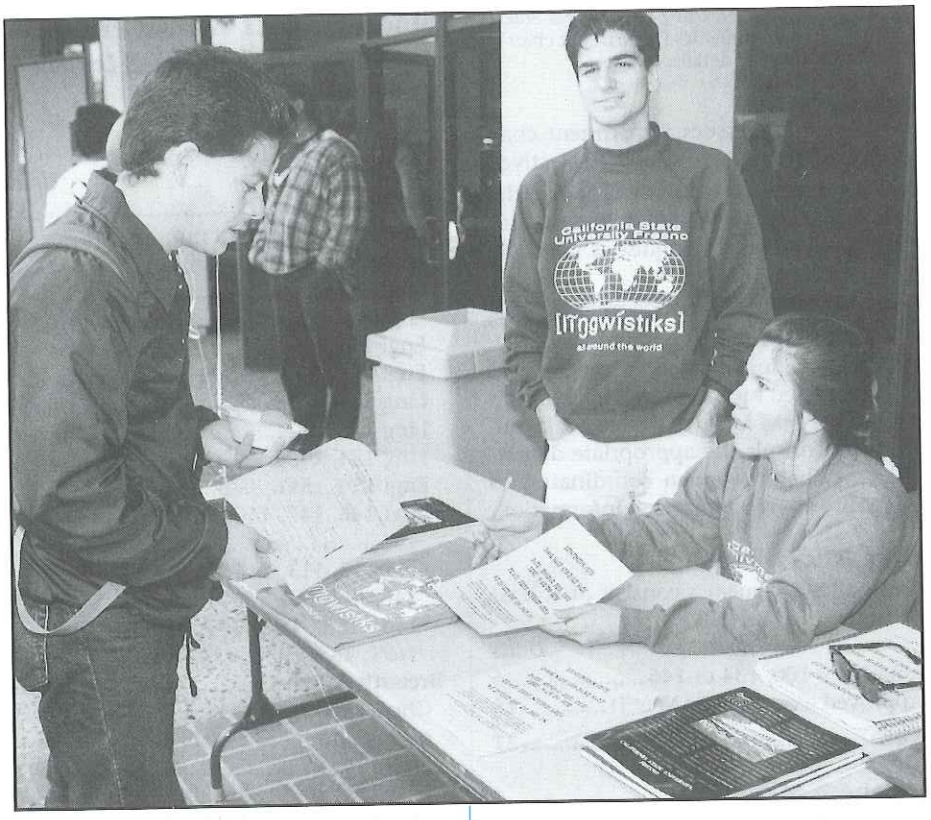
1. Engl 101, 102, or 103 will count toward the requirement of 9 units in upper-division General Education.
2. Courses used to satisfy CAPSTONE may not be used to satisfy requirements for the major.
3. The upper-division writing skills requirement must be met after completing 56 units. See *Degree Requirements*.
4. Students in the Non-Credential Liberal Arts Option who decide later to pursue the Multiple Subject Credential must complete the Teaching Credential Option.
5. Liberal studies majors who plan to obtain a Multiple Subject Credential (elementary teaching) normally take Multiple Subject Credential core courses as their electives. To enroll in these courses it is essential that the candidate be officially admitted to the program one semester prior to enrolling in the Multiple Subject Credential core courses (April 1 for fall enrollment and November 1 for spring enrollment). See the *Curriculum, Teaching, and Educational Technology* section in this catalog for specific details.
6. Liberal Studies majors may take up to 6 units of ***CR/NC*** within the major.

Scholarship Requirement

Liberal studies majors who plan to obtain a Multiple Subject Credential (elementary teaching) must obtain a high GPA as a condition for admission to a teacher education program. The GPA for the multiple subject applicant is calculated as a cumulative average of all college coursework taken. This cumulative average may be calculated based on prior degrees earned, transfer units from other CSU or non-CSU campuses, or dates of prior degrees earned.

Currently, a GPA of 2.87 is required for admission to the Multiple Subject Credential Program. This figure is subject to periodic change. For additional information regarding admission to the Multiple Subject Credential Program, contact the School of Education and Human Development Admissions and Records Office in EdP 120.

Linguistics



School of Arts and Humanities
Department of Linguistics
GERALD R. McMENAMIN, *Chair*
Peters Business Building, Room 383
(209) 278-2441

B.A. in Linguistics
M.A. in Linguistics
Minor in Linguistics

The Department of Linguistics offers an undergraduate minor, a Bachelor of Arts degree with options in teaching English as a Second Language (ESL) and Spanish-English Bilingualism, and a Master of Arts degree with options in General Linguistics and ESL. 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 reflects the operation of his or her mind and the values and expectations of the society to which he or she belongs.

An undergraduate major in linguistics qualifies a student to teach ESL 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 master's degree qualifies a student to teach in a community college or university or in an adult school as well as 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, foreign languages, 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. The Linguistics Department provides practical classroom teaching experience for qualified ESL students through employment in the American English Institute, a facility established by the department and operated under the aegis of the Extended Education Office. 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 worldwide demand for teachers of ESL and for consultants and resource teachers in elementary and secondary schools, as well as for authors and editors of ESL 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

Gerald R. McMenamin, *Chair*

Undergraduate Advisers: Barbara M. Birch, Gerald R. McMenamin

Graduate Advisers: P. J. Mistry, Vida Samiian

Armando Baltra
Frederick H. Brengelman
Ellen Lipp
Peter A. Master
Shigeko Okamoto
George W. Raney
Graham W. Thurgood
Raymond S. Weitzman
Grover K. H. Yu
Jack B. Zeldis

Bachelor of Arts Degree Requirements

Linguistics Major

To complete the major for the B.A. degree, students must complete 30 units in one of the options outlined below, the General Education requirement, specific course/skill requirements, and electives and remaining degree requirements totaling at least the 124 units required for a B.A. degree.

The B.A. program in Linguistics is diversified but integrated. It prepares students for a variety of careers in bilingual-bicultural education and the teaching of ESL.

At present, two options are available: 1) English as a Second Language and 2) Spanish-English Bilingualism. In each option, students receive a basic grounding in the nature and structure of human language.

	Units
Major requirements	**30**
Select one option:	
English as a Second Language	
Ling 10 or 100, 134 or 146, 141, 171	(12)
Select from Ling 132, 138, 147	(6)
Approved electives (see *Note 1)*	(12)
Spanish-English Bilingualism	
Ling 10 or 100, 134 or 146, 141	(9)
Select from Ling 132, 136, 147, 148	(6-9)
Electives from Chicano and Latin American Studies, Spanish, Linguistics	(12-15)
General Education	**51**
Electives and remaining degree requirements (See *Degree Requirements*); may be used toward a dual major or minor	**43-46***
Total	**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*). Consult Linguistics Department chair or faculty adviser for details.

Advising 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* 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
Ling 10 or 100, 134 or 146	6
Approved electives (*see Note 1*)	15
Total	**21**

Japanese Minor

A Minor in Japanese consists of at least 18 units.

	Units
Japn 1A, 1B, 2A, and 2B	12
Electives	6
Select from the following: Japn 100, Ling 140T (Japanese Language and Culture), Ling 140T (Japanese Linguistics), and Ling 190 (Independent Study)	
Total	**18**

General Education Linguistic Credit

The following courses are applicable to Division 7 of the General Education requirements: Chinese 1A, 1B, 2A, 2B; Hebrew 1A, 1B; Japanese 1A, 1B, 2A, 2B; Linguistics 10; Sanskrit 10A, 10B. See also the *Department of Foreign Languages and Literatures.*

Language Development Specialist Certificate

See *Literacy and Early Education, Specialist Credentials.*

Bilingual/Cross-Cultural Language and Academic Development (CLAD/BCLAD) Credentials

See *Literacy and Early Education, CLAD/BCLAD,* expected approval 1993-94.

Single Subject Waiver Program

English/English as a Second Language

Prerequisites:
Engl 41 or 43 (4)
Ling 10 or 100 (3)

	Units
Core courses	**35**
Choose the required number of units from each group:	
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, 168T, 169T, 183, 193, 193T, 194	(4)
Breadth courses	**18**
Choose the required number of units from each group:	
Ling 171	(3)
Ling 132, 136, 150	(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 below; for general requirements see *Division of Graduate Studies*. 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 and Literatures.

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 prerequisites. 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.*)

Master of Arts Degree Requirements

	Units
Core courses	9
Ling 145, 242, 243	
Options	21
Select one option:	
General Linguistics	(21)
Ling 148, 238 and 15 units of approved upper-division and graduate level coursework	
ESL	(21)
Ling 237, 241, 244, and 12 units of approved upper-division or graduate level coursework of which a minimum of 3 units are in ESL-related areas	
Total	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. Any two graduate courses in French.

Emphasis in German. Any two graduate courses in German.

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, grammatical concepts, language change, child language acquisition, role of language in society. General Education BREADTH, Division 7.

20. Language and Culture (3)
The relationship between language and culture; linguistic diversity of ethnic groups in the U.S. and the world.

40T. Topics in Linguistics (1-4; max total 12 if no topics repeated)
Topics to be offered at the discretion of the department.

100. General Linguistics (3)
Linguistics methodology: phonology, morphology, syntax, and semantic analysis. Language history: variation and change. (Former Ling 135)

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 lifestyles, world views and experiences; the development of their intellectual, aesthetic and spiritual traditions; and their current aspirations and problems. General Education CAPSTONE Cluster course.

130. Language and Gender (3)
An exploration of gender-based variation in language structure and usage in different languages, cultures, social classes, and ethnic groups. An overview of current research in the field and implications for linguistics and social universals. (Former Ling 140T section)

132. Linguistics and Reading (3)
Prerequisite: Ling 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.

136. Varieties of English (3)
The regional, social, and stylistic varieties of modern English.

138. History of the English Language (3)
Prerequisite: Ling 10, 100 or 134. 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. (2 lecture, 2 lab hours)

140T. Topics in Linguistics (1-4; max total 12 if no topic repeated)
Topics to be offered at the discretion of the department.

141. Teaching English to Speakers of Other Languages (TESOL) (3)
Prerequisite: Ling 134 or 146. Theories and methods of teaching English to speakers of other languages.

142. Phonology (3)
Prerequisite: Ling 100. 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 100. Theory and practice in the description of grammatical systems. Comparison of approaches. Practical experience with data.

145. Historical Linguistics (3)
Prerequisite: Ling 100. Explanation of similarities among languages; methods of reconstructing past languages and investigating relationship and grouping among languages. Comparison of approaches to language change.

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 of language arts and ESL teachers.

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 variations.

150. Child Language Acquisition (3)
An examination of the psycholinguistic nature of first and second language acquisition and the biological foundations of language. Overview of current research in the field and implications for the language arts program. (Former Ling 140T section)

155. Computer Applications in Linguistics and ESL (3)
Introduction to the applications of computers in both theoretical and applied

linguistics. Some minimal experience in using computers is assumed. (2 lecture, 2 lab hours) (Former Ling 140T section)

171. Practicum in TESL (3)
Prerequisite: Ling 141 or concurrently. Provides practice in teaching English as a Second Language; includes class visitations and classroom demonstrations; working with non-native speakers, lesson planning, material preparation, and evaluation of current ESL texts.

190. Independent Study (1-3; max see reference)
See *Academic Placement — Independent Study*. Approved for ***SP*** grading.

FOREIGN LANGUAGE COURSES

Chinese (Chin)

1A-B. Elementary Chinese (3-3)
Not open to students with previous training. Beginning course in spoken and written Mandarin Chinese. General Education BREADTH, Division 7.

2A-B. Intermediate Chinese (3-3)
Prerequisite: Chin 1B. Review grammar and syntax; techniques of brush use; speaking and reading. General Education BREADTH, Division 7.

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. General Education BREADTH, Division 7.

Hmong (Hmong)

1A-B. Basic Hmong (3-3)
Beginning course in spoken Hmong. Covers learning comprehension and oral practice, basic grammar, vocabulary, and traditions and lifestyle of the speakers of the language. (Former Ling 140T section)

Japanese (Japn)

1A-B. Elementary Japanese (3-3)
Beginning course in modern Japanese. Development of communicative skills through practice of basic sentence and conversational patterns. Introduction to reading and writing in Hiragana, Katakana, and 50 Kanji characters. General Education BREADTH, Division 7.

2A-B. Intermediate Japanese (3-3)
Prerequisite: Japn 1B. Further development of communicative skills in conversational Japanese. Also covers reading and writing in Kana and 200 Kanji characters. General Education BREADTH, Division 7.

100. Advanced Japanese (3)
Prerequisite: Japn 2B or its equivalent. Enhancement of oral communicative fluency as well as grammatical accuracy. Includes practice in reading some expository writing. Covers 150 Kanji characters. (Former Ling 140T section)

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 lifestyle of the speakers of the language, and relationship with Greek, Latin, and Germanic languages. General Education BREADTH, Division 7.

English as a Foreign Language (EFL)

(See *Special Programs* section for English courses for speakers of other languages offered through the Linguistics Department.)

GRADUATE COURSES

(See *Course Numbering System.*)

Linguistics (Ling)

231T. Seminar in Linguistics (3; max total 12 if no topic repeated)
Prerequisite: Ling 100 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 100 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.

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 scholarly concern and climate during each period.

241. Seminar in Teaching English as a Second/Foreign Language (3)
Prerequisite: Ling 141. Overview of research in the field of ESL/EFL 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. ESL Classroom Evaluation Techniques (3)
Covers 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.

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.

249. Field Methods in Linguistics (3)
Prerequisite: Ling 142 or equivalent. Firsthand experience in eliciting linguistic data from informants; practice in analyzing and describing a language. (6 lab hours)

251. Seminar in Discourse Analysis (3)
Prerequisite: Ling 100 or equivalent. Exploration and analysis of the functional and other linguistic basis for the organization of units larger than the sentence. (Former Ling 140T section)

290. Independent Study (1-3; max see reference)
See *Academic Placement — Independent Study*. Approved for ***SP*** grading.

Mass Communication and Journalism

School of Arts and Humanities
Department of Mass Communication and Journalism
R. C. ADAMS, *Chair*
McKee Fisk Building, Room 238
(209) 278-2087
(209) 278-2628

B.A. in Mass Communication and Journalism
Options:
Advertising
Broadcast Journalism
Broadcast Management
Broadcast Production
Media Studies
News-Editorial
Photocommunications
Public Relations
M.A. in Mass Communication
Minor in Mass Communication and Journalism

The Department of Mass Communication and Journalism offers courses of study for students seeking careers in the media or allied fields or wishing to pursue advanced study in mass communication and journalism. The department offers eight options:

1. **advertising**, which involves communication skills in marketing consumer goods and services and in disseminating other information,
2. **broadcast journalism**, which stresses effective news-gathering techniques and development of a clear writing style for the broadcast media,
3. **broadcast management**, which is oriented to developing the practical skills and the critical overview essential to an administrative or managerial role in any of the electronic media,
4. **broadcast production**, which is designed to develop skills and critical abilities supportive of careers in producing/directing in all the electronic media,
5. **media studies**, which provides an analytical study of the media and their impact on society,
6. **news-editorial**, which stresses effective news-gathering techniques and development of a clear writing style for the print media,
7. **photocommunications**, which emphasizes photography and the visual elements of mass media, and
8. **public relations**, which focuses on developing communication skills that will create better understanding between institutions and the general public.

Facilities

The department uses laboratories equipped for audio production and editing, video production and editing, still photography, writing and editing for all media, and newspaper and magazine layout. Computers and computerized equipment are a part of writing labs wherein writing assignments are executed and the departmental newspaper, *Insight*, is produced. Computer-assisted video editing is a part of laboratory instruction and available for co-curricular activities in program production. The department also subscribes to computer databases and on-line news and information services for instructional use.

Bulldog Video is a co-curricular student organization that operates, under departmental supervision, a closed-circuit video program service on the campus. KFSR-FM is an operating radio station licensed to the president of the university and funded, in large part, by student fees. Although not affiliated with the department, *The Daily Collegian*, a daily newspaper published by the Associated Students, is an additional outlet for student work. All three organizations receive most of their financial support through Instructionally Related Activities monies and provide some paid, part-time employment and experience for advanced students.

Internships and Placement

Through contractual arrangements with local media enterprises, the department provides internship opportunities for qualified students (see MCJ 191). Also, department faculty assist graduating seniors in job placement through individual counsel, referral, and recommendation. Qualifying for an internship is one of the major steps any student can take in pursuing employment upon graduation.

Accreditation and Affiliations

The department is accredited by the Accrediting Council on Education in Journalism and Mass Communications. It is also a member of the Association of Schools of Journalism and Mass Communication and of the Broadcast Education Association. Student organizations include chapters affiliated with Alpha Epsilon Rho, the National Broadcasting Society; the American Advertising Federation; the California Chicano News Media Association; the National Press Photographers Association; and the Society of Professional Journalists.

Faculty

R. C. Adams, *Chair*

Paul D. Adams
Roberta R. Asahina
Rita A. Atwood
George A. Flynn
Joel P. Fowler
Russell A. Hart
Philip J. Lane
D. Gregory Lewis
William N. Monson
B. Schyler Rehart Jr.
James B. Tucker
James R. Wilson
John D. Zelezny

Bachelor of Arts Degree Requirements

Mass Communication and Journalism Major

All mass communication and journalism majors should be aware of the following requirements for completion of the Bachelor of Arts degree:

1. A minimum of 124 units must be completed for graduation, 51 in General Education, 40 (including 9 upper-division G.E. units) in upper-division courses.
2. The department requires (depending upon option) 32-34 units of MCJ courses for the major. They include 9 units of core courses taken by all majors, 18-22 units selected from an option in the major, 6-9 units from the elective list for the option, and 3-6 other units from the departmental offering.
3. The department requires 15 units to be taken in a "Liberal Arts and Sciences" block. A list of approved courses is available in the department office. Selections should be made with the advice, and substitutions may be made only with the written consent, of the faculty member providing a student's major advising.
4. Electives may not include courses in which the content focus is on mass communication.

Degree Summary	*Units*
Major requirements	32-34*
Major courses in the department (See 2, above.)	
Liberal Arts and Sciences block	15
(See 3, above.)	
General Education	51
Electives	24-26*
(See 4, above.)	
Total	124

*The number of units depends upon the student's choice of option.

Advising Notes

1. Only MCJ courses with a grade of *C* or higher will apply to the B.A. degree in Mass Communication and Journalism.
2. MCJ majors are expected, in consultation with a member of the faculty, to declare an option by the junior year.
3. MCJ majors are not permitted to enroll for *CR/NC* grading in MCJ courses to be applied to the major, except for courses wherein the grade is mandatory, i.e., MCJ 114, 117, 191.
4. To avoid being dismissed from a course, MCJ majors are urged to check course descriptions in the university catalog to be sure they have met prerequisites before enrolling for classes.
5. MCJ 163 cannot be counted in the major and used to satisfy a CAPSTONE Cluster requirement.
6. Majors in the Broadcast Management Option are required to earn credit for B A 120.
7. Majors in the Broadcast Production Option are required to earn credit for Drama 34.
8. The department requires all students to pass a Language Qualification Exam to be eligible for enrollment in MCJ 10 and other writing and editing courses (see course prerequisites). The LQE may be taken no more than three times.

Options

All students with a major in mass communication and journalism are required to complete a 9-unit core that includes:

	Units
MCJ 1, 10, 100	9

All majors are also required to select one of the following options, to complete the required courses listed for the option, and to identify and complete elective courses, selected with the advice of an appropriate faculty member — a total of 23-25 units more.

Advertising	*Units*
Required	21-22
MCJ 142, 143, 144, 146, 148, plus two courses from MCJ 160 through 179	
Elective	3
One additional course, selected with the advice of an advertising faculty member	
Total	24-25

Broadcast Journalism	*Units*
Required	19
MCJ 102W, 115, 124, 128, plus two courses from MCJ 160 through 179	
Electives	6
At least two courses selected from MCJ 113, 114, 117, 119, 126, 165, 186, 191, with the advice of a broadcast journalism faculty member	
Total	25

Broadcast Management	*Units*
Required	22
B A 120; MCJ 142, 164, 182, 188, plus two courses from MCJ 160 through 179	
Elective	3
At least one course selected from MCJ 113, 114, 117, 147, 165, 186, 191, with the advice of a broadcast management faculty member	
Total	25

Broadcast Production	*Units*
Required	20
Drama 34; MCJ 113, 115, 116, plus two courses from MCJ 160 through 179	
Electives	5
At least two courses selected from MCJ 112, 114, 117, 118, 119, 130, 166, 191, with the advice of a broadcast production faculty member	
Total	25

Media Studies	*Units*
Required	19
MCJ 162, 164, 168, plus three courses from MCJ 160 through 179	
Electives	4-6
At least one course selected from MCJ 17, 102W, 106, 113, 115, 142, 152, 182, with the advice of a media studies faculty member	
Total	23-25

News-Editorial	*Units*
Required	18
MCJ 102W, 104, 105, 108, plus two courses from MCJ 160 through 179	
Electives	6
At least two courses selected with the advice of a news-editorial faculty member	
Total	24

Photocommunications	*Units*
Required	21
MCJ 17, 102W, 132, 134, 138, plus two courses from MCJ 160 through 179	
Elective	3
At least one course selected with the advice of a photocommunications faculty member	
Total	24

Public Relations	*Units*
Required	21
MCJ 102W, 104, 152, 158, 167, plus two courses from MCJ 160 through 179	
Elective	3
At least one course selected with the advice of a public relations faculty member	
Total	24

Mass Communication and Journalism Minor

	Units
Required	6
MCJ 1, 10	
Electives	12
Any four courses selected with the advice and consent of a member of the departmental faculty	
Total	18

Mass Communication Graduate Study

The Master of Arts in Mass Communication is offered by the Department of Mass Communication and Journalism. The program has been developed to prepare students for professional roles in the various mass communication industries, to be teachers in the mass communication disciplines, or to become candidates for advanced graduate study and research. For more information, contact the graduate coordinator, **Philip J. Lane, (209) 278-2628.**

Master of Arts Degree Requirements

Under the direction of a member of the graduate faculty, each student prepares and submits an individually designed course of study within the following framework:

	Units
Required core courses	9
M Com 200, 201, 202	
Selected courses in major interest area	9-12
Approved electives in cognate areas (e.g., psychology, political science, sociology)	3-6
Thesis	6
Total (at least 21 units in 200-series)	30

COURSES

Mass Communication and Journalism (MCJ)

1. Introduction to Media and Society (3)
Survey structures and practices of U.S. mass media industries; examines historical, legal, economic, political, and social contexts of mass media; analyzes the effects of mass communication in our society. (Former Jour 1; TCOM 10)

5. Basic Editing (3)
Open only to mass communication and journalism majors. Recommended for all majors who do not pass the language qualification exam. Application of basic language skills to media writing and editing. (Former Jour 5)

10. Media Writing (3)
Prerequisites: pass Language Qualification Exam, Engl 1. Preparation of written messages for the print and electronic media and for related industries such as public relations and advertising. Introduces techniques of writing news stories, press releases, advertisements, commercials, public service announcements, and other media assignments. (2 lecture, 2 lab hours) (Lab fee, $15) (Former Jour 8; TCOM 120)

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) (Former Jour 17)

100. Media Practices and Professions (3)
Prerequisite: MCJ 1 or equivalent. Examines current trends, problems, and issues facing mass media professionals, including career opportunities in various communication fields. (Former TCOM 110)

102W. Reporting (3)
Prerequisites: pass Language Qualification Exam, MCJ 10, 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 the media. Meets the upper-division writing skills requirement for graduation. (2 lecture, 2 lab hours) (Lab fee, $15) (Former Jour 100W)

103. Advanced Reporting (3; max total 6)
Prerequisites: pass Language Qualification Exam, MCJ 10, 102W, Engl 1. Practice in handling advanced news writing and reporting assignments in a newsroom environment; preparation of interpretative and investigative articles for the media. Department newspaper used for laboratory purposes. (8 lab hours, 4 hours arranged) (Lab fee, $15) (Former Jour 110)

104. Editing of Publications (3)
Prerequisites: pass Language Qualification Exam, MCJ 10. Preparation of copy, headlines, and photos for newspapers and other publications; advanced concepts of grammar and style; legal and ethical issues of publications; basic publications layout and graphic design. (2 lecture, 2 lab hours) (Former Jour 114)

105. Newspaper Workshop (3; max total 6)
Prerequisite: permission of instructor. Practice in editorial leadership, newspaper writing assignments, and newspaper production techniques. Department newspaper used for laboratory purposes. (1 lab hour, 10 hours arranged) (Former Jour 120)

106. Desktop Publishing (3)
Survey, design, and editing of specialized publications such as newsletters, brochures, and other materials for editorial, advertising, and public relations purposes. Emphasis on computerized production techniques. (2 lecture, 2 lab hours) (Lab fee, $15) (Former Jour 106)

107W. Magazine Feature Writing (3)
Prerequisites: pass Language Qualification Exam, Engl 1. Writing and marketing feature material for magazines, newspaper supplements, and syndicates. Meets the upper-division writing skills requirement for graduation. (Former Jour 124W)

108. In-Depth Reporting (3)
Prerequisites: pass Language Qualification Exam, MCJ 10, 102W, Engl 1. Advanced reporting for the media; emphasis on covering community sources and issues, including politics, local government, courts and law enforcement. (2 lecture, 2 lab hours) (Lab fee, $15) (Former Jour 188)

112. Audio Production (4)
Lectures and laboratory experiences in the design and execution of audio-based programs, as used in the telecommunications industries. (2 lecture, 3 lab hours; 1 arranged hour) (Former TCOM 30; TCOM 103)

113. Video Production (4)
Lectures and laboratory experiences in the design and execution of video programs, as developed in studio environments. (2 lecture, 3 lab hours; 1 arranged hour) (Former TCOM 50; TCOM 105)

114. Radio Operations Practicum (1; max total 2)
Prerequisites: MCJ 1 or equivalent; permission of instructor. Enrollees participate in the operation of the university FM radio station, on a scheduled basis, under instruction and supervision of department faculty. ***CR/NC*** grading only. (1 lab, 4 arranged hours) (Former TCOM 131)

115. Electronic Field Production (4)
Lecture and discussion of field-production techniques as used in ENG/EFP; preproduction planning, production execution, and postproduction processes. Field assignments required. (4 hours lecture, discussion, demonstration; outside projects required) (Former TCOM 70; TCOM 107)

116. Advanced Video Production and Directing (3)
Prerequisites: Drama 34, MCJ 1, 113, and 115 or equivalents; ***B*** or better in production courses. Development of critical and creative skills; study of production theory and practice; planning and producing for the director's role. Laboratory goal: airworthy products for closed-circuit, cable, or broadcast distribution. (1 lecture, 4 lab hours; arranged hours) (Former TCOM 150)

117. Television Operations Practicum (1; max total 2)
Prerequisites: MCJ 116 or equivalent; 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 department faculty. ***CR/NC*** grading only. (1 lab, 4 arranged hours) (Former TCOM 151)

118. Corporate Video (3)
Prerequisites: MCJ 10, 113, and 115 or equivalents, with ***B*** or better. Advanced study of the planning, organization, and execution of video field-production techniques as used in corporate video and documentary program production; single-camera, film-style video techniques and postproduction. (2 lecture, 2 lab, arranged hours) (Former TCOM 170)

119. Broadcast Media Projects (3; max total 6)
Prerequisites: senior status in major; permission of instructor. Creative group projects in radio, television, film; public showing/airing or other distribution required. (6-8 arranged hours) (Former TCOM 189)

124. Broadcast News Writing (3)
Prerequisites: pass Language Qualification Exam, MCJ 10, Engl 1. Gathering, writing, and editing news for the broadcast media. (2 lecture, 2 lab hours) (Lab fee, $15) (Former Jour 128)

126. Media Performance (3)
Prerequisites: completion of Drama 22 and Spch 3 or equivalents. Basic theories and techniques of broadcast and film performance. Lectures and laboratory experiences in vocal and visual aspects of performance; media characteristics and requirements; analysis and preparation of material for media performance. (2 lecture, 2 lab hours) (Former TCOM 80; TCOM 108)

128. News/Public Affairs Production (3)
Prerequisites: MCJ 124 or equivalent; permission of instructor. Study of local news operations and programming, use of sources and resources, news policy, and editorial responsibility, management, and control. Planning and producing news for presentation on the university closed-circuit channel. (1 lecture, 4 lab hours; arranged hours) (Former Jour 153; TCOM 153)

130. Screenwriting (3; max total 9)
(See Drama 130.)

132. 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. (Former Jour 116)

134. Intermediate Photojournalism (3)
Prerequisite: MCJ 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) (Former Jour 117)

135. Multimedia Journalism (3)
Survey and practice in multimedia communications especially as a public relations or advertising tool. Emphasis placed on slide-tape and its production. (Former Jour 127)

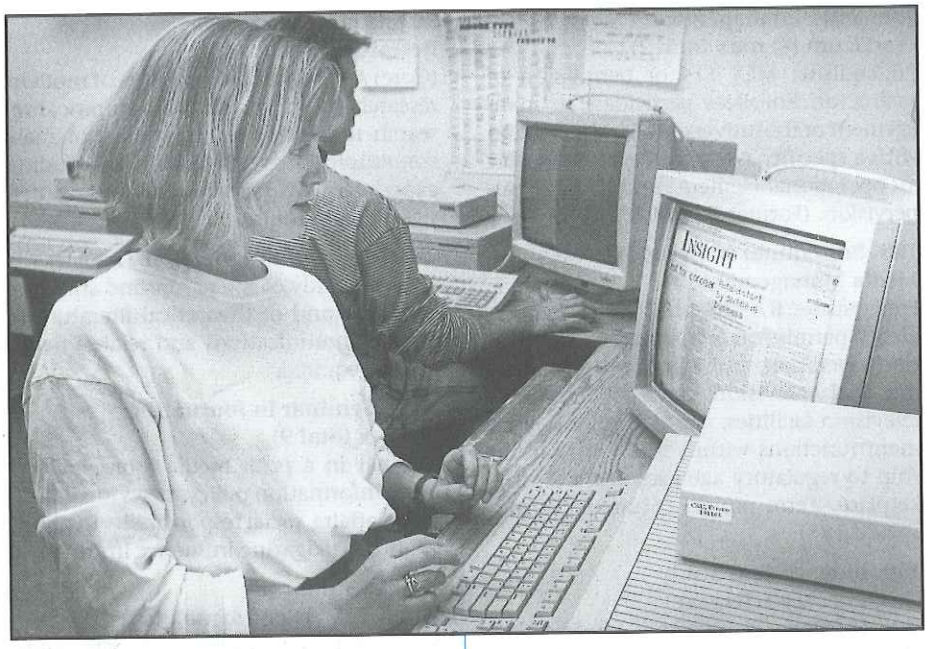
138. Advanced Photojournalism (3; max total 6))
Prerequisites: MCJ 17, 134, and permission of instructor. Individualized study and practice in advanced skills, including lighting, color, laboratory techniques, and electronic imagery. (Former Jour 187)

142. 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. (Former Jour 145)

143. Newspaper Advertising Staff (3; max total 6)
Prerequisite: MCJ 142. Selling and servicing accounts and creating and producing advertisements for the department's laboratory newspaper. (Former Jour 146)

144. Print Advertising Copy Writing (3)
Prerequisites: pass Language Qualification Exam, MCJ 142. Print advertising copy writing for variety of print media. The role of the copy writer; development of creative strategy; laws regulating print advertising. (Former Jour 155)

146. Advertising Media (3)
Prerequisite: MCJ 142. 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. (Former Jour 160)



147. Broadcast Advertising Copy Writing (3)
Prerequisite: MCJ 142. 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. (Former Jour 165)

148. Advertising Campaigns (3)
Prerequisites: MCJ 142 and 144 or 146. Background, research, planning, and preparation of national advertising campaign as advertising agency with client-agency setup; marketing plan and creative execution. (Former Jour 175)

152. Public Relations (3)
Development of public relations practice; principles and methods; application in business, education, and other fields. (Former Jour 113)

158. Public Relations Strategies and Techniques (3)
Prerequisites: pass Language Qualification Exam, MCJ 10, 102W, 152, Engl 1. Study of effective publicity methods and assessment of public relations programs and problems in business, philanthropy, and public institutions. (Former Jour 173)

162. Media Issues and Effects (3)
Prerequisites: MCJ 1, 100. An examination of mass media effects on individuals and society; an assessment of industry and public views of media impact. The focus is on academic perspectives. (Former Jour 186; TCOM 140)

163. Radio/TV as Popular Culture (3)
Prerequisite: must have completed 56 units. A consideration of the media as popular cultural arts through study of development of program forms, social influences. Term paper required. General Education CAPSTONE Cluster course. (Former TCOM 163)

164. Media Consumer Analysis (4)
Study of survey research methods as used in program ratings, opinion analysis and tracking, and message assessment in radio, television, advertising, and public opinion. Project participation required. (Former TCOM 145)

165. News/Public Affairs Analysis (3)
Study of methods of content analysis as used to evaluate program, newspaper, and magazine content for emphasis, bias, styles, and comparison. Project participation required. (Former TCOM 148)

166. 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 TCOM 173)

167. Public Opinion Research (3)
Examination of public opinion from both theoretical and practical perspectives; role of public opinion in news, advertising, and public relations; methods of assessing opinion, behavior, and media effects. (Former Jour 183)

168. Cultural Studies of Mass Media (3)
A critical examination of the changing relationships between the mass media and culture in all its expressive forms through the use of contemporary methods of cultural studies research and of the effects of communications technology on culture, society, and individual consciousness. (Former TCOM 167T section)

172. Media Law (3)
Study of federal and state laws and regulations that apply to the media, covering such topics as freedom of information, libel, right to privacy, fair trial-free press, copyright, obscenity and indecency, advertising regulation, and broadcast law and regulation. (Former Jour 181; TCOM 160)

173. Media Ethics (3)
Study of ethical choices 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 180)

174. History of Mass Media (3)
Historical background of American media from colonial to modern times. (Former Jour 184)

175. Media Stereotypes (3)
Prerequisites: MCJ 1, upper-division standing. Survey of dominant media stereotypes involving people of color, women and men, aged, and others. Analysis of economic, social, and political factors that shape and maintain media stereotypes; effects of ste-

reotypes. Roles of minorities and women in media industries. (Former Jour 115; TCOM 115)

176. International Media (3)
A study of the roles media and new information technologies play in the national development of industrialized and Third World nations and in their international relations. (Former Jour 182; TCOM 167T section)

177T. Media Topics (3; max total 6)
Prerequisites: MCJ 1, upper-division standing. Topics explore various aspects of the relationships between media and society in national and international arenas. (Former Jour 139T; TCOM 167T)

178. New Information Technologies (3)
Addresses the technological, philosophical, and sociological impacts of electronic media. Particular attention is given to understanding how the technology developed and how it operates. Designed to provide a better understanding of the issues confronting new information technologies in a changing society. (Former TCOM 167T section)

182. 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 TCOM 165)

186. Radio-Management Practicum (1; max total 2)
Prerequisite: MCJ 114 or 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. (Former TCOM 191)

188. Proseminar in Broadcast Media Management (3)
Prerequisites: B A 120 and MCJ 172 or equivalents; permission of instructor. Organization, operation, and administration of radio and television stations and cable television facilities; correlation of department functions within stations; relationship to regulatory agencies and the marketplace. Term project required. (Former TCOM 185)

190. Independent Study (1-3; max see reference)
See *Academic Placement — Independent Study*. Approved for ***SP*** grading. (Former Jour 190; TCOM 190)

191. Internship (3)
Prerequisites: senior standing in the major with 2.5 GPA, permission of instructor. Applied practical experience in an appropriate media outlet, recording studio, production company, advertising agency, or public relations firm with on-the-job and faculty supervision/instruction. Conferences and reports required. ***CR/NC*** grading only. (Former Jour 129, 193, 196, 197, 198, 199; TCOM 186)

GRADUATE COURSES

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. Mass Media Criticism (3)
A study of modern critical techniques and theories and types of critical analyses, and their application to the various mass media forms; and the development of ethical, artistic, and critical standards for the evaluation of media texts. Papers required.

290. Independent Study (1-3; max total 6)
See *Academic Placement — Independent Study*. Approved for ***SP*** grading.

299. Thesis (6)
Prerequisite: See *Criteria for Thesis and Project*. Preparation, completion, and submission of an acceptable thesis for the master's degree. Approved for ***SP*** grading.

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 offers a large number of electives within the mathematics major. By selecting appropriate courses, students have considerable flexibility to accommodate their individual interests. Students should consult with a department adviser for specific recommendations as to which electives are suited to their career paths.

The electives in *Applied Mathematics* prepare students to assume positions in technical industries or government employment, or to continue advanced studies in the applied area.

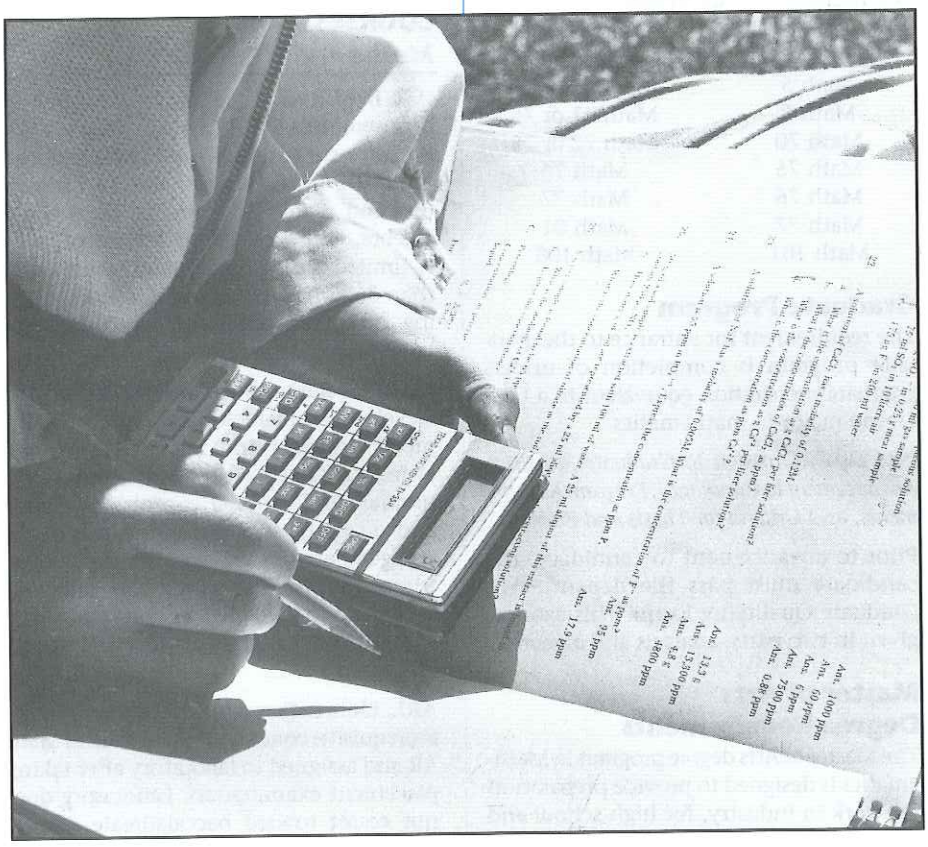
The electives in *Pre-College Teaching* in mathematics provide students with the necessary background for obtaining a California Secondary Teaching Credential in mathematics. In order to complete the credential requirements, a fifth year of education courses, classroom observation, and practice teaching is needed. At the present time, there is an increasing demand for well-trained people in this area.

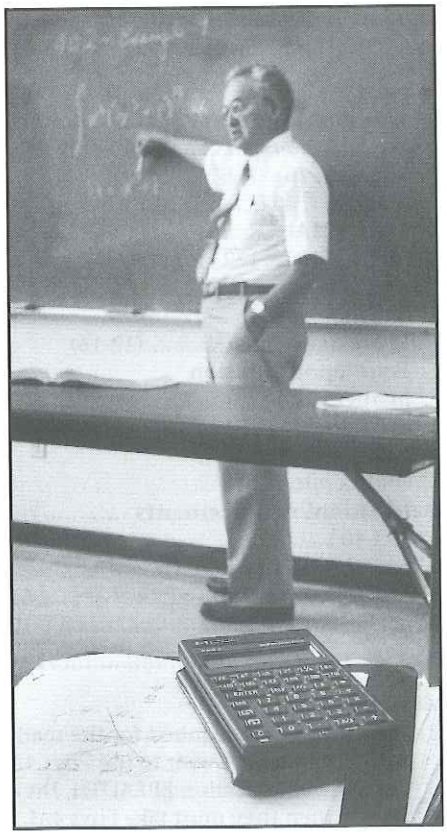
The electives in *Pure Mathematics* prepare students for the pursuit of graduate studies leading to advanced degrees and employment at the college or university level, or research in industries.

The electives in *Statistics and Probability* provide a good foundation for students planning to work as statisticians for industry or government agencies involving statistical analysis of scientific, technical, or economic data. They also offer 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).

School of Natural Sciences
Department of Mathematics
RUDOLPH NAJAR, *Chair*
Peters Business Building
(209) 278-2992

B.A. in Mathematics
M.A. in Mathematics
Minor in Mathematics
Credential Program
Single Subject Waiver





Faculty

Rudolph Najar, *Chair*

Graduate Coordinator: Della C. Duncan
Undergraduate Advisers: All full-time faculty
Credential Advisers: Arthur A. Hiatt and Agnes Tuska

Robert F. Arnold
Moses E. Cohen
Larry W. Cusick
Donald J. Donohue
Ernesto Franco
Noal C. Harbertson
Harold B. Haslam
Merrilee K. Helmers
Detlev Lindae
Hussain Sayid Nur
Hugo S. Sun
Peter Tannenbaum
Ronald L. Wagoner
Norman T. Woo
Burke Zane

Bachelor of Arts Degree Requirements

Mathematics Major

The requirement for entrance to the major and minor programs is completion of two years of algebra and courses in geometry and trigonometry, or a sequence of courses containing their equivalents, such as Math 4R and 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* for complete details on general degree requirements. A minimum of 40 units, including those required for the major, must be upper division.

	Units
Major requirements	**56-64**
Core curriculum	(44-48)
Math 75, 76, 77, 81	(16)
Math 151, 152	(8)
Math 171A	(4)
Math 171B or 172	(4)
Approved upper-division courses	(12-16)
Elective curriculum	(12-16)
Four upper-division mathematics courses, excluding Math 124, 128, 140, 142; may include a minor	
Additional requirements	**7-8**
C Sci 40	(4)
Phys 4A, 4AL (see *Note 1*)	(3-4)
General Education (see *Note 2*)	**51**
Electives	**1-10**
Total	**124**

Advising Notes

1. Phys 4AL is not required for the math major. If students wish to use Phys 4A for General Education BREADTH, Division 1, then they must take Phys 4AL.
2. This figure takes into account that 3 units of Math 75 may also be applied to satisfy the General Education CORE mathematics requirement (see *General Education*). Consult department chair or faculty adviser for details.

Mathematics Minor

	Units
Math 70, or Math 71 and 72, or Math 75	4-6
Upper-division math courses	6
Electives in mathematics	8-10
Total	**20-22**

Note: Math AR, 4R, 140 and 142 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 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
Math 101	Math 108

Graduate Program

The requirement for entrance to the graduate program is 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.)*

Prior to advancement to candidacy, the candidate must pass the department's Graduate Qualifying Exam. This exam is given in two parts: analysis and algebra.

Master of Arts Degree Requirements

The Master of Arts degree program in Mathematics is designed to provide preparation for work in industry, for high school and community college teaching, and for advanced graduate study in mathematics.

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 the graduate adviser, 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	15
Approved electives (no more than 6 units in a related field)	15
Total	**30**

Specific requirements: Math 228, 251, 271, 298.

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)
Prepares students for the ELM exam and for Math 4. The course takes two semesters and reviews arithmetic, elementary algebra, and geometry. ***Note:*** Enrollment is limited to freshmen who score lower than 350 on the ELM exam. ***CR/NC*** grading only; not applicable toward baccalaureate degree requirements.

AR. ELM Basic Mathematics Skills (3)
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; not applicable toward baccalaureate degree requirements.

ARL. Elementary Algebra Laboratory (1)
Prerequisite: concurrently enrolled in Math AR 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; not applicable toward baccalaureate degree requirements. (Former Math 1AR)

4R. Intermediate Algebra (3)
Prerequisite: elementary algebra and geometry. 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; not applicable toward baccalaureate degree requirements. (See *Duplication of Courses*.)

4RL. Intermediate Algebra Laboratory (1)
Prerequisite: concurrently enrolled in Math 4R 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; not applicable toward baccalaureate degree requirements. (Former Math 4AR)

5. Trigonometry (3)
Prerequisite: Students must take the ELM exam; students who do not pass the exam must record a grade of *C* or better in a college-taught intermediate algebra course. 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*.) (CAN MATH 8)

6. Precalculus (4)
Prerequisite: Students must take the ELM exam; students who do not pass the exam must record a grade of *C* or better in a college-taught intermediate algebra course. 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: Students must take the ELM exam; students who do not pass the exam must record a grade of *C* or better in a college-taught intermediate algebra course. 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. General Education CORE, Quantitative Reasoning. (CAN STAT 2)

14. Introduction to Discrete Mathematics (3)
Prerequisite: Students must take the ELM exam; students who do not pass the exam must record a grade of *C* or better in a college-taught intermediate algebra course. Set theory, relations and functions, logic, proof techniques, number systems.

41. Number Systems (3)
Not open to mathematics majors. Prerequisite: Students must take the ELM exam; students who do not pass the exam must record a grade of *C* or better in a college-taught intermediate algebra course. 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.

43. Elementary Problem Solving (3)
Prerequisite: Students must take the ELM exam; students who do not pass the exam must record a grade of *C* or better in a college-taught intermediate algebra course. The purpose of this course is to develop problem solving skills using elementary mathematics.

45. What is Mathematics? (3)
Prerequisite: Students must take the ELM exam; students who do not pass the exam must record a grade of *C* or better in a college-taught intermediate algebra course. Intended primarily for liberal arts students. Topics: mathematics and social science, mathematics of shape and growth, statistics, mathematics of management science and mathematics of computers. General Education CORE, Quantitative Reasoning.

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: Students must take the ELM exam; students who do not pass the exam must record a grade of *C* or better in a college-taught intermediate algebra course. Functions and graphs, limits, derivatives, antiderivatives, differential equations, and partial derivatives with applications in the Life Sciences. General Education CORE, Quantitative Reasoning.

71. Elementary Mathematical Analysis I (3)
No credit if taken after Math 70, 72, or 75. Prerequisite: Students must take the ELM exam; students who do not pass the exam must record a grade of *C* or better in a college-taught intermediate algebra course. 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 II (3)
No credit if taken after Math 75; 2 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. General Education CORE, Quantitative Reasoning.

75. Mathematical Analysis I (4)
No credit if taken after Math 72; 2 units of credit if taken after Math 71; 3 units of credit if taken after Math 70. Prerequisite: Students must take the ELM exam. Additionally, beginning in the Fall of 1994, a passing score on the Precalculus Diagnostic Test or a grade of *C* or better in Math 6 will be required prior to registration. Inequalities, functions, graphs, limits, continuity, derivatives, antiderivatives, the definite integral and applications. General Education CORE, Quantitative Reasoning. (CAN MATH 18)

76. Mathematical Analysis II (4)
Prerequisite: Math 72 or 75. Transcendental functions, techniques of integration, improper integrals, conic sections, polar coordinates, infinite series. (CAN MATH 20)

77. Mathematical Analysis III (4)
Prerequisite: Math 76. Vectors, three dimensional calculus, partial derivatives, multiple integrals, Green's Theorem, Stokes' Theorem. Use of the microcomputer as an exploratory tool in the calculus. (3 lecture, 2 lab hours) (Lab fee, $15) (CAN MATH 22)

81. Applied Analysis (4)
Prerequisite: Math 77. Introduction to ordinary linear differential equations; solutions by power series and Laplace transforms. Solution of systems of equations. Introduction to Fourier series. Use of the microcomputer as an exploratory tool. (3 lecture, 2 lab hours) (Lab fee, $15)

90. Directed Study (1-3; max total 3)
Independently arranged course of study in some limited area of mathematics either to remove a deficiency or to investigate a topic in more depth. (1-3 hours, to be arranged)

101. Statistical Methods (4)
Prerequisite: Math 70, 71, or equivalent; no credit if taken after Math 108. 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.

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)
Prerequisite: Math 76. Counting techniques, matrix algebra, graphs, trees and networks, recurrence relations and generating functions, applied modern algebra.

116. Theory of Numbers (4)
Prerequisite: Math 72 or 75. Divisibility theory in the integers, primes and their distribution, congruence theory, Diophantine equations, number theoretic functions, primitive roots, indices, the quadratic reciprocity law.

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 C, Fortran, or Pascal. Zeros of nonlinear equations, interpolation, quadrature, systems of equations, numerical ordinary differential equations, and eigenvalues. Use of numerical software libraries. (Lab fee, $15)

121L. Numerical Analysis Laboratory (1)
Prerequisite: concurrently enrolled in Math 121. Optional computer laboratory for Numerical Analysis I. Use of microcomputers to implement numerical algorithms. (2 lab hours)

122. Numerical Analysis II (4)
Prerequisite: Math 121. Advanced topics from numerical linear algebra, function approximation, fast Fourier transforms, and numerical partial differential equations. Use of numerical software libraries. (3 lecture, 2 lab hours)

123. Topics in Applied Mathematics (3)
Prerequisite: Math 77. Vector spaces and linear transformations, eigenvalues 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. Matrix algebra, systems of equations, eigenvalues, eigenvectors, diagonalizations, functions of matrices with applications to differential equations, optimization, and Markov chains.

128. Applied Complex Analysis (3)
Prerequisite: Math 77. Analytic functions of a complex variable, contour integration, series, singularities of analytic functions, the residue theorems, conformal mappings; emphasis on engineering and physics applications.

131. Game Theory and Linear Programming (3)
Prerequisite: Math 72 and permission of instructor; or Math 76. Introduction to linear programming, problem formulation, adaptation of the Dantzig simplex algorithm to linear programming problems, duality theory, transportation problems. Games of chance, strategy, minimax theorem for two-person zero-sum games, relationship to linear programming.

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. 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 (4)
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 modern times. Theorems with historical significance will be studied as they relate to the development of modern mathematics.

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 (4)
Prerequisite: Math 76. Equivalence relations; groups, cyclic groups, normal subgroups, and factor groups; rings, ideals, and factor rings; integral domains and polynomial rings; fields and field extensions.

152. Linear Algebra (4)
Prerequisite: Math 151. Vector spaces, linear transformations, matrices, determinants, eigenvalues and eigenvectors, linear functions, inner-product spaces, bilinear forms, quadratic forms, orthogonal and unitary transformations, selected applications.

161. Principles of Geometry (3)
Prerequisite: Math 72 or 75. The classical elliptic, parabolic, and hyperbolic geom-

etries 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.

171A. Intermediate Mathematical Analysis I (4)
Prerequisite: Math 77. Sets, real numbers as a complete ordered field, its usual topology, functions of a real variable, limits, continuity, uniform continuity, differentiability, generalized mean value theorem, Riemann integrals, series of functions, uniform convergence, and Fourier series of integrable functions. (Former Math 171)

171B. Intermediate Mathematical Analysis I (4)
Prerequisite: Math 171A. Analytic functions of a complex variable, contour integration, series, singularities of analytic functions, the residue theorems, conformal mappings.

172. Intermediate Mathematical Analysis II (4)
Prerequisite: Math 171A. Differentiation of functions of several variables, applications of partial differentiation, functions of bounded variation, rectifiable curves, theory of Riemann-Stieltjes integration, multiple integrals and line integrals, improper Riemann-Stieltjes integrals. Inverse and implicit function theorems.

181. Differential Equations (3)
Prerequisite: 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 171A. 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*. Approved for ***SP*** grading.

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.

198. Senior Project (3)
Prerequisite: senior standing or permission of instructor; Math 151, 171A and 124 or 152. Independent investigation and presentation of an advanced topic in mathematics. Satisfies the senior major requirement for the B.A. in Mathematics.

GRADUATE COURSES

(See *Course Numbering System.*)

Mathematics (Math)

202. Fundamental Concepts of Mathematics (3)
Prerequisite: Math 151, 161 and 171A. 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, 171B. 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 multilinear 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*. Approved for ***SP*** grading.

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. Approved for ***SP*** grading.

IN-SERVICE COURSE

(See *Course Numbering System.*)

Mathematics (Math)

302. Topics in Mathematics for Teachers (3; max total 6 if topic not repeated)
Prerequisite: permission of instructor. Topics in modern mathematics with special emphasis for teachers.

Military Science

The Sid Craig School of Business and Administrative Sciences
Department of Military Science
DAVID A. BENTLEY, *Chair*
North Gym, Room 211
(209) 278-2887, 278-4810
In California, 1 (800) 660-ROTC

Army Reserve Officer's Training Corps Program (ROTC)

Minor in Military Science

The Army ROTC Program develops the mental and physical qualifications of students in preparation for positions of leadership within the military and civilian communities. Its 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 and Army Reserves 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 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 enhances the student's ability to lead by providing him/her with actual experience in leading other students who represent some 300 colleges and universities in the United States.

Additionally, the student's curriculum must include acquired knowledge in written communication skills, understanding of human behavior, military history, computer literacy, and math reasoning.

Career Opportunities

Upon completion of the ROTC 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 ROTC 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 ROTC course must meet certain requirements. Information on these requirements can be obtained by telephoning or visiting the **Army ROTC office on campus (278-2887/4810) or in California, 1 (800) 660-ROTC.**

Financial Assistance

All students formally enrolled in the ROTC 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 a minimum of $148 per weekend drill. 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.

Faculty

David A. Bentley, *Chair*

Advisers: Glenn C. DeMent, Moose M. Kinsey, Terry L. Wilfong

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 find departmental faculty helpful in guiding them through their academic experience as well as helping them pursue career goals.

Military Science Minor

Each student enrolled in the ROTC Advanced Course and who completes the 21 units (19 upper-division) necessary for commissioning will be eligible for the award of a Minor in Military Science. Coordination with the department faculty adviser is required.

	Units
Required courses	21
M S 131, 132, 134A, 134B, 134C, 134D, 141, 142; Hist 180; PE AC 42	
Optional course	3
M S 192	
Total	24

Professional Military Education Requirements (PME). In addition to the required courses above, students in the ROTC Advanced Course must fulfill prescribed professional military education requirements by satisfactorily completing courses in written communication, human behavior, military history, computer literacy, and math reasoning. Students must obtain approval from their military science department faculty adviser to ensure their planned course of study will satisfy this requirement prior to graduation and commissioning.

COURSES

Military Science (M S)

1. Introduction to Military Science (1)
Organization and function of the U.S. Army; basic traditions, customs, and protocol. Introduction to basic leadership skills, map reading, and management techniques.

2. General Military Skills and Survival Training (1)
Training in basic soldier skills and survival techniques in a field environment. Focuses on basic training skills, first-aid procedures, field crafts, and survival techniques.

3. U.S. Military in Recent Conflicts (1)
Overview of U.S. military involvement in recent conflicts. Special focus on U.S. army involvement and the relationship of technological advancements and politico-military considerations with changing strategy and tactics.

11. General Leadership 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)
Prerequisite: permission of instructor. A six-week training program during the summer. This course is a "no obligation" look at the U.S. Army's basic leadership skills and training overview. Training is held and pay provided at Fort Knox, Kentucky.

131. Advanced Leadership and Management (3)
Prerequisite: permission of instructor. 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)
Prerequisite: M S 131 or permission of instructor. 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)
Prerequisite: permission of instructor. A six-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.

134A. Freshman Leadership Laboratory (1; max total 2)
Open to freshman Army ROTC students. Practical work to augment classroom instruction. Weekly morning laboratories plus one field trip each semester. Attendance at all functions is voluntary. (Former M S 134)

134B. Sophomore Leadership Laboratory (1; max total 2)
Open to sophomore Army ROTC students. Practical work to augment classroom instruction. Weekly morning laboratories plus one field trip each semester. Attendance at all functions is voluntary. (Former M S 134)

134C. Junior Leadership Laboratory (1; max total 2)
Open to junior Army ROTC students. Practical work to augment classroom instruction. Weekly morning laboratories plus one field trip each semester. Attendance at all functions is mandatory. Must be taken each semester a student is enrolled in the Advanced Course. (Former M S 134)

134D. Senior Leadership Laboratory (1; max total 2)
Open to senior Army ROTC students. Practical work to augment classroom instruction. Weekly morning laboratories plus one field trip each semester. Attendance at all functions is mandatory. Must be taken each semester a student is enrolled in the Advanced Course. (Former M S 134)

141. Ethics and Military Professionalism (3)
Prerequisite: permission of instructor. Military Professional Ethics, Military Justice, Command and Staff Functions, Mission and Organization of the U.S. Army and Military Correspondence.

142. Advanced Leadership Training (3)
Prerequisite: permission of instructor. Required course for MS IV cadets. Instruction focuses on transitioning cadets to lieutenants. Topics include responsibilities of army officers, army leadership doctrine, and the army promotion system. Emphasis on skills used early in an officer's career.

192. Directed Reading in Selected Military Topics (3)
Prerequisite: M S 131, 132, 141 and permission of instructor. Directed reading in military history and/or the role of the army in the formulation of national policy in consultation with a faculty adviser. Requires a substantial writing requirement.

Music

School of Arts and Humanities
Department of Music
JACK R. FORTNER, *Chair*
Music Building, Room 102
(209) 278-2654

B.A. in Music
M.A. in Music
Minor 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:

- Undergraduate instruction in music for those planning professional careers as performers, composers, and studio teachers, as well as those preparing for advanced degrees in performance, composition, and musicology
- Preparation for the teaching credential programs in or involving music
- Graduate training for students planning professional and academic careers or seeking professional growth as teachers in junior colleges or other school systems
- Broad acquaintance with musical art for the layman and nonmusic major

Two degree programs accredited by the National Association of Schools of Music are offered: the Bachelor of Arts and the Master of Arts, each with concentrations in performance, composition, music history, or music education.

Faculty and Facilities

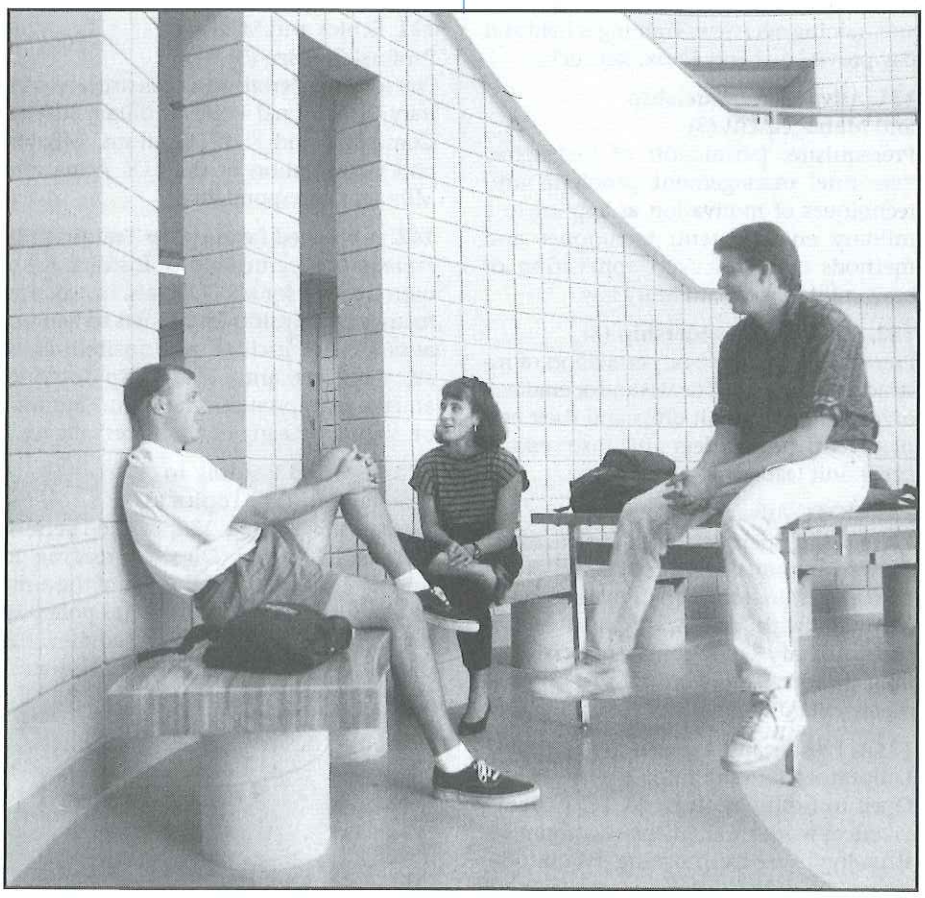
The Department of Music faculty is composed of individuals whose backgrounds reflect varied areas of specialization: performance, composition, scholarly research, and music education. Many members of the faculty have national and international reputations as performing artists and teachers. Others are 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 buildings consist 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 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

Jack R. Fortner, *Chair*

M. Teresa Beaman
Kathryn Bumpass
W. Ritchie Clendenin
Jose A. Diaz
Steven E. Gilbert
Leslie Guelker-Cone
Thomas N. Hiebert
Miles M. Ishigaki
Helene Joseph-Weil
David R. Margetts
Manuel Peña
Juan Serrano
Lawrence R. Sutherland
Gary L. Unruh
Andreas Werz

Bachelor of Arts Degree Requirements

Music Major

Each student seeking a Bachelor of Arts degree with a major or minor in music must fulfill *Other Departmental Requirements* (see next page) and all requirements listed under *Degree Requirements* and *General Education.*

Options — select one:

Option I (47-63 units): Preparation for performance, composition, music history, 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 — 14-20 units); *Other Departmental Requirements* (see pages 377 and 378); General Education (51 units); and electives, including remaining degree requirements (10-26 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.

Units

Core requirements

Music 1A, 1B, 40, 41, 42, 43, 58, 61, 141, 144, 161A, 161B, 161C 33
Music 36S and 136S until Piano Proficiency Exam is passed 0-10
33-43

Emphases — select one:

a. ***Instrumental Performance***
Four semesters with advanced standing in Music 31S and 131S through 38S and 138S 8
Music 140T, 142, 148, 150A, 150B, 150C, 150D, 160T, 171 4-6
Music 198 (Senior Project — Recital) ... 2
For keyboard majors:
Music 119P 2
Music 176T 3
14-21

b. ***Vocal Performance***
Four semesters with advanced standing in Music 39S and 139S 8
Music 119Q (Vocal Pedagogy) 2
Music 158B (Adv Choral Conducting) .. 2
Music 172 (Vocal Literature) 2
Music 185A (Lyric Diction I) 2
Music 185B (Lyric Diction II) 2
Music 198 (Senior Project — Recital) ... 2
20

c. ***Composition***
9 units in Music 48 9
6 units in Music 148 with advanced standing in composition 6
Music 198 (Senior Project — Recital) or Music 199 (Senior Project) 2
Two semesters in piano (Music 36S and 136S) after passing Piano Jury Examination, Level 1 4
21

d. ***Music History***
Music 142 3
Music 160T 6
Music 171 3
Music 190 2-3
Music 198 (Senior Project — Recital) or Music 199 (Senior Project) 1-2
15-17

Option II (74-86 units): Waiver program for the Single Subject Teaching 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 (20-22 units); and General Education (51 units); and electives to complete the B.A. degree (124-137 units). 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 the Single Subject Teaching Credential and 5th year requirements.

Units

Core requirements

Music 1A, 1B, 40, 41, 42, 43, 58, 61, 119I, J, K, L, M, N, O, Q, 144, 158A or 158B, 161A, 161B, 161C 42
Music 36S and 136S until Piano Proficiency Exam is passed 0-10
Elect from Music 182, 183, 184 3
4 Semesters in Music 31S and 131S through 39S and 139S, including 2 semesters with advanced standing 8
Music 198 (Senior Project — Recital) 1
54-64

Select one of the following ensemble requirements:

Voice, Piano, and Organ
Music 3CC and 103CC (Concert Choir) 16
Music 3 and 103; Music 18 and 118 (any large instrumental ensemble) 2
Music 185A, 185B (Diction I and II) 4
22

String and Harp
Music 3CC and 103CC (Concert Choir) 2
Music 3O and 103O (Orchestra) 16
Music 3 and 103; Music 18 and 118 (any large instrumental ensemble) 2
20

Brass, Woodwind, and Percussion
Music 2 and 102 (Choral Ensemble) or Music 3CC and 103CC (Concert Choir) 2
Music 3WE and 103WE (Wind Ensemble) 16
Music 3MB and 103MB (Marching Band) 4
22

Credential requirements 10
Music 155, 159, 169, 179; EHD 50, not necessary for the B.A. degree

Other Departmental Requirements

1. Students majoring in music must declare an area of concentration (e.g., an instrument, voice, composition, music history, or music education).
2. At the close of their first semester, students must pass the preliminary jury examination in their area of concentration before being permitted to continue their major. A further examination must be passed for advanced standing.
3. Students majoring in music must enroll in a piano class until the departmental piano proficiency examination is passed.
4. Every semester, music majors must participate in a major performing organization appropriate to their applied music concentration. Violin, viola, cello, and double bass majors will participate in Orchestra. Wind and percussion majors will participate in Wind Ensemble. Voice majors will participate in Concert Choir. Guitar and piano majors will substitute Gui-

tar Ensemble, Keyboard Ensemble, Chamber Music Ensemble, or Music 130T (Accompanying) for 50 percent of the major performing ensemble requirement. (Option II majors in these areas must consult their credential adviser.) IN ADDITION: Applicants for the public school credential, before qualifying for the credential, must participate in at least one semester of any major instrumental ensemble and one of any major choral ensemble. Applicants who are wind and percussion specialists must participate in at least two semesters of marching band and one of any major choral ensemble.

5. Participation in all rehearsals and performances of the performing organizations for which the student registers must take precedence over any conflicting activity.
6. Students in Music 31S and 131S through 39S and 139S will appear in student recitals when assigned.
7. Students majoring in music must attend a designated number of recitals or concerts.
8. A senior project is required of all student during their 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 satisfy music major requirements.
10. Option II music majors, whose major instrument is piano or guitar or whose concentration is music history or composition/theory, must pass the Level II Jury Exam in *one* of these areas: voice; violin; viola; cello; contra bass; clarinet; flute; saxophone; oboe; bassoon; trumpet; trombone; horn; tuba; or percussion.
11. Option II students must pass a conducting proficiency examination after completion of Music 158.
12. All undergraduate students must fulfill the upper-division writing skills requirement in order to graduate. Students are expected to meet this requirement the semester after they complete 56 units.

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 and 131S through 39S and 139S; 6 to 9 units in music literature. In addition, students minoring in music must enroll in a major performing organization (see *Note 4* on this page) each semester of the junior and senior years.

Certificate of Special Study in Music Performance

The Certificate of Special Study in Music Performance is intended for those persons who wish to study an instrument or voice without matriculating for a degree. A candidate for the certificate program should be qualified for advanced standing (Jury II competency) in his or her specialty prior to admission. Admission to the program requires the consent of both the major professor and the chair of the department.

The certificate program will comprise a minimum of 12 units of upper-division work, to be structured on an individual basis with the approval of both the major professor and the chair of the department. The individual program, along with the requisite approvals, will be in writing and kept on file in the department.

The general requirements for the certificate program are:

- instruction in the student's major voice or instrument during each semester of residence
- at least one course in music theory or history, and
- at least one ensemble course, appropriate to the student's area of specialization, for each semester of study.

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.

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 (GRE) 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.*)

The Master of Arts degree program in music requires a bachelors degree in music or the equivalent. Students must have achieved a minimum score of 450 on the verbal portion *or* 430 on the quantitative portion of the GRE.

All entering M.A. students must take diagnostic entrance examinations in music history and music theory. Where needed, remedial work may be required prior to graduate study. An audition and/or entrance interview is also required.

Under the direction of graduate advisers, 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

Specific requirements	***Units***
Music 204, 220, 1 music history seminar (Music 260, 267, 277, 287), and Music 211 or another performance class by advisement	**11**
Concentration	
Music education, performance, music theory/composition, history/literature	**9-12**
Electives	
Courses in music or related fields, including at least 3 units in a subject other than music	**4-7**
Project or thesis	**3**
Total	**30**

Students with concentrations in vocal performance, choral conducting, and music history must satisfy foreign language requirements (see area adviser). Courses in addition to those above may be specified after examination of the student's record and the student's performance on the diagnostic entrance examination. A maximum of 4 units in Music 102 and 121 taken after completion of the B.A. may be applied to the M.A. degree. A written qualifying examination is required for admission to project or thesis.

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 and 102. Choral Ensembles (1; repeatable for credit)
Study and performance of choral literature appropriate for groups such as community chorus (CC), chamber singers (CS), jazz singers (JS), men's chorus (MC) and women's chorus (WC). General Education BREADTH, Division 4.

3 and 103. Major Performing Ensembles (2; repeatable for credit)
Study and performance of choral and instrumental literature appropriate for groups such as concert choir (CC), orchestra (O), wind ensemble (WE), marching band (MB), and symphonic band (SB). General Education BREADTH, Division 4.

17 and 117. Special Instrumental Ensembles (2; repeatable for credit)
Study and performance of instrumental literature in certain ensembles whose rehearsals and performances demand awarding of 2 units. These are President's Quintet, Viotti String Quartet, and Zalud Brass Quintet. Admission is by audition only and is accompanied by a scholarship award. (Former Music 130T section)

18 and 118. Instrumental Ensembles (1; repeatable for credit)
Study and performance of instrumental literature appropriate for chamber groups such as brass ensemble (BE), cello ensemble (CE), chamber music ensemble (CM), flute ensemble (FE), guitar ensemble (GE), string ensemble (SE), woodwind ensemble (WWE), keyboard ensemble (KE), and percussion ensemble (PE). General Education BREADTH, Division 4.

21 and 121. Performance Workshops (2; repeatable for credit)
Study and performance of music literature appropriate for groups such as jazz workshop "A" (JWA), jazz workshop "B" (JWB), basketball band (BB), band workshop (BW), opera workshop (OW), percussion workshop (PW), and vocal performance workshop (VPW). General Education BREADTH, Division 4.

Instrumental and Vocal Lessons
Music 31S and 131S through 39S and 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. For music majors and minors, concurrent enrollment in an appropriate major ensemble is required. All courses are repeatable for credit. (All courses require a $20 course fee.)

31S and 131S. Brass (2)
32S and 132S. Percussion (2)
33S and 133S. Strings (2)
35S and 135S. Woodwinds (2)
36S and 136S. Piano (2)
38S and 138S. Organ (2)
39S and 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. General Education BREADTH, Division 5.

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. Introduction to computerized music notation.

41. Theory of Music II (3)
Prerequisite: knowledge of music fundamentals (scales, intervals, keys, triads); computerized music notation (Music 40 preferred). Harmonic and contrapuntal practice of the 17th and 18th centuries. Development of written skills, concentrating on four-voice choral settings. Introduction to computerized music notation.

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. Advanced computerized music notation.

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)
Exploration of a wide range of musical styles (past, present, classical, and popular) through guided practical experiences and the development of an aesthetic sensitivity for music of various cultures. General Education BREADTH, Division 5.

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. (Course fee, $20)

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. (Course fee, $20)

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. (Course fee, $20)

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. (Course fee, $20)

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. (Course fee, $20)

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. (Course fee, $20)

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. (Course fee, $20)

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.

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.

129. Reedmaking (2)
Required for oboe and bassoon players. Individual or group supervision in all aspects of the art of reedmaking. Repeatable for credit until such time as student and professor mutually agree that supervision is no longer necessary. (Former Music 130T section)

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.

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. 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. 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.

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 multitrack 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 nonmajors. Introduction to song literature and singing games suitable for children. Development of in-tune singing, ear training, and sight-singing skills.

155. Sound, Rhythm, and Song (3)
Prerequisite: Music 153 for students not majoring in music; no prerequisite for music majors. Individual research on the place and functions of music in the preschool 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.

158A. Advanced Instrumental Conducting (2; max total 4)
Prerequisite: Music 58A. Advanced instrumental 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 Teaching Credential candidates in music.

158B. Advanced Choral Conducting (2; max total 4)
Prerequisite: Music 58B. Advanced choral 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 Teaching Credential candidates in music.

159. Marching Band Techniques (2)
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 (3)
Prerequisite: Engl 1. Meets 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. General Education CAPSTONE Cluster course.

161B. Survey of Music History II (3)
Prerequisite: Music 61, permission of instructor. Lectures, discussion, and reports on music from approximately 1680 to 1880. General Education CAPSTONE Cluster course.

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. Introduction to the World's Music (3)
Introduction to the study of music in culture, with examples drawn from the music of various societies, including some combination of art music and folk music of Latin America, North America, Asia, Africa, Western Europe, and the Middle East.

172. Vocal Literature (2)
Prerequisite: Music 40, 41, 61, or permission of instructor. For students who major or minor in vocal music. A historical survey of the standard repertoire for the voice.

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.

180. Children's Choirs: Techniques and Literature (3)
Prerequisite: Music 155. Basic overview of materials, techniques, and procedures applicable to the choral experience at the elementary level. Topics include conducting for the elementary school choral director, vocal pedagogy for children, and a survey of appropriate choral literature.

182. Band Arranging (3)
Prerequisite: Music 43, familiarity with computerized music notation. Scoring and arranging for Band; 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 and Literature (3)
Prerequisite: Music 43, familiarity with computerized music notation. Scoring and arranging for various sizes and types of choral ensembles; compositions for most choral idioms are examined and surveyed.

184. Orchestral Arranging (3)
Prerequisite: Music 43, familiarity with computerized music notation. 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.

185A. Lyric Diction I (2)
Prerequisite: Music 40, 41. For students who major or minor in vocal music. The study of the International Phonetic Alphabet and its application to singers' pronunciation of English, Italian, and Latin.

185B. Lyric Diction II (2)
Prerequisite: Music 185A. For students who major or minor in vocal music. Singers' diction studies of French and German.

187. Pop Music: Jazz and Rock (3)
Styles of Pop Music with special emphasis on Jazz and Rock and their influence on life styles. General Education CAPSTONE Cluster course.

190. Independent Study (1-3; max see reference)
See *Academic Placement — Independent Study*. Approved for ***SP*** grading.

191. Readings in Music (1-3)
Prerequisite: permission of instructor. In-depth readings and discussions in individual conferences; subjects to be selected by students and their advisers. May be preliminary research in connection with thesis topic. Approved for ***SP*** grading.

198. Senior Recital (1-2)
Prerequisite: senior standing, approval of major applied music instructor. Preparation and presentation of a satisfactory senior recital. To be taken in conjunction with Music 131S-139S; see *Other Departmental Requirements*. Satisfies the senior major requirement for the B.A. in Music.

199. Senior Project (2)
Prerequisite: senior standing, approval of major adviser. Preparation, completion, and submission of a suitable research paper, study, or composition. See *Other Departmental Requirements*. Satisfies the senior major requirement for the B.A. in Music.

GRADUATE COURSES

(See *Course Numbering System*.)

Music (Music)

204. Graduate Music Theory Survey (3)
Prerequisite: graduate standing. Required of all M.A. candidates in music. A comprehensive survey of the disciplines of harmony, counterpoint, and analysis, with respect to the music of the 18th through 20th centuries, with an emphasis on review and reinforcement. Topics include species counterpoint, figured bass, voice leading, principles of Schenkerian analysis, and basic atonal and twelve-tone theory.

205. Seminar in Analysis I: Tonal Music (3)
Principles of musical form and analysis as applied to representative works of the 18th and 19th centuries.

206. Seminar in Analysis II: Nontonal Music (3)
Development of a descriptive vocabulary suitable for the music of the 20th 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 or to other master's students by permission of instructor. 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. Approved for ***SP*** grading.

211. Graduate Performance Ensemble (2; max total 6)
Prerequisite: graduate standing or permission of instructor. Ensemble performance of instrumental or choral music with emphasis on historical and theoretical interpretation of advanced level literature. This course includes technical, stylistic, and aesthetic elements of musical literature, rehearsal, and public performance.

219T. Seminar in Music Education (3; max total 9 if no course repeated)
Prerequisite: Music 155, CTET 161 and permission of the instructor. Topics of special concern to the teacher or administrator. Individual research projects and discus-

sion 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, 161B. 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.

221. Foundations of Music Education (3)
Historical, curricular, and philosophical foundations of music education. Research in learning theories, teaching strategies, and concept development. Evaluation of contemporary trends and techniques in methodology.

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. Approved for ***SP*** grading.

258T. Topical Seminars in Conducting (1-3; max 6)
Prerequisite: Music 158A or 158B. 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.

260T. Topic Seminar in Music History (3; max 9)
Current methods, resources, and issues in music history, with application to specific topics focusing on major Western composers, major genres, landmark works or repertories, issues in musical aesthetics and criticism.

267. Seminar in Contemporary Music (3)
Prerequisite: Music 220. Critical and analytical study of the sources, selected works, and composers of the 20th century, with particular emphasis on avant-garde movements and schools. 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*. Approved for ***SP*** grading.

291. Readings in Music (1-3)
Prerequisite: permission of instructor. Readings in depth and discussions in individual conferences; subject to be selected by students and their advisers. May be preliminary research in connection with thesis topic. Approved for ***SP*** grading.

298. Project (3)
See *Criteria for Thesis and Project*. 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. Approved for ***SP*** grading.

299. Thesis (3)
Prerequisite: See *Criteria for Thesis and Project*. Preparation, completion, and submission of an acceptable thesis for the master's degree. Approved for ***SP*** grading.

IN-SERVICE COURSES

(See *Course Numbering System*.)

Music (Music)

307. Musical Instrument Repair (l; max total 3)
Maximum total credit 3 units, provided instrumental groups are not repeated. Criteria for selection; techniques for care and repair of music instruments. Instrumental grouping: brass and percussion; woodwind and strings; piano.

309T. Workshop: Vocational and Avocational Music Topics (1-3)
Topics such as New State Music Textbooks, Elementary School Classroom Instruments, Folk Music and Dancing, Piano Teachers' Workshop, Brass Music, Creative Approaches to Classroom Music, Exploring Sound and Music.

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.

The school requires that new faculty possess the appropriate terminal degree recognized in their discipline. The school has 90 permanent faculty with 100 percent holding the doctorate in their discipline granted by some of the most prestigious universities in the nation and abroad.

Man/Woman and the Natural Environment (MNE)

(18-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 18 units of credit are applied to General Education requirements. Students spend approximately one month in the field. A special fee for transportation and food on field trips is required. For further information, contact the dean's office, 278-3936.

Biol 15	An Ecological Approach to Life Science (5)
Geol 15	The Earth and Its History (5)
N Sci 15	Environmental Science (3)
S Sci 15	Man/Woman's Place in the Natural Environment (5)

COURSES

Natural Science (N Sci)

1. The Art of Medicine (1; max total 4)
Primarily for prehealth care students. Delivery of health care today. Concepts of the art of medicine presented by community physicians and specialists.

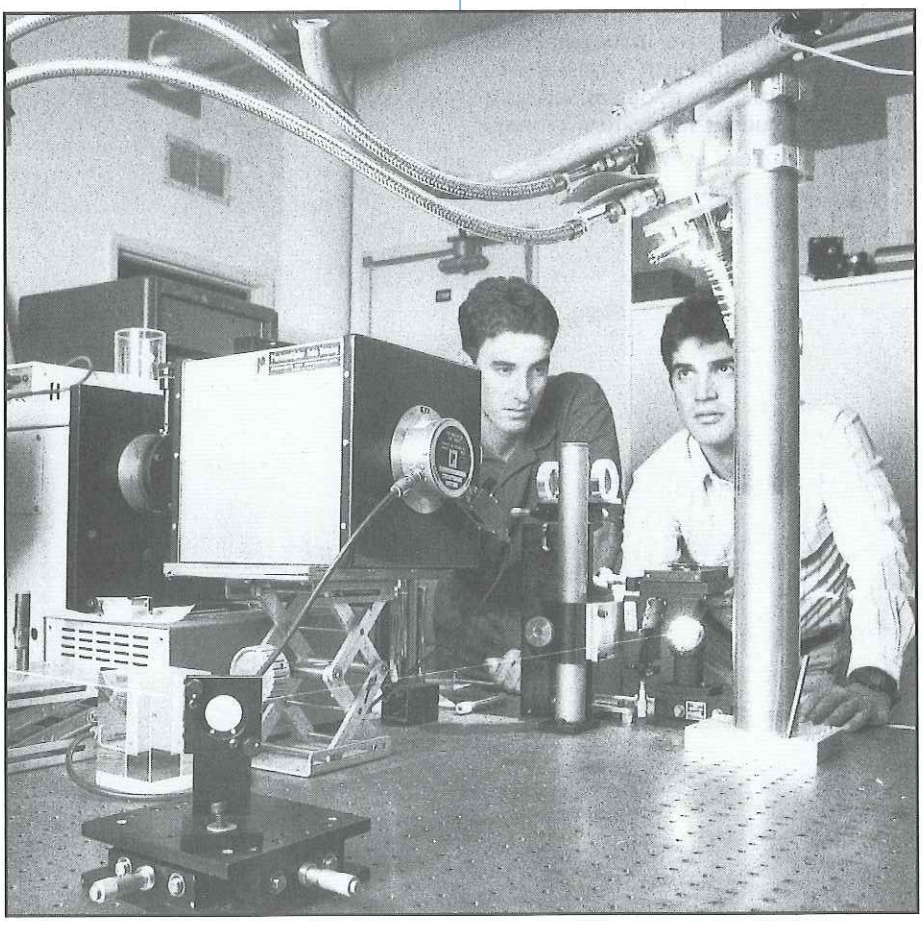
4. Science and Nonsense: Facts, Fads, and Critical Thinking (3)
Use of language, thought, and logic in science, distinguishing science fact from science fiction. Inductive and deductive methods, judgment, opinion, belief, and knowledge. A critical examination of contemporary pseudoscientific issues (creation "science," UFOs, astrology, etc.). General Education CORE, Critical Thinking.

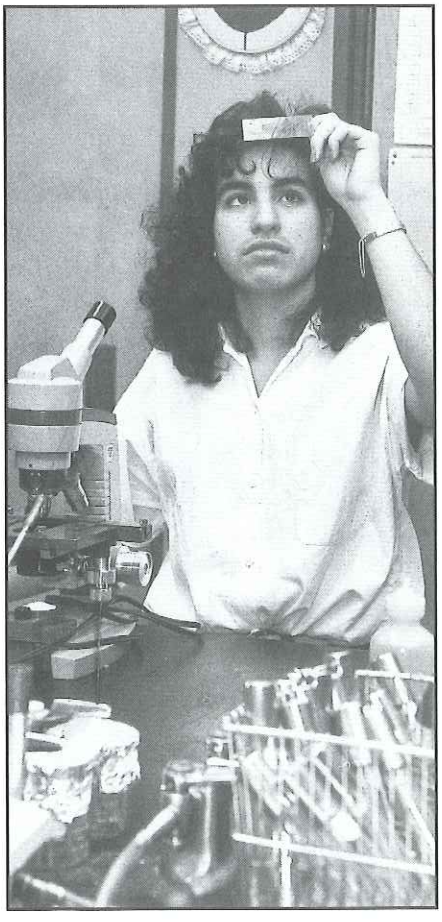
School of Natural Sciences
KIN-PING WONG, *Dean*
Science Building, Room 101
(209) 278-3936

15. Environmental Science: An Integrative Course (3)
Concurrent enrollment in Biol 15, Geol 15, and S Sci 15 required. Portion of *Man/Woman and the Natural Environment* Cluster. A study of the interrelationships among the anthropological, biological, and geological aspects of man/woman and the natural environment. Team taught. *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.

100. Chemistry for Liberal Studies (3)
Not open to engineering students. Prerequisite: all General Education CORE and





BREADTH (Divisions 1 and 2) requirements. Emphasizes chemistry as a process rather than a collection of facts, laws, and theories. Designed especially for students planning careers as elementary school teachers.

101. Biology for Liberal Studies (3)
Not open to engineering students. Prerequisite: all General Education CORE and BREADTH (Divisions 1 and 2) requirements. Emphasizes biology as a process rather than a collection of facts, laws, and theories. Designed especially for students planning careers as elementary school teachers.

102. Physics and Astronomy for Liberal Studies (3)
Not open to engineering students. Prerequisite: all General Education CORE and BREADTH (Divisions 1 and 2) requirements. Introductory physics and astronomy with emphasis on hypothesis formation, analysis, and testing. Everyday observations and materials will be used to the extent possible to facilitate the transfer of concepts and techniques to the elementary classroom. (2 lecture, 2 lab hours) (Former N Sci 120)

106. Reigning Theories of Science (3)
Examination of historically important scientific theories from the perspective of science as a human enterprise. Role of philosophy, religion, culture, and nationalism in the acceptance/rejection of theories. Research paper, class presentation required.

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)

180. Practicum in Secondary Science Teaching (2)
Concurrent enrollment in EHD 155B required; for single subject life/physical science student teachers. Application of best science teaching research; practice; emphasis on reflection/discussion of current teaching, effective management of students/time, authentic assessments, laboratory/curriculum resources, sheltered techniques, student motivators. (Former Biol 280)

GRADUATE COURSE
Natural Science (N Sci)

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)

IN-SERVICE COURSE
Natural Science (N Sci)

380T. Topics in Natural Sciences (1-4; max total 6)
Studies in the natural sciences integrating topics from biology, chemistry, geology, mathematics, physics, and psychology.

Nursing

School of Health and Social Work
Department of Nursing
MARIAMMA K. MATHAI, *Interim Chair*
McLane Hall, Room 178
(209) 278-2041

B.S. in Nursing
School Nurse Health Services Credential
M.S. in Nursing
Options:
Administration/Supervision
Clinical Specialization
Nursing Education
Primary Care/Nurse Practitioner

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 by 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 postbaccalaureate 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 sixth semester clinical course sequence, the student is qualified to take the National Council Licensure Examination (NCLEX-RN) and apply for the Public Health Nurse Certificate. CSU Fresno's nursing program is accredited by the California Board of Registered Nursing and the National League for Nursing (NLN).

Clinical Facilities

A wide variety of clinical resources are available, including Fresno Community Hospital and Medical Center, St. Agnes Medical Center, Valley Children's Hospital, Veteran's Administration Medical Center, HCA Cedar Vista Hospital, Valley Medical Center, Central Valley Indian Health, Associated Indian Services, Armenian Home, San Joaquin Gardens, and the health departments from Fresno, Madera, Kings, and Tulare counties.

Advanced Placement in the Nursing Major

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 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*).

Registered nurses are in a separate admission pool from the generic nursing applicants.

Licensed Vocational Nurses are offered three options:

1. Generic Nursing Program
2. Transfer/Credit by Examination
3. Thirty-Unit Option (nondegree)

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

Mariamma K. Mathai, *Interim Chair*

Judith Allender	M. Joan Heron
Carol L. Avent	Janet Hild
Marlene A. Dehn	Mary R. Ivan
Glen C. Doyle	Patricia R. Nuttall
Filomena C. Flores	Michael F. Russler
F. Ndidi Griffin	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. Generic and advanced placement R.N. students are admitted both fall and spring semesters. A separate nursing program application must be submitted. Applicants must meet all criteria for admission to the university and to the nursing major.

1. Students applying to the university must do the following:
   a. File an application for admission to CSU Fresno with the application fee and two official transcripts from each college or university attended by the deadline.
   b. Transfer students with fewer than 56 transferable semester units must file ACT or SAT scores and a high school transcript by the document deadline.
2. Transfer students, as well as CSU Fresno students, must submit a nursing program application and documentation including one official transcript from each college or university attended by the application deadline.
3. 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 the Nursing Department regarding any questions.

Impacted Status

The Department of Nursing is on impacted status; applicants are selected according to the following criteria:

1. Eligibility to ***apply*** to the nursing major:
   a. Recorded grades for at least two natural sciences and two other prerequisites by the filing period deadline.
   b. Intended completion of all prerequisites by date of intended enrollment in the major.
   c. Minimum grade of *C* in all prerequisite courses; one repeat per course allowed to improve grade.

   (Students not in the major may apply to the university as prenursing majors.)
2. Minimum requirements for ***enrollment*** in nursing:
   a. Completion of *all* prerequisites with a minimum grade of *C* (*CR* grades are not accepted).
   b. GPA of 2.5 or above in *all* prerequisites.
   c. Only one repeat per course allowed to improve grade.
3. Selection of admission to major:
   a. Recent California veterans who are admissible to the university and meet minimum enrollment requirements (2b. above).
   b. Remaining qualified applicants will be ranked according to:
      - GPA of completed prerequisites
      - Prerequisites completed without repetition by the filing period deadline
      - Underrepresentation in nursing (African American, Asian American, Hispanic American, Native American, male)
      - First reapplication, if applying for immediate subsequent semester
   c. There is no waiting list. Applicants compete against the entire applicant pool.
4. Application filing period:

   Fall Admission: November 1-30; applications are available October 1.

   Spring Admission: August 1-31; applications are available July 1.

Note: Students who have been admitted to the major, have made no arrangements with the department, and fail to attend the first day of class will be dropped from the major and not considered for future admission.

Policies and Procedures for Direct Transfer into the Nursing Major

1. Students must have completed at least 2 semesters or 12 semester units of nursing courses in the major (all other students must follow the admission procedures for basic or advanced placement majors).
2. Students must submit all transcripts, course descriptions of nursing courses, and two letters of recommendation from their current school to be considered for transfer.
3. Students must meet all CSU Fresno criteria for admission and continuation in the major to be eligible for transfer.
4. Students are admitted and placed in the major at the discretion of the department chair.
5. Transfer students who have written notification of acceptance into the program enter the major on a space-available basis and must receive department permission to enroll in classes.

Leave of Absence from Nursing Program

1. Request for leave of absence:
   a. Students must request a leave of absence (LOA) in writing from the department chair. Students who don't request a LOA may not be readmitted into the major.
   b. Leaves will be granted only for students who have completed at least one semester in the program and are in good standing.
2. Request to return from leave of absence:
   a. Students must request in writing to be reinstated in the program specifying:
      - Date of LOA
      - Reason for LOA
      - Disposition of circumstances requiring the LOA
      - Activities (e.g., working in hospital) engaged in during LOA
   b. Students will be notified in writing of requirements for returning to program, denial, or reinstatement.
   c. Requirements for return may include any or all of the following, based on the discretion of the department chair:
      - Letters of recommendation from individuals such as counselors or physicians
      - Enrolling in up to 5 units of Independent Study to update theoretical and/or clinical skills
   d. Students who receive written notice of reinstatement in the major return on a space-available basis and must receive permission from the department to enroll in classes.

For the university application form and admissions information, write to the Office of Admissions, California State University, Fresno. For further information regarding program admission curricula,

write to the following address and enclose a self-addressed, stamped, legal-size envelope:

California State University, Fresno
Admissions: Nursing
School of Health and Social Work
2345 East San Ramon Ave.
Fresno, CA 93740-0026.

Note: New transcripts must include all prior coursework *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.

Progression in the Major. Criteria for retention, progression, and graduation from the program include a minimum grade of *C* in each required course and each nursing course offered for a grade, and credit in courses offered for *CR/NC* grading only. Nursing and required courses may be repeated only once to achieve a *C* or credit grade. Any student who receives less than a *C* grade (or no credit) in two nursing courses will not be permitted to continue in the major. Refer to the *Student Handbook, Baccalaureate Degree Nursing Program,* for complete progression and retention policies.

Expenses. Students must be prepared to incur any additional cost such as uniforms, malpractice insurance, health insurance, stethoscopes, course syllabi, lab fees, etc., and be responsible for transportation to clinical facilities. A current CPR certification, a physical examination, and specific immunizations are required.

Bachelor of Science Degree Requirements

Nursing Major ***Units***

Major requirements* 65

Select one program:

Generic students ..... (65)
Nurs 10, 10L, 10S, 110, 110L, 110S, 112, 121, 121L, 123, 123L, 124, 131, 131L, 132, 132L, 133, 140, 140L, 141, 141L, 141S, 145, 150, 150L, 151, 180T (2 units)

RN students only ..... (65)
Nurs 112, 135, 136, 140, 140L, 141, 141L, 141S, 145, 150, 150L, 151; nursing electives; 30 transfer nursing units

Prerequisite requirements 32
Courses which must be completed before entrance into the nursing major: Chem 3A; PhyAn 64 and 65; Nutr 53; Micro 20 or 140; Engl 1; Psych 10; Anth 2 or Soc 1, 2, or 3; Spch 8 preferred (or Spch 3 or 7)

Additional requirements 15
Courses which are prerequisite to specific nursing courses: Critical Thinking course; CFS 38; Phil 120; 3 units of ethnic/women's studies; Introduction to Statistics: H S 92 or Math 11 (recommended) — consult nursing course descriptions

General Education 51
(See *Notes 1-2*)

Minimum Total** 130

*See the Nursing Department for course descriptions not found in this catalog and for advising.

**This figure takes into account that prerequisite units and additional requirements may be used to satisfy General Education requirements.

Advising Notes

1. Several prerequisite units also may be used to satisfy General Education requirements.
2. Most of the units in additional requirements may be used to satisfy General Education requirements, including Micro 20 or 140 that fulfills the Division 2 requirement only for nursing majors.
3. Students must complete the upper-division writing skills requirement in order to take Nurs 145 and to graduate.
4. Optional *CR/NC* grading is not permitted in the nursing major.
5. Students are strongly encouraged to seek academic advising every semester. Contact the department office for an appointment.
6. A $2\frac{2}{3}$ or 3-unit transfer introduction to psychology class is accepted in lieu of Psych 10. Also, 4 quarter-unit classes are accepted as equivalent to 3 semester-unit classes.
7. All practicum courses (with suffix "S" or "L") require a minimum of three hours of clinical per unit of credit as a minimum to meet course objectives.

Postbaccalaureate Health Services Credential Program — School Nursing

The Health Services Credential Program provides basic preparation for professional roles in school nursing. The program, approved by the California Commission on Teacher Credentialing, leads to the Professional Health Services Credential. The Department of Nursing, in conjunction with the School of Education and Human Development, recommends qualified candidates for credentialing as providers of health services in California public schools (preschool, K-12, adult).

The program of study consists of a minimum of 30 units. Courses taken in NLN accredited baccalaureate programs may be accepted for the credential at the discretion of the Department of Nursing.

		Units
C D 103	Speech and Hearing Science	3
C D 128	Observation in Communicative Disorders: Audiology	1
C D 131	Principles in Audiology	3
	or	
Nurs 180T	Audiometry for School Nurses	3
Nurs 184	Introduction to School Nursing	3
C D 114	Education of Exceptional Children	3
	or	
Psych 168	Exceptional Children	3
	or	
SPED 160	Mainstreaming Exceptional Children	3
	and	
SPED 160F	Fieldwork in Special Education	1
COUN 174	Introduction to Counseling	3
	or	
COUN 200	Seminar in Counseling Techniques	3
Nurs 136	Health Appraisal*	3
Nurs 137	Teaching of Health Clients (microteaching required)*	3
Nurs 185	Seminar in School Nursing*	3
Nurs 186	School Nurse Practicum I (elementary)*	3
Nurs 187	School Nurse Practicum II (secondary)*	3

Note: A minimum of 15 units in the credential program must be taken on the CSU Fresno campus. The use of any comparable course is contingent upon departmental approval. Coursework taken more than 10 years ago is not acceptable to meet program requirements.

*Courses only available through regular enrollment in the university following acceptance into the Credential Program.

A 3-unit introductory statistics course and a 3-unit nursing theory/research course are required for admission into the Health Services Credential Program.

A maximum of 9 units is allowed through courses taken in Extended Education or concurrent enrollment.

Proof of current malpractice insurance, current CPR certification, and a health clearance are required prior to enrollment in Nurs 186 and 187. Health clearance is obtained through Student Health and Counseling Services.

The student must hold either a Certificate of Clearance ***or*** a Preliminary Health Services Credential prior to enrollment in Nurs 186 and 187. Contact the credentials analyst, Ed/Psych Building, Room 120, (209) 278-3084, for application information.

All admission requirements (credential program application form, admission to the university, all documents, and prerequisites) must be completed prior to enrollment in any of the nursing courses.

Admission Criteria

1. Baccalaureate degree in nursing from a NLN accredited program
2. Admission to the university at the postbaccalaureate level
3. Current California Registered Nurse License
4. California Public Health Nurse Certificate
5. Overall GPA of 2.5 and 3.0 in nursing
6. Three satisfactory letters of recommendation (at least one from a recent employer or nursing faculty)

Admission Procedure

1. Complete application for admission to postbaccalaureate standing, Admissions Office, Joyal Building. Forward copy of application to Department of Nursing, health services coordinator.
2. Complete Credential Program application (available from the Department of Nursing).
3. Attach transcripts of previous academic work.
4. Attach photocopies of required documents (R.N. License, P.H.N. Certificate).
5. Submit three letters of reference/recommendation (forms available from Department of Nursing).
6. Arrange appointment with coordinator, Health Services Credential Program, for program planning/advising.

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 may be refused a Health Services Credential. For further information, contact the credentials analyst, Ed/Psych Building, Room 120, (209) 278-3084.

Time Restrictions. All requirements for a Professional Health Services Credential must be completed within five years of the date of issuance of the preliminary credential.

Articulation with Graduate Program

Students who wish to pursue a master's in nursing must consult the graduate curriculum coordinator. Articulation with options in clinical specialist/community health or primary care/pediatric nurse practitioner are available.

Graduate Program

The department offers a NLN 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 postbaccalaureate 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 NLN accredited program
3. Registered nurse license in California (may be waived for nurses licensed in another country)
4. Overall GPA of 2.5 with 3.0 in nursing
5. GRE score of 450 (verbal) or 430 (quantitative)
6. Malpractice insurance
7. A minimum of one year of clinical practice as a registered nurse
8. An introductory course in statistics*
9. An introductory course in research*
10. A physical assessment course that includes theory and practice; or validation of knowledge and skills for graduates of programs with integrated content

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 CSU Fresno's Division of Graduate Studies.
4. Complete the Graduate Nursing Program application.
5. Write to the following address and enclose a self-addressed stamped, legal-size envelope:
   California State University, Fresno
   Admissions: Graduate Nursing Program
   School of Health and Social Work
   2345 East San Ramon Ave.
   Fresno, California 93740-0026

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 APPLICATION FOR ADMISSION TO THE PROGRAM 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, 226, 228, 229; Soc 174	17
Approved cognates (See *graduate coordinator for cognates.*)	3
Role specialization courses (See *next page.*)	13
Thesis (Nurs 299) or Project (Nurs 298)	3
Minimum Total	**36**

*Course must be taken within five years. Outdated courses may be validated by examinations administered by the department or through enrollment in a course.

Role Specialization (Options)

Nursing Administration
Nurs 240, 242, 243; GPA 210 (cognate)

Nursing Education
Nurs 230, 232, 234; COUN 203 (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

Note: All practicum courses require a minimum of three hours of clinical work per unit of credit as a minimum to meet course objectives.

Nurs 224 must be completed prior to taking the Department Qualifying Examination.

Advancement to candidacy is contingent on passing the Department Qualifying Examination. The Department Qualifying Examination is also used to meet the university writing requirement.

Graduate students are responsible for policies and regulations of the Division of Graduate Studies and those specified in the graduate nursing program brochure.

Any nursing classes in the Role Specialization options area may be canceled because of insufficient enrollment.

Master of Science in Nursing

Registered Nurses with a Baccalaureate Degree in a Field Other Than Nursing

This program is open only to students eligible for admission to graduate standing at CSUF, who have completed a nursing program in an accredited school, are registered, or eligible for registration as nurses in the state of California and who hold a bachelor's degree in a related field from an accredited university.

For admission to the M.S.N. program, students are required to meet the following criteria in addition to the regular criteria set for admission to the M.S.N. program:

1. Submission of resume of all past educational and employment experience. Resume should emphasize experience in leadership, community health, research, and writing for publication.
2. Review of resume by the graduate coordinator of the Nursing Department who establishes nursing courses the student must complete to obtain a comparable background to students graduating with a B.S.N. at CSUF.
3. Satisfactory completion of the individualized program established by the coordinator before enrolling in the regular M.S.N. program.

Nurse Administrator

The Administration/Supervision Option prepares the graduate to assume leadership roles in nursing service organizations. The administration seminars and practicum focus on organization and management theories.

The purpose of the Administration/Supervision Option is to prepare knowledgeable and responsible nursing leaders who assume the authority and accountability for the development of nursing service policies and who foster the participation of nursing staff in planning, implementing, and evaluating practice to ensure safe, efficient, and therapeutically effective care.

Nurse Educator

The Nursing Education Option prepares the graduate 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 Nursing Education 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 Specialization 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 Specialization Option is to prepare nurses to prescribe and implement both direct and indirect nursing care and to articulate nursing therapies with other nursing personnel and other health providers.

Nurse Practitioner

The Primary Care/Nurse Practitioner Option prepares the graduate 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 ANA Certification.

The purpose of the Primary Care/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.

COURSES

Nursing (Nurs)

8T. Beginning Topics in Nursing (1-3; max total 6 if no topic repeated)
Not available for credit in the nursing major. Selected topics in nursing for prenursing and/or beginning nursing students. Explores topics not covered in regular nursing courses.

10. Basic Concepts of Nursing Practice (4)
Prerequisite: admission to the major; Nurs 10L, 10S concurrently. 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 basic concepts of pharmacotherapeutics and wellness promotion throughout the life span.

10L. Practicum in Basic Concepts of Nursing Practice (2)
Prerequisite: admission to the major; Nurs 10, 10S concurrently. Utilization of concepts from Nurs 10 in selected health wellness settings. Supervised practice of health assessment, communication skills, and noninvasive nursing procedures. (6 clinical hours)

10S. Basic Skills in Nursing I (1)
Prerequisite: admission to the major, Nurs 10, 10L concurrently. Application of concepts from Nurs 10 in simulated client situations, emphasis on assessment and interventions required to assist individuals in meeting their common health needs. (3 lab hours)

50. Cooperative Education in Nursing (1-5; max total 12; 80 hours/unit)
Prerequisite: current CPR certification; health clearance; Nurs 10, 10L, 10S. Provides students enrolled in the nursing major an opportunity to obtain structured work-study experiences, under the supervision of registered nurses, in participating health care agencies. Opportunities for additional practice and development of confidence through application of previously learned knowledge and skills. *CR/NC* grading only; not applicable toward degree requirements.

110. Basic Concepts in Nursing II (3)
Prerequisite: Nurs 10, 10L, 10S; CFS 38. Corequisite: Nurs 110L, 110S, 112. Application 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 (2)
Corequisite: Nurs 110, 110S, 112. Application of nursing process to clients with common health deviations. Identification of risk factors associated with stressors and provision of nursing care directed toward primary and secondary interventions. (6 clinical hours)

110S. Basic Skills in Nursing II (2)
Corequisite: Nurs 110, 110L, 112. 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. (6 lab hours)

112. Nursing Therapeutics (2)
Prerequisite: Nurs 10, 10L, 10S. Study of the inter, intra, and extrapersonal stressors leading to alterations in cardiac function, comfort, coping, elimination, immune response, metabolism, mobility, nutrition, respiration, and role performance and the implications for nursing practice.

121. Nursing Care of the Emotionally Disturbed Client (2)
Prerequisite: Nurs 110, 110L, 110S. Corequisite: Nurs 121L. Current theories and concepts in the care of clients with behavioral and emotional disturbances.

121L. Clinical Practice in Nursing of the Emotionally Disturbed Client (3)
Corequisite: Nurs 121. Application of the nursing process to clients demonstrating major behavioral and emotional disturbances. (6 clinical, 3 lab hours)

123. Concepts of Acute Illness in Adults (2)
Prerequisite: Nurs 110, 110L, 110S, 112. Corequisite: Nurs 123L. Secondary prevention of the acutely ill adult client/family with alterations in structure, energy, and resources due to intra, inter, and extrapersonal stressors upon flexible and normal lines of defense. Emphasis on the nursing process for reconstitution. (Former Nurs 130)

123L. Clinical Practicum: Acute Illness in Adults (3)
Corequisite: Nurs 123. Application of nursing process in secondary prevention and care of acutely ill adults. (6 clinical, 3 lab hours) (Former Nurs 130L)

124. Pharmacology in Nursing (2)
Prerequisite: Nurs 110, 110L, 110S, 112. Pharmacological theory required for effective nursing practice. Principles of pharmacokinetics and pharmacodynamics. (Former Nurs 180T section)

131. Nursing of the Childrearing Family (2)
Prerequisite: Nurs 121, 121L, 123, 123L. Corequisite: Nurs 131L. Introduction to current theories and concepts in the care of the pediatric client/family with emphasis on wellness and illness.

131L. Clinical Practice in Nursing of the Childrearing Family (3)
Corequisite: Nurs 131. Application of specific skills, theories, and concepts in the care of the pediatric client/family with emphasis on wellness and illness. (6 clinical, 3 lab hours)

132. Nursing the Childbearing Family (3)
Prerequisite: Nurs 121, 121L, 123, 123L, 124. Corequisite: Nurs 132L. Theoretical base and clinical knowledge for application in primary and secondary prevention in the nursing of the childbearing family. Introduction to high risk perinatal nursing. (Former Nurs 120)

132L. Clinical Practice in Nursing of the Childbearing Family (2)
Corequisite: Nurs 132. Application of knowledge and technical skills in the nursing of the childbearing family during the intrapartum and postpartum periods with emphasis on the family as a unit. (6 clinical hours) (Former Nurs 120L)

133. Issues in Nursing (2)
Prerequisite: Nurs 110, 110L, 110S; Phil 120; Critical Thinking course. Clinical and professional issues relevant to the practice of professional nursing. Emphasis on ethical, legal, historical, economic, and sociopolitical issues.

134. Geriatric Nursing: Concepts in Health Aging (2)
Prerequisite: Nurs 121, 121L, 123, 123L. Exploration of theories and concepts relative to healthy aging, the nurse's role as a case manager in developmental and situational crises, and resources available to the nurse. Appropriate for nursing elective or RNs preparing for ANCC certification in gerontology. (Former Nurs 180T section)

135. Professional Transition (3)
Prerequisite: admission to the major with advanced standing. Introduction to theoretical and conceptual frameworks in nursing. Application to individual nursing practice. Opportunities for peer group support. Socialization into a B.S.N. program. (Former Nurs 180T section)

136. Health Appraisal (3)
Health appraisal integrates psychosocial and pathophysiological processes including techniques of history taking and health assessment in nursing practice and knowledge of normal findings as well as common deviations. (2 lecture, 2 lab hours)

137. Teaching Strategies for the Health Care Client (2-3)
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 micro-teaching are provided. (Laboratory optional)

140. Concepts of Complex Clinical Nursing (2)
Prerequisite: Nurs 131, 131L, 132, 132L, 133. Corequisite: Nurs 140L. Theory and concepts relative to care of clients with complex health problems. Emphasis on synthesis of concepts and principles derived from nursing and other disciplines in implementation of primary, secondary,

and tertiary prevention for clients of all ages. (Former Nurs 103)

140L. Practicum in Complex Clinical Nursing (2)
Corequisite: Nurs 140. Clinical application of concepts and nursing process in care of clients of all ages with complex health problems. (6 clinical hours) (Former Nurs 103L)

141. Concepts in Community Health Nursing (2)
Prerequisite: General Education Division 9: Other Cultures; Pl Si 2 or 101; Nurs 131, 131L, 132, 132L, 133. Corequisite: Nurs 141L, 141S. Introduction to the philosophy, principles, and practice of community health nursing. Concepts and methods reflect a holistic perspective of man/woman and the environment; understanding of the nursing process as applied to the community. (Former Nurs 128A)

141L. Practicum in Community Health Nursing (3)
Corequisite: Nurs 141, 141S. Application of primary, secondary, and tertiary prevention in the community with individuals, families, and groups. (9 clinical hours) (Former Nurs 128AL)

141S. Activities in Community Health Nursing (1)
Corequisite: Nurs 141, 141L. Discussions and presentations of the implementation of primary, secondary, and tertiary nursing prevention in the community with individuals, families, and communities. (3 clinical hours)

145. Nursing Theories and Research (3)
Prerequisite: statistics, Nurs 121, 121L, 123, 123L, 133, and upper-division writing. 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.

150. Concepts of Leadership and Role Development (4)
Prerequisite: Nurs 140, 140L, 141, 141L, 141S, 145. Corequisite: Nurs 150L, 151. Synthesis of concepts basic to development of a nurse generalist; emphasis on leadership and management skills; provides conceptual base for continuing professional development. (Former Nurs 106; Nurs 128B)

150L. Practicum in Leadership and Role Development (4)
Corequisite: Nurs 150, 151. Development of leadership/management skills and role development. Care of selected population of clients in a variety of care settings. (12 clinical hours) (Former Nurs 106L, 128BL)

151. Senior Project (2)
Prerequisite: senior standing or permission of instructor; Nurs 140, 140L, 141, 141L, 141S, 145. Corequisite: Nurs 150, 150L. Opportunity for students to build upon conceptual, theoretical, and research knowledge base. Students pursue in-depth study and practical application in areas of interest: management, conflict resolution, application of nursing theories, research, or community project. Satisfies the senior major requirement for the B.S. in Nursing.

180T. Topics in Nursing (1-3; max total 12 if no topic repeated)
Selected topics such as aging, holistic nursing, transcultural nursing, assertiveness training for nurses, psychosocial aspects of nursing, etc. Some topics may have clinical component.

184. Introduction to School Nursing (3)
Prerequisite: Nurs 136; Psych 168 or C D 114 or SPED 160 and 160F; admission to HSC program. Role of the nurse in the school health program; parameters of school health practice.

185. School Nurse Seminar (3)
Prerequisite: Nurs 136, Psych 168 or C D 114 or SPED 160 and SPED 160F; 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 I (3)
Prerequisite: Nurs 137; COUN 174 or COUN 200; audiometrist certificate; Nurs 185 prior to or concurrently. School health services in elementary school; direct supervision by credentialed nurse required; scheduled conferences with preceptor and faculty. (9 clinical hours)

"When I see the joy in their faces because they were able to understand the lesson ... and when the grades are out, and they squeal with delight, 'I made it' ... that, to me, is why I teach."

Filomena Flores,
Professor of Nursing

187. School Nurse Practicum II (3)
Prerequisite: Nurs 137; COUN 174 or COUN 200, audiometrist certificate; Nurs 185 prior to or concurrently. 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*. Approved for ***SP*** grading.

GRADUATE COURSES

(See *Course Numbering System.*)

Nursing (Nurs)

210. Primary Care Techniques (2)
Prerequisite: Nurs 136 or equivalent, pathophysiology, admission to the Graduate Program in Nursing. Refinement of primary care techniques in interviewing, history taking, and physical assessment for nurses in expanded roles. Primary care laboratory techniques and interpretation of laboratory findings, health screening and selected secondary prevention strategies, and pharmacology. (1 lecture, 3 practicum hours)

211. Pharmacology for Nurse Practitioners (2)
Prerequisite: RN licensure, certification as nurse practitioner, graduate standing in MSN Program or permission of instructor. Concepts and theory relative to drugs and devices utilized in health care by the nurse practitioners in a primary care setting. Content will include pharmacodynamics, pharmacokinetics, and legal and ethical consideration for use with all age groups of clients. (Former Nurs 288T section)

223. Advanced Research Methodology in Nursing (3)
Prerequisite: admission to Graduate Program in Nursing; H S 92 (statistics) 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)
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.

225. Role Transitions in Nursing (2)
Emerging trends and universal aspects of advanced roles in nursing are examined. Appropriate theory, research and evaluation strategies are interpreted and applied to nursing practice, education, and administration. Concepts of collaboration, consultancy, teaching, leadership, and research are emphasized.

226. Analysis of Nursing Issues (2)
Prerequisite: admission to Graduate Program in Nursing. The evolution of major issues relevant to nursing are analyzed within the context of social, political, economic, and historical perspectives.

228. Seminar in Advanced Clinical Nursing (3)
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.

229. Practicum in Advanced Clinical Nursing (3)
Prerequisite: Nurs 224, Nurs 210 (for nurse practitioner students); Nurs 228 prior to or concurrently. 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)
Prerequisite or corequisite: Nurs 224. Analysis of educational issues in nursing; theories and methods of teaching in classroom and clinical instruction.

232. Curriculum Development in Nursing (3)
Prerequisite or corequisite: Nurs 224; COUN 203. 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.

234. Practicum in Nursing Education (4)
Prerequisite: Nurs 224, 228, 229; COUN 203; Nurs 230 prior to or concurrently. Implementation of a philosophy of nursing education and teaching-learning strategies are required. Under the preceptorship of a master educator, the learner participates in all aspects of instructional design, planning, implementation, and evaluation.

240. Professional and Legal Aspects of Health Care for the Nurse Executive (2)
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)
Prerequisite or corequisite: Nurs 224. 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.

243. Practicum in Nursing Administration (3)
Prerequisite: Nurs 224, 228, 229; Nurs 242 and GPA 210 (cognate) prior to or concurrently. Application of principles related to nursing executive management and health care marketing. Human and financial resource management, knowledge of professional standards, quality assurance, and legal concerns related to executive nursing management are examined in a practicum setting.

250. Seminar in Clinical Specialization (2)
Prerequisite: Nurs 224, 228, 229. Advanced concepts of individual, family, and community theory are analyzed in relation to the health promotion and reconstitution process of dysfunctional individuals, families, and communities.

251. Practicum in Clinical Specialization (4)
Prerequisite: Nurs 228, 229; Nurs 250 prior to or concurrently. Analysis and implementation of all aspects of the clinical specialist role in practice settings. Family and group process theories are applied to nursing, client, and staff groups.

264. Practicum in Advanced Clinical Nursing for the Nurse Practitioner (3)
Prerequisite: Nurs 210, 224; Nurs 228 prior to or concurrently. A practicum designed to prepare nurse practitioners to deliver health promotion and health maintenance services. Applications of individual, family, community, and nursing theories are addressed utilizing transcultural and intergenerational factors in interdisciplinary practice settings.

265. Nurse Practitioner Role in Primary Prevention (1)
Prerequisite: Nurs 210, 224; Nurs 228 prior to or concurrently. Corequisite: Nurs 229. Theoretical base for primary prevention: health maintenance, health promotion, health screening, health teaching, and anticipatory guidance for nurse practitioners. Case management techniques utilizing protocols/algorithms.

266. Nurse Practitioner Role in Secondary Prevention (2)
Prerequisite: Nurs 228, 229, 265. Theoretical base of secondary prevention in primary care settings. Assessment and management of acute self-limiting conditions. Use and development of algorithms/protocols for secondary prevention. Intensive pharmacology for nurse practitioners.

267. Practicum in Secondary Prevention, Family Nurse Practitioner (4)
Prerequisite: Nurs 228, 229, 265; Nurs 266 prior to or concurrently. 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 in Secondary Prevention, Pediatric Nurse Practitioner (4)
Prerequisite: Nurs 228, 229, 265; Nurs 266 prior to or concurrently. 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.)

271. Practicum in Secondary Prevention, Geriatric Nurse Practitioner (4)
Prerequisite: Nurs 228, 229, 265; Nurs 266 prior to or concurrently. Application of knowledge related to management of acute, self-limiting and stable chronic conditions/families.

277. Family Nurse Practitioner Role in Tertiary Prevention (2)
Prerequisite: Nurs 266, 267. 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, Family Nurse Practitioner (3)
Prerequisite: Nurs 266, 267; Nurs 277 prior to or concurrently. 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 (2)
Prerequisite: Nurs 266, 269. 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, Pediatric Nurse Practitioner (3)
Prerequisite: Nurs 266, 269; Nurs 279 prior to or concurrently. Supervised clinical practice in a primary care setting with emphasis on care of children 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.)

281. Geriatric Nurse Practitioner Role in Tertiary Prevention (2)
Prerequisite: Nurs 266, 271. 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 in Tertiary Prevention, Geriatric Nurse Practitioner (3)
Prerequisite: Nurs 266, 271; Nurs 281 prior to or concurrently. Supervised clinical practice in assessment and management of acute, self-limiting, and stable chronic conditions of individuals and families.

288T. Seminar Topics in Advanced Clinical Nursing (1-3; max total 9)
Prerequisite: permission of instructor. Selected topics in specialized practice domains such as home health, cardiovascular, oncology, gerontologic, and rehabilitation nursing. Analysis and integration of research-based knowledge into the nursing process characterizing the specific practice domain are emphasized.

290. Independent Study (1-3; max total 3)
See *Academic Placement — Independent Study*. Approved for ***SP*** grading.

298. Project (3)
See *Criteria for Thesis and Project.* 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. Approved for ***SP*** grading.

299. Thesis (3)
Prerequisite: Nurs 223. See *Criteria for Thesis and Project.* Preparation, completion, and submission of an acceptable thesis, based on an approved proposal, for the master's degree. Approved for ***SP*** grading.

IN-SERVICE COURSE

(See *Course Numbering System.*)

Nursing (Nurs)

302T. Selected Topics in Nursing (1-6; repeatable with different topics)
Selected topics related to recent developments and advances in the knowledge and techniques of nursing. The purpose is to offer nurses, health personnel, and others the opportunity to study in-depth the selected topics related to specific clinical areas of nursing.

PEACE AND CONFLICT STUDIES Interdisciplinary Minor

School of Social Sciences
PETER J. KLASSEN, *Dean*
Social Science Building, Room 108
(209) 278-3013

The overall purpose of the program in Peace and Conflict Studies (21-unit minor) is to prepare students, including potential leaders, with peacemaking and conflict management skills they can apply to daily life situations, regardless of their academic disciplines or chosen professions. The program has been developed to provide an interdisciplinary perspective to the study of conflict, violence, war, and peace. Such an approach is essential in view of the highly complex, interconnected, interdependent world in which we live. This requires an understanding that allows people to respond creatively, rather than thoughtlessly, to conflict and violence at various levels. This interdisciplinary program is open to all students.

Faculty

Sudarshan Kapoor, *Coordinator*
Barbara Birch, *Linguistics*
Melanie Bloom, *Speech Communication*
Leslie Farlow, *Education*
Robert Fischer, *Sociology*
Russell J. Mardon, *Political Science*
Bernard E. McGoldrick, *Political Science*
Robert Mikell, *Ethnic Studies*
Ernest Moerk, *Psychology*
Lea Ybarra, *Chicano and Latin American Studies*

Requirements for the Minor

A total of 21 units, which will include:

1. 15 units from the Areas of Study. It is strongly recommended that 3 units be taken from each of the five Areas of Study. However, four out of the five areas **must** be covered.
2. Practicum or independent study in peace and conflict studies (3 units). See program adviser for more information.
3. **IntD 180. Peace and Conflict (3)** Provides an overview of causes and types of conflict, critical examination of issues related to war, peace, and justice; historical and contemporary perspectives and responses to conflict resolution; uses an eclectic and interdisciplinary approach. This is the program's only required course and provides an interdisciplinary foundation to the program. General Education CAPSTONE Interdisciplinary Course.

In memory of Cesar Chavez 1927-1993

Areas of Study

AREA I — Personal and Interpersonal Issues

Soc 150T	Interpersonal Relationships
Soc 165	The Family
Spch 108	Communication and the Small Group
Spch 162	Interpersonal Communications
Phil 10	Self, Religion, and Society
Phil 157	Freedom, Fate, and Choice
Psych 61	Personal Adjustment
Psych 178	Culture, Social Class, and Development

AREA II — Community and Social Issues

Anth 172	Ethnic Relations and Cultures
Af Am 144	Race Relations
IntD 156	Military Expenditures
Crim 140	Family Violence
CLS 128	Contemporary Political Issues
Econ 140	Political Economy of the Military-Industrial Complex
I S C 93	Contemporary American Society (1 unit)
Soc 111	Society of Minority Relations
Phil 120	Contemporary Conflicts in Morals
Phil 125	Issues in Political Philosophy
Pl Si 116	Contemporary Political Ideology
Psych 134	Social Psychology
W S 108	Rape
W S 116	Domestic Violence

AREA III — International and Global Issues

Ag Ec 140	International Agricultural
Af Am 150	South Africa
Arm S 120T	Armenian Genocide
B A 174	Introduction to International Business
Econ 114	Economic Development of Poor Nations
Econ 179	Global Corporations and the Third World
Geog 163	World Crisis
Hist 180	U.S. Military History
Pl Si 112	Christianity and Politics
Pl Si 120	International Politics
Pl Si 122	Contemporary World Politics
Pl Si 125	Russian Foreign Policy
Psych 150T	Psychology of Peace and War
Soc 157	Social Change

AREA IV — Conflict Management

Ag Ec 117	Agricultural Labor-Management Relations
B A 156	Labor Law
Hist 166	U.S. Latin American Diplomacy
Hist 185	American Diplomatic History
HRM 152	Labor Relations and Collective Bargaining
Pl Si 8	Human Civil Rights
Pl Si 126	International Law and Organization
Pl Si 159T	Conflict Resolution
Spch 164	Intercultural Communication
Spch 169	Communications and Conflict Management

AREA V — Education for Peace and Nonviolence

Af Am 145	Martin Luther King Jr.
C R P 110T	Community Development
EHD 101	Peace Education
P E 111	The Olympic Games
Phil 131	Comparative Religion
Soc 122	Social Movements
S Wrk 122T	Gandhi and Nonviolence

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 prelaw option, the religious studies option, and the philosophy minor. The department provides ample opportunity for individual attention and student participation in its activities, e.g., Philosophy Club, symposia, etc.

Faculty and Facilities

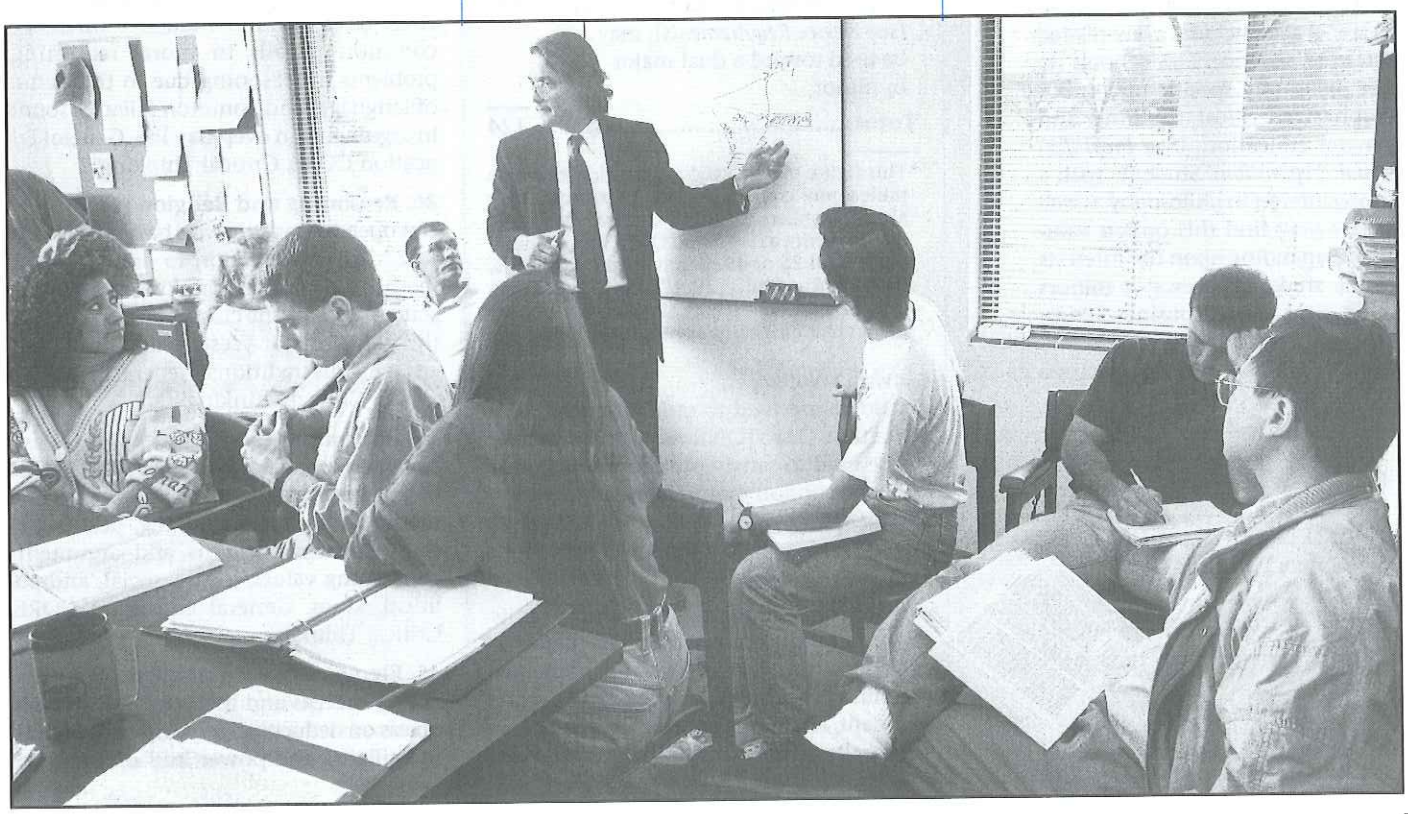
The department has a diverse and well trained faculty with special interests ranging from logic and scientific method to existentialism and philosophy of religion. All members of the department share the conviction that the best way to teach philosophy is through an intense but sympathetic interchange 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. Students who complete a major in philosophy develop analytical, critical, and communicative skills which are demanded by law schools, seminaries, and training programs in government and business. 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.

School of Arts and Humanities
Department of Philosophy
ANN E. BERLINER, *Chair*
Music Building, Room 102
(209) 278-2621

B.A. in Philosophy
Options:
Prelaw
Religious Studies
Minor in Philosophy



Faculty

Ann E. Berliner, *Chair*
Adviser: James W. Slinger
Prelaw Adviser: Karen R. Bell
Religious Studies Adviser: Donald N. Blakeley

Pedro Amaral
Hague D. Foster
Warren L. Kessler
Robert D. Maldonado
James M. Smith
Terry R. Winant

Bachelor of Arts Degree Requirements

Philosophy Major

Students must select from the Philosophy Major, the Prelaw Option, or the Religious Studies Option.

	Units
Philosophy Major requirements	32
Phil 25, 45 or 145	(3-4)
Phil 101 and 103	(6)
Select 2: Phil 105, 146, 150, 156, or 157	(6)
Select 1: Phil 115 or 118	(3)
Select at least 2: Phil 190 and/or 192	(3)
Phil 170T	(3)
Approved philosophy electives	(7-8)
Prelaw Option requirements	37-38

The Prelaw Option emphasizes critical thinking and analytical skills, as well as ethics and issues related to law. It also includes a law-related intern experience. Law schools do not prefer any specific major, but emphasize critical thinking and general education. (See *Preprofessional Preparation*). Students with a strong interest in philosophy as well as law may find this option valuable. Depending upon the interests of the student, courses or minors in political science, business, criminology, and a variety of social sciences would be useful electives for the Prelaw Option.

Phil 25 or 45	(3-4)
Phil 101 or 103	(3)
Phil 115 or 118	(3)
Phil 120 or 122	(3)
Phil 121 or 127	(3)
Select two: Phil 146, 150, 156 or 157	(6)
Phil 170T	(3)
Phil 199	(4)
Electives: Anth 146; Crim 20; Eth S 146; Pl Si 70, 110, 111, 170, 171 or other approved courses	(9)
Religious Studies Option requirements	32-33

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.

Phil 25, 45, or 145	(3-4)
Phil 130, 131	(6)
Phil 133W and/or 134	(3-7)
Phil 136, 137, 138	(3-6)
Phil 170T or 172T	(3)
Select one: Phil 101, 103, 105, 107	(3)
Select one: Hist 103, 116, Anth 150W or other approved courses outside the Philosophy Department	(3)
Phil 190, 192, or approved philosophy electives	(3-4)
General Education	51
Electives and remaining degree requirements	35-47*
(see *Degree Requirements*); may be used toward a dual major or minor	
Total	124

*This figure takes into consideration that two philosophy courses (6 units maximum) may also be applied to satisfy General Education requirements, as follows: CORE, Critical Thinking — Phil 25 or 45 (3 units); and BREADTH, Division 6 — Phil 1, 10, 120, or 131 (3 units). (See *General Education*.) Consult the department chair or faculty adviser for details.

Advising Notes

1. No course used to satisfy General Education CAPSTONE requirements may be used to satisfy philosophy major or major option 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* 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. General Education BREADTH, Division 6. (CAN PHIL 2)

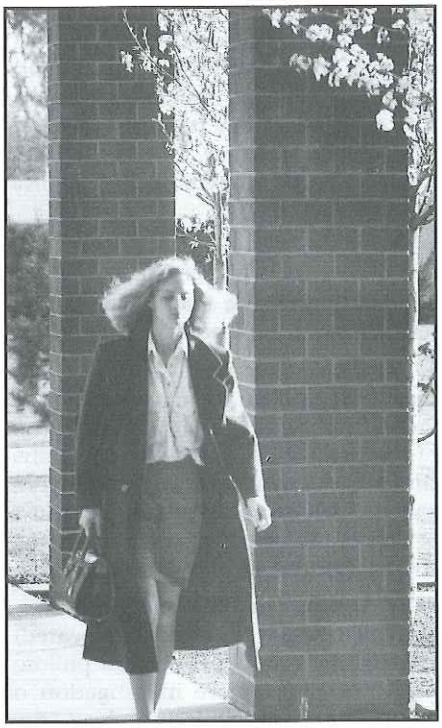
10. Self, Religion, and Society (3)
Conceptions of human nature; nature and varieties of religion; personal and social implications and values of religion. General Education BREADTH, Division 6.

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. General Education CORE, Critical Thinking.

26. Reasoning and Religion (4)
Not open to students who have had Phil 25 or 27. An introduction to principles and methods of critical thinking utilizing as source material the claims, arguments, and theories of major Western and non-Western religious traditions. General Education CORE, Critical Thinking.

27. Reasoning About Values (4)
Not open to students who have had Phil 25 or 26. An introduction to principles and methods of critical thinking, utilizing as source material claims and arguments concerning values, ethics, social, and political issues. General Education CORE, Critical Thinking.

45. Elementary Formal Logic (4)
Basic concepts and methods of logic; emphasis on deduction. Development of skills in utilizing the power and precision of



formal techniques to evaluate the worth of reasons and evidence, viz., elementary symbolic logic for deduction; elementary probability theory for induction. General Education CORE, Critical Thinking. (Lab fee, $15) (CAN PHIL 6)

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. General Education CAPSTONE Cluster course.

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. General Education CAPSTONE Cluster course.

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.

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)
Study of major figures and schools of philosophy in the Roman world. Special emphasis upon Epicurean, Stoic, and Skeptic traditions, with consideration of other major contributions. General Education CAPSTONE Cluster course.

110. Feminist Philosophy (3)
Introduction to feminist approaches to philosophy and to specifically philosophical approaches to gender. Several philosophical issues will be explored at some depth. These might be drawn from the following areas: personal identity; values and society; political authority; knowledge and reality.

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.

118. Social and Political Theory (3)
Examination of traditional and contemporary theories of society and government. Analysis of basic concepts such as the common good, social contract, authority, justice, and natural rights.

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. General Education BREADTH, Division 6.

121. Ethics in Criminal Justice (3)
Philosophical issues concerning society's treatment of criminal behavior. Topics discussed include: morality and law; punishment or rehabilitation; safe vs. repressive society, and what types of deviant behavior should be regarded as criminal?

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 busi-

ness. Introduction to basic ethical theories and methods of reasoning about moral dilemmas.

125. Issues in Political Philosophy (3)
Not open to students who take Phil 118. Examination of prominent political philosophies and contemporary issues of politics and public policy. Policy issues may include the scope and limits of government authority, the role of government in the economy, foreign policy, health care, education, agriculture, and the environment. General Education CAPSTONE Cluster course.

127. Philosophy of Law (3)
Nature and functions of law; methods of justifying legal systems; logic of legal reasoning; analysis of fundamental legal concepts. General Education CAPSTONE Cluster course.

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. General Education CAPSTONE Cluster course.

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. General Education BREADTH, Division 6.

132. Religion and the Margin (3)
Exploration of elements facing religious studies that have been historically moved from the center to the side (marginalized), such as women's experience, ethnicity, gender, and class. Focus will include how religion has both supported and resisted this move.

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. General Education CAPSTONE Cluster course.

135. Asian Religious Traditions (3)
A study of the major beliefs and values of the Asian religious traditions, including an examination of some of the classical texts central to Asian religions. General Education CAPSTONE Cluster course.

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.

145. Symbolic Logic (3)
(Similar to Math 110; consult department.) Prerequisite: Phil 25 or 45 or permission 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. General Education CAPSTONE Cluster course.

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.

165T. Special Topics
(1-3; max total 9 if no topic repeated)
Topics of current or interdisciplinary interest or requiring special background.

170T. Senior Seminar (1-4; max total 12 if no topic repeated)
Prerequisite: senior standing or permission of instructor and at least one upper-division philosophy course. Intensive investigation of selected problems, major figures, or a historical period in philosophy. Extensive writing and supervised research.

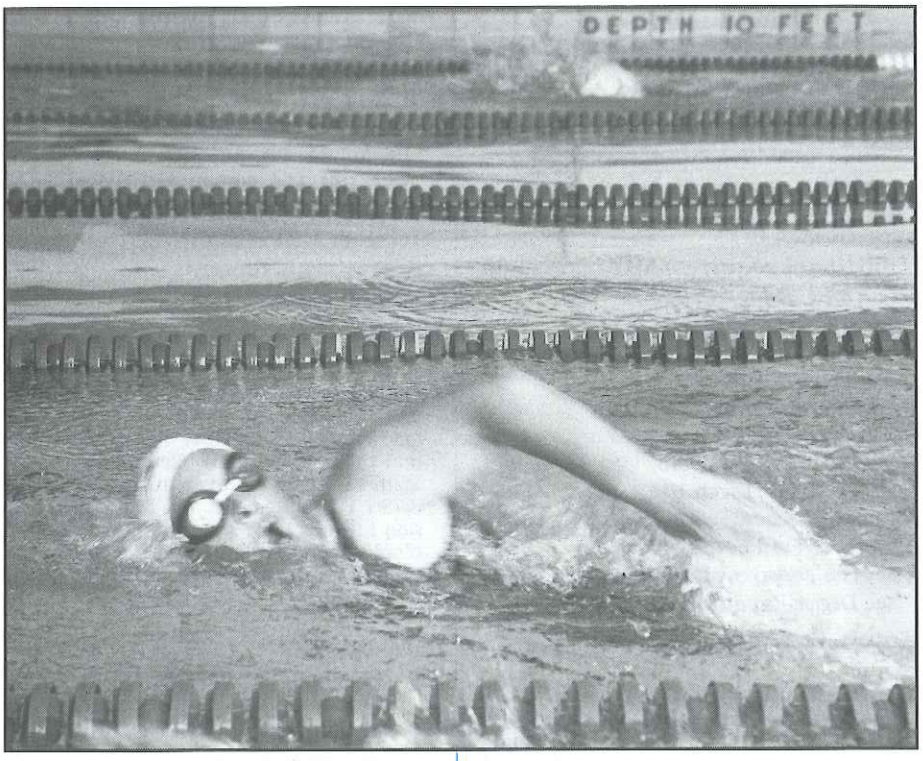
172T. Seminar in Religious Issues
(1-4; max total 12 if no topic repeated)
Prerequisite: one upper-division philosophy course. Intensive investigation of problems in philosophical theology, comparative religion, and culture. Extensive writing and supervised research.

190. Independent Study
(1-3; max see reference)
See *Academic Placement — Independent Study*. Approved for ***SP*** grading.

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 work-study 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 and Human Performance



School of Health and Social Work
Department of Physical Education
and Human Performance
JOANNE W. SCHROLL, *Chair*
South Gym, Room 111
(209) 278-2016

B.S. in Physical Education
Options: Adapted, Allied Career, Athletic Training, Exercise Science, Teaching
M.A. in Physical Education
Option: Exercise Science
Minors
Coaching
Physical Education
Certificates
Aerobic Leadership
Adapted Physical Education Specialist Credential
Single Subject Teaching Credential in Physical Education

The Department of Physical Education and Human Performance 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.S. degree in physical education is designed to meet individual professional goals. The flexibility of the program provides for the preparation of physical education teachers, coaches, professionals in various fields related to physical education, athletic trainers, and 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 is 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 fieldwork in a two-year internship program. The internship includes working in one of the training rooms where service is provided for all 18 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.

Career Opportunities

Historically, a graduate with a degree in physical education was employed as a teacher and/or coach in a school setting. In recent years, however, a variety of career opportunities have emerged for the physical education major. With aquatics centers, racquet clubs, dance studios, wellness and fitness centers, sports medicine clinics, agencies for the handicapped, and rehabilitation centers are 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 is offered for students interested in physical activity. The program is developed to aid 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 backpacking, 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.

Facilities

The facilities for physical education include two gymnasiums, six racquetball/handball courts, 12 tennis courts, a large matted area, a gymnastic apparatus area, a strength-training 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*
Undergraduate Adviser: Consult Department Chair
Graduate Adviser: Rose M. Lyon
Credential Adviser: Melva E. Irvin
Athletic Trainer Adviser: Edward L. Ferreira
Adapted Adviser: Virginia F. Chadwick

Tim R. Anderson
Sally L. Ayer
O. Duane Ballard Jr.
J. Andrew Doyle
Richard W. Francis
Ara Hairabedian
Jacobo O. Morales
Donna R. Pickel
Billie L. Poston
Robert B. Van Galder

Bachelor of Science Degree Requirements

Physical Education Major ***Units***

Major requirements **53**
Core Program ..... (24)
(Required for all options except Exercise Science)
P E 30, 31, 115K, 147, 153, 156A, 156B, 159A
Options (select one) ..... (29)
Adapted Option ..... (29)
P E 115D, 125C, 135E or 135H, 145A, 145B or 145C, 145D or Dance 160, P E 150, 152, 157A, 159B
Allied Career Option ..... (29)
Elect 3 from: P E 106A, 106B, 106C, 108, 111, 114, 146, 148, 150, 152, 157A, 162
Elect 3 from: P E 115D, 125A, 125B, 125C, 125D, 135B, 135E, 135H, 145A, 145B, 145C, 145D
Elect 11-12 additional approved units from P E or other departments
Athletic Training Option ..... (29)
P E 106A, 106B, 106C, 106E, 106F, 107, (taken four semesters), 157A
Elect 1 from: P E 125A, 125B, 125D, 135E, 135H
Elect 1 from: P E 115D, 125C, 135B
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)
Exercise Science Option
(see below)
Additional requirements **11-20**
Teaching, Adapted, and Allied Career Options ..... (11)
PhyAn 33; Nutr 54 or 147; and H S 48
Athletic Training Option ..... (20)
PhyAn 64, 65; H S 48, 90; Nutr 147; Psych 102
General Education **51**
Electives and remaining degree requirements **0-9***
(see *Degree Requirements*)
Total **124**

* This figure takes into consideration that P E 31 or H S 90 may also be used to satisfy the General Education BREADTH, Division 4 requirement 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.

Physical Education Major

Exercise Science Option ***Units***

Major requirements **63-64**
Core Program ..... (39-40)
P E 31, 106A, 115K, 147 or 148, 156A, 156B; Chem 3B; Nutr 147; PhyAn 64, 65; Phys 2A
Elect 1 from: P E 159A; H S 92; Math 11, 101
Emphases (select one) ..... (24)
Exercise Physiology ..... (24)
Elect from: P E 106B, 106C, 106E, 148, 150; Biol 121; BioSc 140A-B; Chem 109, 128A, 128B, 129A, 129B, 150, 151, 153, 155, 156; Nutr 153; Genet 172; Math 70, 140; Ph Th 125, 126, 127; PhyAn 130, 140, 151; Phys 2B, 135
Biomechanics ..... (24)
Elect from: C Sci 10, 20; Math 6, 71, 72, 75, 76, 77, 81, 118, 128; Ph Th 125, 126, 127; PhyAn 130, 140; Phys 2B, 4A, 4B, 105A, 105B; Zool 132
Additional requirements **18-23**
Chem 1A or 3A; Zool 10; Math 5; IS 50 or C Sci 1; H S 48 ..... (16-19)
Elect 2 courses from: PE AC 21, 24, 31, 39, 103, 120, 156 ..... (2-4)
General Education **51**
Electives and remaining degree requirements **0-7***
(see *Degree Requirements*)
Total **124-138***

* This figure takes into account that up to 15 units of major and additional requirements may also be used to satisfy the General Education CORE, Quantitative Reasoning (H S 92, Math 11, 71-72, or 75) and Critical Thinking (C Sci 1) requirements and BREADTH, Division 1 (Chem 1A or 3A or Phys 2A), Division 2 (Zool 10) and Division 4 (P E 31) requirements. Consult department chair or faculty adviser for details.

Advising Notes

1. Mandatory advising is required of all students 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. The Health Related Physical Fitness Test requires that the student score a minimum total of 200 points on four tests. 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 units required for a Bachelor's Degree in Physical Education and Human Performance.
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 *de-*

partmental minor). Consult the appropriate department chair, program coordinator, or faculty adviser for further information.

8. Completion of the Bachelor of Science degree in the physical education teaching option meets the requirements of the Single Subject Waiver Program.
9. Students interested in the athletic training option should consult the department for the criteria for selection into this program.

Physical Education Teaching Credential Requirements

	Units
Single Subject Credential in Physical Education	
B.S. degree with a major in Physical Education Teaching Option	124
Professional preparation courses	37
Total	161

Adapted Physical Education Specialist Credential	
B.S. degree with a major in Physical Education Adapted Option	124
Courses in addition to the major to be completed prior to Student Teaching: P E 146, 157B, 158A, 158B	9
Professional preparation courses	37
Total	170

Advising Notes

1. Students interested in obtaining a teaching credential are strongly advised to confer with the department's 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 Curriculum, Teaching, and Educational Technology Department.
3. To complete the major or to be admitted to the credential program, each student must pass a series of physical performance tests and all skill competency tests administered by the physical education and human performance department.
4. The required courses, or their approved equivalents, in the B.S. 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.S. degree waiver program has been completed.

Physical Education and Human Performance Minor and Certificate Requirements

	Units
Physical Education Minor (satisfies add-on credential)	
P E 31, 105	6
P E 108, 115K, 147, 152, or 159A	3-6
P E 115D, 125C, 135B, 145A, 145B, 145C or 145D	3-6
P E 135E and/or 135H	3-6
Total	20-21

Coaching Minor	
P E 105, 106A, 115K, 162; Nutr 54 or 147	15
P E 115D, 125A, 125B, 125C, 125D, 135B, 135H, 145A, or 145B	6
Coaching Internship (P E 199-approved by dept. chair)	2
Total	23

Certificate of Aerobic Leadership	
P E 105, 114, 115K; RLS 128	11
P E 106A; H S 48; Nutr 54 or 147	3
PE AC 21, 24, 124, 103; Dance 155A	2
P E 199 Supervised Work Experience	2
Total	18

Advising Notes

1. Students should consult with an adviser regarding any of the above programs.
2. CPR certification is required of all students completing a minor or certificate program.

Master of Arts Degree Requirements

The Department of Physical Education and Human Performance offers advanced study designed to enhance professional competencies in teaching, administration, and research in physical education, sport and exercise science. There may be curricular emphasis and specialization in pedagogy, administration or exercise science with focus upon academic preparation for more advanced degrees, applied research, or direct professional application.

Requirements. The Master of Arts degree requires 30 units of advanced coursework of which there is a common core of 9 units, 9-12 units of specific curricular requirements, and 3-12 units of electives. The culminating experience may be a thesis, a comprehensive exam, or an internship.

Under the direction of a graduate adviser, each student designs a coherent program within the following framework:

M.A. in Physical Education	***Units***
Core	9
P E 230, 231, and 261	
Requirements	9
Select three from: P E 223, 240, 241, 242, 260, 262, 263, and 285	
Electives	12
Any additional P E 200-level courses or approved outside area courses	
Total	30

Exercise Science Option	***Units***
Core	9
P E 230, 231, and 261	
Requirements	12
Select four from P E 222, 223, 233, 234, 238, 239, and 285	
Electives	3
Any P E 200-level course or any approved outside area course	
Thesis	6
P E 299	
Total	30

Advising Notes

1. The Master of Arts degree program in Physical Education assumes undergraduate preparation equivalent to a CSU Fresno major in physical education. Students not possessing undergraduate preparation in physical education will be required to take 12-15 prerequisite units.
2. All students must take a written qualifying exam before advancement to candidacy. The university graduate-level writing skills requirement is met by successful completion of this step.
3. See also the general graduate requirements listed under the *Division of Graduate Studies*.

COURSES

Note: Activity courses may be repeated for credit. Students may apply a maximum of eight units for the total degree requirements.

Aquatics (PE AC)

4. Swimming for Beginners (1)

6. Water Aerobics (1)
(Former PE AC 80T section)

101. Advanced Lifesaving (2)
Prerequisite: 500-yard swim in 10 minutes or less.

103. Swim for Fitness (1)
Prerequisite: intermediate swim ability.

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)

See *Theatre Arts* for additional dance classes.

12. Elementary Social Dance (1)

14. Country Western (1)
(Former PE AC 80T section)

112. Intermediate Social Dance (1)
Prerequisite: PE AC 12 or equivalent.

Individual Activities (PE AC)

15. Basic Massage (1)
Fundamental massage techniques; types of massage and their usage; physiological and psychological effects of massage, classical Swedish massage strokes and their sequence. (Former PE AC 80T section)

16. Adapted Physical Activity (1)
Individually designed activity for disabled students.

17. Elementary Archery (1)

18. Backpacking (2)
Limited to novice backpackers. (Estimated cost to student approximately $50 for supplies, transportation.)

19. Elementary Badminton (1)

20. Elementary Bicycling (2)
Introduction to bicycling as a lifetime sport. Bicycle selection, care, and maintenance. Traffic laws and bicycle safety. Student must provide own 10-speed bicycle. Two all-day rides on Saturday. Medical clearance required.

21. Elementary Strength Training (1)

22. Elementary Bowling (1)
(Approximate course fee, $25)

24. Elementary Conditioning Exercises and Aerobics (1)

27. Elementary Fencing (1)

30. Elementary Golf (1)

31. Elementary Gymnastics (1)

33. Fitness Walking (1)
(Former PE AC 80T section)

39. Jogging (1)

40. Elementary Karate (1)
Japanese style of Shotokan Karate.

41. Judo (1)
(Former PE AC 80T section)

42. Physical Training (2)
Unique overall fitness program emphasizing strength and endurance training. Designed to tone muscles, promote weight loss and increase stamina. Course is tailored to individual student needs. Program includes running, weight lifting, aerobics, stadium stair runs, sprints, push ups, and sit ups.

46. Elementary Racquetball (1)

51. Self-defense for Women (1)
(Former PE AC 151)

52. Skiing (2)
Limited to novice skiers (Approximate course fee, $50)

54. Elementary Tennis (1)

60. Yoga (1)

117. Intermediate Archery (1)
Prerequisite: PE AC 17 or equivalent.

119A. Intermediate Badminton (1)
Prerequisite: PE AC 19 or equivalent.

120. Cycling for Fitness (2)
Prerequisite: PE AC 20 or equivalent.

121. Intermediate Strength Training (2)
Prerequisite: PE AC 21 or equivalent.

122. Intermediate Bowling (1)
Prerequisite: PE AC 22 or equivalent. (Approximate course fee, $25)

"Throughout the lifespan, physical activity is integral in the learning process and the maintenance of self-esteem, independence, and mental and physiological vitality."

Rose M. Lyon
Graduate Adviser

124. Intermediate Conditioning Exercises and Aerobics (1)
Prerequisite: PE AC 24 or equivalent.

127. Intermediate Fencing (1)
Prerequisite: PE AC 27 or equivalent.

130. Intermediate Golf (2)
Prerequisite: PE AC 30 or equivalent. (Approximate course fee, $50) (Former PE AC 130B)

140. Intermediate Karate (1)
Prerequisite: PE AC 40 or equivalent. Japanese style of Shotokan Karate.

146. Intermediate Racquetball (1)
Prerequisite: PE AC 46 or equivalent.

154A. Intermediate Tennis (1)
Prerequisite: PE AC 54 or equivalent.

154B. Advanced Tennis (1)
Prerequisite: PE AC 154A or equivalent.

156. Triathlon (2)
Prerequisite: permission of instructor. (Former PE AC 80T section)

Team Activities (PE AC)

65. Basketball (1)

68. Soccer (1)

71. Elementary Volleyball (1)

73. Softball (1)

80T. Topics in Physical Education (1-2)
Participation in and investigation of selected physical activities not in current curriculum.

171A. Intermediate Volleyball (1)
Prerequisite: PE AC 71 or equivalent.

171B. Advanced Volleyball (1)
Prerequisite: PE AC 171A or equivalent. U.S.V.B.A. rules will be followed.

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. General Education BREADTH, Division 4. (2 lecture, 2 lab hours)

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:* Does not satisfy physical education major requirements.) (Fall only)

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 48. Advanced study in athletic training including injury recognition, evaluation, and rehabilitation. (Spring only)

106C. Therapeutic Modalities in Athletic Training (3)
Prerequisite: P E 106A; PhyAn 33 or 64-65. The theory and application of various therapeutic modalities used in the treatment of athletic injuries. (Fall only)

106E. Therapeutic Exercise in Athletic Training (3)
Prerequisite: P E 106C, 156A. The development and application of rehabilitation and therapeutic exercise programs for the injured athlete. (Spring only)

106F. Organization and Administration in Athletic Training (3)
Prerequisite: P E 106A, 106B. Current issues in athletic training, organization, administration, and professional preparation. (Fall only)

107. Internship in Athletic Training (1; max total 4)
Prerequisite: P E 106A, H S 48, PhyAn 33 or 64 and admission into Athletic Training Program. Practical experience in the field of athletic training.

108. Organization of Intramural Sports-Recreational Games (2)
Organization, administration, and promotion of intramural activities.

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. General Education CAPSTONE Cluster course.

112C. Officiating Track and Field (1)
Analysis and interpretation of rules for track; procedures, mechanics, and practice in officiating. (1-2 hour lecture/lab) (Spring only)

114. Aerobic Exercise Program Development (2)
A class designed to train the student in aerobic fitness class leadership and aerobic exercise program development. (1 lecture, 2 lab hours) (Spring only) (Former P E 180T section)

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, 156B. 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. (Spring only)

125B. Coaching Basketball (3)
Principles underlying participation in competitive basketball. (Fall only)

125C. Coaching Track and Field (3)
Principles underlying participation in competitive track and field.

125D. Coaching Baseball (3)
Principles underlying participation in competitive baseball. (Fall only)

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) (Spring only)

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)
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: PhyAn 33. Physical growth and development from prenatal period through old age with emphasis on motor development.

148. Biophysical Aspects of Aging (3)
(Same as Geron 148.) Theories of aging, biological mechanisms of the aging process, and the role of physical activity in those physiological functions influenced by age. (Spring only)

150. Perceptual Motor Development (3)
(Same as RLS 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 lecture, 2 lab hours)

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)
Prerequisite: PhyAn 33 or 64-65; P E 31. Human movement: biological and mechanical bases, application of skeletomuscular considerations and principles of mechanics to human movements.

156B. Physiology of Exercise (3)
Prerequisite: PhyAn 33 or 64-65, P E 31, and Nutr 54 or 147. 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)
Prerequisite: 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)
Prerequisite: 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. (Spring only)

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*. Approved for ***SP*** grading.

199. Supervised Work Experience (1-2; max total 4)
Prerequisite: upper-division status, GPA 2.5 last 30 units, permission of department chair and instructor. ***CR/NC*** grading only.

GRADUATE COURSES

(See *Course Numbering System.*)

Physical Education (P E)

220. Seminar in Special Physical Education (3)
Seminar dealing with current topics in special physical education: physiological and psychological profiles of disabled individuals, federal and state legislation, assessment, and designing individualized exercise programs. Students will explore computer-assisted and managed instruction as related to special physical education.

222. Biomechanics (3)
Prerequisite: P E 156A and 156B. Study of physical and mechanical bases of human movement. Mechanical properties of structural and active tissues, relation of these properties to tissue function. Application of principles of physics and mechanics to human movement and sport. Kinematic analysis of sport performances.

223. Scientific Basis of Motor Learning (3)
The psychophysiological study of motor learning and movement behavior. Evolution of theories and approaches utilized in the study of skill learning, and the examination of factors which facilitate or deter acquisition. Application of concepts through extensive laboratory experiences. (2 lecture, 3 lab hours)

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; Chem 3A, 3B. 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 lecture, 3 lab hours)

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 lecture, 3 lab hours)

238. Exercise Testing, ECG, and Prescription (3)
Prerequisite: P E 115K. Detailed study of the *American College of Sports Medicine Guidelines for Exercise Testing and Prescription*. Theoretical concepts of screening, exercise testing, and prescribing exercise for appar-

ently healthy populations and populations with special needs supported by extensive practical laboratory testing experiences. (2 lecture, 3 lab hours) (Former P E 250T section)

239. Design and Implementation of Adult Fitness Programs (3)
Prerequisite: P E 115K. An analysis of community, corporate and commercial fitness programs, including program objectives, target populations, programming areas, promotion, management and staffing, facility considerations, and program evaluation.

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 and Sport (3)
Analysis and environmental factors which influence administration of sport in public and private sectors. Emphases include ethics and application of administrative and leadership theory to strategic planning, organizing, evaluation, and managing human resources in sport and physical education contexts.

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.

243. Administrative Issues in Sport and Physical Education Promotion (3)
Prerequisite: P E 230, 231, 241, and MBA 214. The effective promotion of sport organizations, athletic and physical education programs. Emphasis is on the integration of promotional elements into the total marketing strategy of the organization, and the administration of fundraising and corporate sponsorship plans.

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.

285. Internship in Physical Education and Sport (3-6)
Prerequisite: completion of core courses curriculum (P E 230, 231, 261) and three required courses. Work experience within the physical education, health-fitness industry, or sport administration setting, directed and evaluated by a qualified faculty member with appropriate supervision by an on-site professional. ***CR/NC*** grading only.

290. Independent Study (1-3; max see reference)
See *Academic Placement — Independent Study*. Approved for ***SP*** grading.

298. Project (3-6; max total 6)
Prerequisite: See *Criteria for Thesis and Project*. Preparation, completion, submission, and/or demonstration of an original project. Creativity shall be a prime factor. Abstract required, e.g., choreograph gymnastic performance, organize square/folk dance program, compose audio-visual representation of sport forms. Approved for ***SP*** grading.

299. Thesis (2-6)
Prerequisite: See *Criteria for Thesis and Project*. Preparation, completion, and submission of an acceptable thesis for the master's degree. Approved for ***SP*** grading.

IN-SERVICE COURSES

(See *Course Numbering System*.)

Physical Education (P E)

310. Analysis of Team Activities (1-3; max total 12 if no area repeated)
Prerequisite: teaching or coaching experience or by permission of instructor. An analysis of the techniques, methods, procedures, and theory of team sports.

320. Analysis of Individual Activities (1-3; max total 12 if no area repeated)
Prerequisite: teaching or coaching experience or by permission of instructor. An analysis of the techniques, methods, procedures, and theory of individual activities.

Physical Therapy

School of Health and Social Work
Department of Physical Therapy
DARLENE L. STEWART, *Chair*
McLane Hall, Room 188
(209) 278-2625

B.S. in Physical Therapy
M.P.T., Master of 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 professional curriculum consists of three semesters of undergraduate core courses and three semesters of advanced professional coursework. Individuals who have not completed the requirements for a baccalaureate degree complete these requirements at the end of the three semesters of undergraduate core coursework and move directly into the advanced professional coursework. Individuals with a previous baccalaureate degree in a non-major and who have met prerequisite requirements may apply for admission to the professional curriculum. Upon successful completion of the three-semester core and the advanced professional curriculum, the student may receive the M.P.T. degree.

The Bachelor of Science degree in Physical Therapy provides the student with a liberal arts foundation integrated with professional coursework designed to provide understanding of basic skills needed to perform direct patient care with the guidance of a licensed physical therapist, such as in a hospital setting. After successful completion of the postbaccalaureate internship, the student is eligible to seek a license to practice physical therapy in the state of California. The bachelor of science degree also prepares the student for consideration for admission to the master's degree program in physical therapy.

Master of Physical Therapy. Education beyond the bachelor of science degree is necessary for comprehensive knowledge of the art and science of physical therapy. The student will be educated with a thorough knowledge base and be capable of critical thought leading to effective analysis and interpretation of data on which to make treatment planning decisions and to predict outcome based on sound research principles. The graduate will be prepared to assume the multidimensional roles of master clinician, including patient care, education, consultation, and administration of physical therapy services in the broad spectrum of physical therapy practice settings, and be effective leaders in the health care delivery system and society.

Faculty and Facilities

All physical therapy faculty have 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 experiences are conducted in a variety of clinical facilities throughout the state of California. Internships are available in selected facilities throughout the state.

Physical Therapy is a popular major and receives more applicants than can be accommodated. The department accepts 40 students in the fall of each year. Class size is limited due to the clinical component of the curriculum and by accreditation standards. Therefore, the department 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, including hospitals, rehabilitation centers, private practices, extended care facilities, home health agencies, public and private schools for the handicapped, and sports medicine clinics. Recent studies indicate that the current manpower shortage will persist and that there will continue to be a strong job market for physical therapists. The starting salaries and opportunities are very good.

Faculty

Darlene L. Stewart, *Chair*

Prephysical Therapy On-Campus Adviser:
Cary Keisler

Sondra Dunkle
Janet K. Duttarer
Joanne M. Laslovich
Gary L. Lentell
Robert K. Martin
Jonathan T. Spry

Bachelor of Science Degree Requirements

Physical Therapy Major — *Units*

Major requirements 44
Clinical Sciences — Ph Th 120, 121, 123, 124, 125, 126, 127, 128, 130, 131, 132, 133, 134, 142, 151, 152

Prerequisite requirements 43
(Prephysical therapy preparation)
Natural Sciences
Chem 1A, 1B or 3A, 3B; Phys 2A, 2B; H S 92 19
Biological Sciences
PhyAn 64, 65, 130, 140 15
Behavioral Sciences
Psych 10, 166; Ph Th 110 9

General Education 42
Including CAPSTONE, see *Note 2.*

Total 129

Postbaccalaureate Certification
(*units are not applicable toward the B.S. degree*) Ph Th 175 12

Advising Notes

1. Nine units of the 43 prerequisite courses 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 128 units.
2. All General Education requirements including CAPSTONE and upper-division writing skills must be met prior to selection into the physical therapy major.
3. Some physical therapy courses may be offered *CR/NC*.
4. General Education prerequisite requirements and elective units also may be used toward a dual major or minor. (See *Dual Major* or departmental minor.) Consult the appropriate department chair, program coordinator, or faculty adviser for further information.
5. Students who do not elect to pursue the M.P.T. must complete a postbaccalaureate 18-week internship to be eligible to take the state licensure examination.

Supplemental Criteria for Selection into the Major

An application for admission to the university must be completed to determine the student's eligibility for university admissions. The university Admissions Office requires two official transcripts from all institutions attended. Submit transcripts at time of application. The Physical Therapy Department application must be submitted with one official transcript from each college or university attended and observation documentation by the application deadline. Applicants must comply with the admissions criteria in order to be considered for entry into the program for the following year. A very limited number of students are admitted to the program each fall. Applicants to the program compete with the entire applicant pool. There is no waiting list. Applications to the Physical Therapy Department will be screened during the spring semester.

Fall Admissions to Physical Therapy

University Application Deadline:
October 29, 1993

Applicants must be currently enrolled/registered at CSU Fresno or be an admitted applicant to the university for the spring term. Transcripts must be submitted at time of application.

Physical Therapy Applications are available:
September 1, 1993

Physical Therapy Application Filing Period:
October 1 to October 29, 1993

A complete application includes an information form, an official transcript from each institution attended including previous spring and summer terms, and observation documentation. Late transcripts or documentation will result in not being considered.

The following admissions criteria are reviewed by the screening committee:

1. The applicant must be currently enrolled at CSU Fresno, admitted to the university for the current fall term and registered, or an applicant to the university for the spring term with a complete admissions file. CSUF applicants with all prerequisites completed, including lower and upper division, and no additional General Education requirements should apply to the university for the fall term of program entry. University applications must be submitted by October 29, 1993.
2. Complete all prerequisites as listed. The applicant must have completed or must be currently enrolled in the following lower-division courses at time of application. All courses must be completed by December 1993.

Lower division

Anatomy
CSUF: PhyAn 64
Transfer: Human Anatomy with Lab

Chemistry
CSUF: Chem 3A, 3B or Chem 1A, 1B
Transfer: Inorganic and organic or biochemistry with labs

Psychology
CSUF: Psych 10
Transfer: General Psychology

Physics
CSUF: Phys 2A, 2B
Transfer: Physics with lab including mechanics, heat, light, sound, and electricity

Statistics
CSUF: H S 92
Transfer: Introduction to Basic Statistics

The following courses are the *only* prerequisites allowed to be taken during the spring term prior to admission to the program.

Upper division

Psych 166 (Abnormal Psychology)
PhyAn 130 (Neuroanatomy)
PhyAn 140 (Neurophysiology)
Ph Th 110 (Patient Advocacy for Health Practitioners)
Neuroanatomy, Neurophysiology, and Patient Advocacy for Health Practitioners must be taken at CSU Fresno.

3. A grade of *C* or better in each prerequisite and a total prerequisite GPA of 3.0 is required. An overall GPA of 2.5 is required. *CR/NC* grades, correspondence courses or independent study courses cannot be used for prerequisite requirements. Only those prerequisite courses completed by the end of the fall semester in which application is made, will be counted toward ranking of candidates for selection into the major.
4. Completion of General Education requirements.
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. All observation hours must be under the supervision of a licensed physical therapist.

6. Participation in a personal interview.
7. Final transcripts from institutions other than CSUF must be submitted as soon as grades are posted. Request transcripts prior to the end of the term.

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 are considered on the same basis as California State University, Fresno students applying for admission to the major.

Notes: California residents are given preference over out-of-state and international students as long as the department is on impacted status.

For department application or admission information, write to the following address and enclose a self-addressed, stamped, legal-size envelope:
Admissions: Physical Therapy
School of Health and Social Work
California State University, Fresno
2345 E. San Ramon Ave.
Fresno, CA 93740-0026.

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. Additional laboratory fees may be required. Students must also provide for all expenses while taking the postbaccalaureate clinical internship. Expenses include student fees, housing, meals, and travel.

Master of Physical Therapy

The master's program is a 40-unit, three-semester, full-time course of study. The course of study is most appropriate for physical therapists and students who wish to do advanced studies and/or become prepared to practice in a variety of clinical settings, e.g., private practice, home health, and extended care. The department philosophy focuses on decision analyses processes in patient intervention. It encourages self-discipline and individual self-assessment for planning for continued professional growth.

Candidates for the Master of Physical Therapy must successfully complete all department prerequisites and complete the baccalaureate major requirement to be considered for selection into the master's degree curriculum.

Master of Physical Therapy Degree Requirements

	Units
Prerequisites	**87**
Natural Sciences	(19)
Chem 1A, 1B or 3A, 3B; Phys 2A, 2B; H S 92	
Biological Sciences	(27)
PhyAn 64, 65, 130, 140; Ph Th 125, 126, 127, 128	
Behavioral Sciences	(13)
Psych 10, 166; Ph Th 110, 142	
Clinical Sciences[1]	(28)
Ph Th 120, 121, 123, 124, 130, 131, 132, 133, 134, 151, 152	
M.P.T. Degree requirements	**40**
Core[2]	(35)
Ph Th 200, 201, 203, 204, 221, 222, 223, 226, 231, 232, 251, 252, 253, 292A, 292B	
Electives	(5)
Ph Th 240-249	
Comprehensive Examination	
Postgraduate Internship Certification requirements	**12**
Ph Th 275[3]	
Total	**139**

[1] Open only to students who have been admitted into the physical therapy major.

[2] Ph Th 251, 252, 253 advanced practicum and Ph Th 275 postgraduate internship are conducted in a variety of clinical facilities throughout the state. Students must provide for all expenses including housing, meals, and travel. These courses are offered *CR/NC* only.

[3] Ph Th 275 must be completed to be eligible to take the state examination for licensure.

Classified Graduate Standing. The Master of Physical Therapy degree program is open to all college graduates with a Bachelor of Science degree in Physical Therapy or other disciplines, who have met prerequisite requirements and show intellectual promise and ability to perform at a satisfactory level during their graduate studies. Candidates for the M.P.T. must have the equivalent to an undergraduate degree in physical therapy or remove deficiencies to be determined based on academic preparation. Successful completion of all prerequisites and baccalaureate major requirements is required to be considered for selection into the master's degree program.

Students with a bachelor's degree are eligible for unclassified postbaccalaureate status with a prephysical therapy major, while completing prerequisite coursework.

A culminating experience is required of all CSU Fresno master's degree candidates. Students in physical therapy satisfy the requirement through a written and/or an oral examination.

The following criteria must be met by the applicant to be considered for classification in the graduate program:

1. Complete all general prerequisites with an overall GPA of 3.0 and baccalaureate major requirements with a minimum grade of *C* in each course.
2. Earn an overall GPA of 2.5 on the last 60 units completed.
3. Receive a satisfactory score on the Graduate Record Exam. Students are encouraged to take the GRE early to avoid delays in acceptance for graduate work.
4. Have received or be eligible to receive a bachelor's degree in physical therapy or related field of study.
5. Submit a department application. See baccalaureate admissions criteria for additional information and deadlines.
6. Be recommended by the physical therapy faculty.

Advancement to Candidacy Requirements are:

1. classified graduate student status
2. earn a minimum GPA of 3.0 in all graduate coursework, and
3. obtain approval from the faculty to take the department's comprehensive written or oral examination.

COURSES

Physical Therapy (Ph Th)

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.

110. Patient Advocacy for Health Practitioners (3)
Prerequisite: Psych 10. May be taken concurrently with Psych 166. Recommended for health professions students, but open

to all students. Exploration of psychosocial and cultural considerations and community resource management for persons with physical impairment. (Former HSW 101)

120. Professional Orientation (1)
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 (3)
Selected theory and clinical application of therapeutic modalities and procedures in the treatment of physical disabilities, including physical agents, exercise, and massage. (2 lecture, 3 lab hours)

123. Introduction to Supervision for Physical Therapy Services (1)
Prerequisite: Ph Th 120. Principles of delegation of duties in provision of physical therapy services. Study of the role of the staff therapist in provision of health care services. (Former Ph Th 143)

124. Research Methods in Physical Therapy (2)
Prerequisite: H S 92 or Math 11. Study of research design and critical reading of research literature.

125. Applied Human Anatomy of the Musculoskeletal System (4)
Prerequisite: PhyAn 64, 65. Study of the structure and function of the neuromusculoskeletal systems with emphasis on surface, muscle anatomy and joint anatomy, nerve and blood supply. Includes dissection lab and prosected materials. (3 lecture, 3 dissection lab hours)

126. Applied Pathophysiology (4)
Prerequisite: PhyAn 64, 65. Advanced study of physiology of body systems and responses to normal aging, environmental influences and pathological dysfunction, including cardiovascular, pulmonary, endocrine, and integumentary systems. Includes dissection lab and prosected materials. (3 lecture, 3 dissection lab hours)

127. Neuromuscular Processes in Human Development and Aging (3)
The study of human development from birth to senescence with focus on concepts of motor and neurological development processes integral to evaluation and treatment intervention in neurological disability. (2 lecture, 3 lab hours)

128. Applied Human Anatomy and Biomechanics of the Neuromusculoskeletal System (2)
Prerequisite: Ph Th 125. Open to physical therapy majors only. Study of the structure, function and biomechanics of neuromusculoskeletal systems with emphasis on joints, spine, and gait. Includes dissection lab and prosected materials. (1 lecture, 3 dissection lab hours) (Former Ph Th 116)

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 (3)
A study of neurological disabilities in therapeutic intervention and program planning. Includes selected lectures by medical practitioners in the medical-surgical management of neurological conditions. (2 lecture, 3 lab hours)

133. Evaluation and Clinical Management of Neurological Systems II (3)
Prerequisite: 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 (3)
Evaluation and therapeutic intervention in the clinical management of normal and pathological conditions of the cardiopulmonary and other selected body systems. (2 lecture, 3 lab hours)

142. Concepts of Patient Compliance (3)
Study of theories and concepts which influence patient management effectiveness and compliance.

151. Clinical Lab I (2)
Prerequisite: Ph Th 121. Clinical experience under the direct supervision of academic faculty in selected hospitals. *CR/NC* grading only.

152. Clinical Lab II (2)
Prerequisite: Ph Th 151. The application of physical therapy skills and procedures in selected hospitals. *CR/NC* grading only.

175. Postbaccalaureate Clinical Internship (12)
Prerequisite: Ph Th 152. Final clinical experience for majors. The internship is 18 weeks of clinical experience at selected hospital settings throughout the state. Certification of internship completion is required before the graduate is eligible to take the state examination for licensure. *CR/NC* grading 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*. Approved for *SP* grading.

GRADUATE COURSES

Physical Therapy (Ph Th)

200. Advanced Anatomy and Pathokinesiology (4)
Prerequisite: Ph Th 125, 128. Investigation of concepts of biophysics, analysis of normal and abnormal movement. Includes dissection of lab and prosected materials. (3 lecture, 3 dissection lab hours)

201. Advanced Evaluation and Clinical Management of Cardiopulmonary Dysfunction (3)
Prerequisite: Ph Th 126, 134. Investigation and analysis of evaluation and therapeutic intervention in the clinical management of the cardiovascular/pulmonary system. (2 lecture, 3 lab hours)

203. Advanced Evaluation and Clinical Management of Special Orthopedic Problems (3)
Prerequisite: Ph Th 131, 200. Advanced specialized approaches to musculoskeletal disabilities with emphasis on evaluation techniques, therapeutic intervention and program planning for the patient with selected orthopedic problems. (2 lecture, 3 lab hours)

204. Advanced Evaluation and Clinical Management of Special Neurological Problems (3)
Prerequisite: Ph Th 127, 133. Advanced specialized approaches to neurological disabilities with emphasis on evaluation techniques, therapeutic intervention and program planning for the patient with selected neurologic problems. (2 lecture, 3 lab hours)

221. Seminar in Clinical Decision Making I (2)
Use of decision analysis and case management theory to master concepts in clinical decision making. Analysis and research of patient problems, synthesis of physical therapy theory and integration of cultural, psychosocial, and community resources to formulate treatment consistent with contemporary practice.

222. Seminar in Clinical Decision Making II (1)
Prerequisite: Ph Th 221. Continuation of Seminar in Clinical Decision Making I.

223. Seminar in Clinical Decision Making III (1)
Prerequisite: Ph Th 222. Continuation of Seminar in Clinical Decision Making II.

226. Electrophysiologic Approaches to Patient Care (3)
Prerequisite: Ph Th 121, 126; PhyAn 140. Exploration of advanced theories and principles related to the clinical use of electrophysiologic modalities. Includes electroneuromuscular stimulation for motor performance, nerve function, pain management and tissue repair. (2 lecture, 3 lab hours)

231. Seminar in Health Care Issues I (2)
Investigation and discussion of the health care delivery system and its impact on the delivery of physical therapy services.

232. Seminar in Health Care Issues II (2)
Prerequisite: Ph Th 231. Investigation and discussion of administration and organization of physical therapy services in the health care delivery system.

240. Advances in Orthopedic Physical Therapy I (2)
Prerequisite: Ph Th 203 or permission of instructor. Exploration of treatment of orthopedic problems.

241. Advances in Physical Therapy II (2)
Prerequisite: Ph Th 240 or permission of instructor. A continuation of Advances in Orthopedic Physical Therapy I.

242. Advanced Clinical Anatomy I (2)
Prerequisite: Ph Th 200 or permission of instructor. Exploration of clinical application of anatomical structures of joints.

243. Advanced Clinical Anatomy II (2)
Prerequisite: Ph Th 242 or permission of instructor. A continuation of Advanced Clinical Anatomy I.

244. Advances in Management of the Aging Population (2)
Prerequisite: Ph Th 127 or permission of instructor. Exploration of special approaches and considerations of intervention of conditions of aging.

245. Advances in Management of the Neurological Patient (2)
Prerequisite: Ph Th 204 or permission of instructor. Exploration of advanced multisystem treatment approaches in neurorehabilitation.

246. Management Strategies for Independent Practice (2)
Prerequisite: permission of instructor. Exploration of strategies for developing and maintaining a physical therapy service in an independent environment.

247. Sports Injuries (2)
Prerequisite: Ph Th 200 or permission of instructor. Exploration in advances in management of sports injuries.

248. Advances in Cardiac Rehabilitation (2)
Prerequisite: Ph Th 201 or permission of instructor. Exploration of the components of implementing and maintaining multilevels of cardiac rehabilitation and the management of patients with cardiac disease.

249. Contemporary Issues in Delivery of Physical Therapy Services (2)
Prerequisite: permission of instructor. Exploration of emerging trends and issues in contemporary physical therapy practice.

251. Advanced Clinical Practicum I (2)
Clinical practice in selected health care facilities throughout the state. *CR/NC* grading only.

252. Advanced Clinical Practicum II (2)
Prerequisite: Ph Th 251. Clinical practice in patient evaluation, treatment planning, and outcome evaluation in a variety of clinical settings located throughout the state. *CR/NC* grading only.

253. Advanced Clinical Practicum III (2)
Prerequisite: Ph Th 252. Continuation of Advanced Clinical Practicum II. *CR/NC* grading only.

275. Postgraduate Clinical Internship (12)
Prerequisite: Ph Th 253. Final experience for majors. The internship is 18 weeks of clinical experience at selected facilities throughout the state. Certification of internship completion is required before the graduate is eligible to take the state examination for licensure. *CR/NC* grading only.

290. Independent Study (1)
Supervised guidance for students who wish to do additional work on research. Approved for *SP* grading.

292A. Advanced Physical Therapy Research: Problem Formulation and Method (3)
Explores advanced topics in physical therapy research including conceptualization, operation utilization, design and sampling strategies. It allows students to prepare a proposal for an independently pursued, empirically based research project.

292B. Advanced Physical Therapy Research: Data Collection and Analysis (3)
Prerequisite: Ph Th 292A. Examines advanced strategies for physical therapy research data collection and analysis. Students are able to independently collect data, analyze it and report findings from a research project.

IN-SERVICE COURSE

(See *Course Numbering System.*)

Physical Therapy (Ph Th)

302T. Topics in Physical Therapy (1-6; repeatable with different topics)
Selected topics in physical therapy for practicing clinicians in the health fields.

Physics and Physical Science

School of Natural Sciences
Department of Physics
BRANDT KEHOE, *Chair*
McLane Hall, Room 169
(209) 278-2371

B.A. in Physical Science
B.S. in Physics
M.S. in Physics
Minor in Physics
Minor 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 nonlinear 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 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

Brandt Kehoe, *Chair*
Undergraduate Adviser: Bret C. Hess
Graduate Adviser: Michael J. Zender
Premedical Adviser: Brandt Kehoe
Preoptometry Adviser: Floyd L. Judd

Manfred Bucher — Gerardo Munoz
Vanvilai Katkanant — Hugh A. Williamson

Bachelor of Science in Physics

The B.S. in Physics offers preparation appropriate to employment in government and industry involving a range of activities from laboratory work to technical sales. It also offers appropriate background preparation for graduate study in physics and a large number of other fields. With an appropriate choice of electives, it provides a very strong premedical, predental, or preoptometry program.

Beyond professional goals, the study of physics provides a deep understanding of fundamental processes which underlie our physical world and fosters methods of inquiry which promote intelligent analysis generally.

Bachelor of Science Degree Requirements

Physics Major	***Units***
Physics requirements (see *Note 1*)	**48**
Physics core	(31)
Phys 4A, 4AL, 4B, 4BL, 4C, 4CL, 102, 103, 104, 105A, 105B, 107A, 110	
Upper-division electives	(17)
Includes courses in physics and, with approval, in related fields. Students planning to pursue graduate study in physics are strongly encouraged to take Phys 107B, 115, 130, 140, 162, and 170A. (see *Note 2)*	
Additional requirements (see *Notes 1, 4,* and *5*)	**31-33**
Math 75, 76, 77, 81; Chem 1A, 1B; C Sci 15, 20 or 40 or ECE 70; I T 53	
General Education (see *Note 3*)	**51**
Electives and remaining degree requirements (see *Degree Requirements* and *Note 3*)	**0-6***
Total	**130-132**

*This figure takes into consideration that one General Education CORE class and a BREADTH Division 1 class also may be applied to satisfy physics major additional requirements (see *General Education*). Under this provision, up to 6 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.

Advising Notes

1. *CR/NC* grading is not permitted in the physics major with the exception of Phys 103. Additional requirements, however, may be taken *CR/NC* (see ***Credit/No Credit** Grading*).
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 *department 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 the B.S. in Physics

The list below is a suggested schedule of courses for the major for students planning to complete the suggested pregraduate study sequence in four years.

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 130 units must be completed for the Bachelor of Science degree. (See *Degree Requirements*.)

1st Year:	Phys 4A, 4AL; Chem 1A, 1B; Math 75, 76; Computer Programming
2nd Year:	Phys 4B, 4BL, 4C, 4CL, 103, 104; I T 53; Math 77, 81
3rd Year:	Phys 102, 105A, 105B, 110, 162, 170A
4th Year:	Phys 107A, 107B, 115, 130, 140 plus upper-division electives

Physics Minor

A Minor in Physics requires the following:

	Units
Phys 4A, 4AL, 4B, 4BL, 4C	11
Phys 102	3
Other upper-division physics	6
Total	**20**

Bachelor of Arts in Physical Science

The B.A. in Physical Science is designed primarily to meet the needs of students interested in pursuing a teaching career in the physical sciences at the secondary level. It provides an effective framework in which to satisfy the requirements of the waiver program (see next page) and to develop greater depth in one or more of the individual sciences involved.

The degree is also a suitable choice for students with a general interest in the physical sciences such as those interested in pursuing a career in technical aspects of law, in medicine, in dentistry, in optometry, and in other areas for which the breadth of scientific coverage of this degree is advantageous.

Bachelor of Arts Degree Requirements

Physical Science Major	***Units***
Physical Science requirements	**49-50**
Physical Science core	(27)
Chem 1A, 1B; Geol 1 and 3 or 15; Phys 2A, 2B (see *Note 1*); P Sci 21	
Additional requirements	(22-23)
Math 75, 76 (see *Note 2*); C Sci 101; BioSc 1A or Biol 15 and BioSc 1B; N Sci 106 (see *Note 3*)	
Emphases (select one) (see *Note 4*)	**16-22**
Chemistry A	(16)
Chem 8, 105, 109, 139, 150	
Chemistry B	(17)
Chem 102, 108, 128A-B, 129A	
Earth Science	(16-17)
Geol 2, 105, 151; plus two from Geol 110, 117, 140, 169; Geog 111	
Physics	(22)
Math 77; Phys 4A, 4B, 4C and Phys 4AL, 4BL, 4CL (replaces Phys 2A, 2B in core, for 6 additional units)	
Phys 102, 105A, 110, and 120A or 120B	
Physical Science	(16)
Chem 8, 108; 109 or 150; P Sci 168; Phys 120A or 120B	
Premedical	(20)
Biol 140A-B; Chem 128A-B, 129A, 150, 151	

Additional General Education requirements	42
6-unit CAPSTONE requirement to be met by Geol 168/Geog 168 (see *Note 3*)	
Electives and remaining degree requirements	10-17
(see *Degree Requirements* and *Notes 3 and 5*)	
Total	124

Advising Notes

1. Phys 2A, 2B is replaced by Phys 4A, 4B, 4C, 4AL, 4BL, 4CL in the Physics Emphasis.
2. Students without a strong foundation in mathematics should consider substituting Math 71-72 for Math 75.
3. The physical science requirements include 9 units of General Education: 3 units of General Education Core mathematics, 3 units from Division 1, and 3 units from Division 2. N Sci 106W satisfies the Upper-Division Writing Requirement.
4. Substitutions may be made in an emphasis program with approval of the appropriate department chair.
5. Students must include in their electives sufficient upper-division courses to satisfy the university's 40-unit requirement. The program requirements for this degree include from 19 to 32 upper-division units, depending upon the emphasis.

Waiver Program for the Single Subject Credential in Physical Science

The waiver program for the Single Subject Credential in Physical Science follows. Students completing the waiver program will qualify in the subject matter for the credential without having to take the subject matter exam.

The B.A. in Physical Science was designed to offer students a degree program which would also satisfy the Single Subject waiver requirements. Through the emphasis components of the degree program, students will acquire greater depth in one or more of the science disciplines involved.

Credential Requirements	***Units***
Core	35-36
BioScience	
BioSc 1A-B or Biol 15 and BioSc 1B	(8-9)
Chemistry	
Chem 1A-B	(10)
Geology	
Geol 1 and 3 or Geol 15	(5)
Physics	
Phys 2A, 2B	(8)
P Sci 21	(4)
Breadth	20
C Sci 101	(3)
Geog 168	(3)
Math 75-76	(8)
N Sci 106	(3)
P Sci 168	(3)
Total	55-56

Physical Science Minor

The Physical Science Minor offers an opportunity for both nonscience and science majors to diversify into important and interesting fields. It consists of 21 units of courses selected according to one of the patterns below:

	Units
A. Chem 3A and 3B*	7
Phys 2A and 2B*	8
Upper-division electives**	6
	21
B. Chem 1	3
Phys 2A and 2B*	8
Geol 1	4
Upper-division electives**	6
	21
C. Chem 3A and 3B*	7
Phys 10	4
Geol 1	4
Upper-division electives**	6
	21

For chemistry, geology or physics majors, all courses must be outside the major department. The revised program must be approved by the chair of the major department.

* Chem 1A may be substituted for Chem 3A, and Chem 1B may be substituted for Chem 3B. Phys 4A and 4AL may be substituted for Phys 2A, and Phys 4B and 4BL may be substituted for Phys 2B.

** The upper-division electives may be any upper-division courses for which the student is qualified, from the three departments. Courses with very few prerequisites are Chem 139; Geol 105, 114, 151, 168, 169; Phys 145; P Sci 106, 168.

Graduate Programs

The Department of Physics offers graduate instruction and research leading to the Master of Science degree.

For general information, read the *Graduate Studies* section in this catalog, and in particular, the sections on *Admission to Graduate Standing, Advancement to Candidacy,* and *Program Requirements*. The minimum entrance requirements are a GPA of 2.5 over the last 60 units, satisfactory scores on the GRE General Examination, and good references. Although the GRE scores are not the only, or most important, criteria used in the admission process, we generally look for scores above 600 on the quantitative portion of the exam or for a total above 1,000 on the combined quantitative and verbal portions. The GRE General Examination must be taken before applying for admission.

It is important to achieve classified standing quickly, before completion of 10 units. The next step is advancement to candidacy, after completion of at least 9 units of graduate study with a minimum GPA of 3.0 and satisfaction of the writing proficiency requirement. Advancement also requires a score of at least the 25th percentile on the Advanced Physics GRE Subject Examination.

Teaching assistantships are usually available, as is general financial aid. For some forms of financial aid, application must be completed before the end of February.

For specific questions, consult the chair of the department or the graduate adviser.

Master of Science in Physics

The M.S. degree in Physics provides a strong foundation both for later Ph.D. study in physics or in related fields, for positions in industry, and for teaching at the community college level. Students completing degrees have successfully pursued all three of these career goals — with roughly equal numbers going to doctoral programs and industry, and a smaller number directly into teaching.

Under the direction of the graduate adviser, a coherent program, directed toward the student's goal in graduate study and designed within the framework outlined on the next page, is prepared and submitted to the department. There is a standard core of classical mechanics (Phys 203A, B), classical electrodynamics (Phys 220A, B) and quantum mechanics (Phys 222) which is strongly recommended for students plan-

ning to pursue further graduate study — and, at least in part, for all students. Other courses, both from within and from outside the department, can be used to complete the program worked out with the adviser. As part of the program, every student is required to complete an independent study project (Phys 290) or a thesis (Phys 299).

Areas of research in which our current faculty are active include solid state theory, optical and magnetic probes of solids, high pressure physics, theoretical neuroscience, diode laser analysis, X-ray fluorescence, the renormalization group in classical physics, ferroelectric phase transitions, radon monitoring, and Raman scattering.

Undergraduate education equivalent to a physics major at CSU Fresno is necessary for admission. Note the other requirements on the previous page under *Graduate Programs*.

	Units
Physics graduate courses	**18**
Phys 290 or 299 (minimum)	(3)
Additional graduate courses in physics	(15)
Students planning further graduate study should include Phys 203A-B, 220A-B, and 222.	
Upper-division or graduate electives in physics or related fields	**12**
Total	**30**

Note: Each student is required to complete as a culminating experience at least 3 units of Phys 290 (Independent Study) and a comprehensive written and oral examination, or at least 3 units of Phys 299 (Thesis).

COURSES

Physics (Phys)

2A. General Physics (4)
Prerequisite: intermediate algebra. Topics and concepts in mechanics, properties of matter, energy, heat, and sound. General Education BREADTH, Division 1. (3 lecture, 3 lab hours) (CAN PHYS 2)

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. General Education BREADTH, Division 1. (3 lecture, 3 lab hours) (CAN PHYS 4)

4A. Mechanics and Wave Motion (3)
Prerequisite: Math 76 or concurrently. Topics in classical Newtonian mechanics including linear and circular motion; energy; linear and angular momentum; systems of particles; rigid body motion; wave motion and sound. General Education BREADTH, Division 1 *when taken with Phys 4AL.*

4AL. Laboratory in Mechanics and Wave Motion (1)
Corequisite: Phys 4A. Introduction to laboratory methods. Experiments in mechanics, waves, and sound (3 lab hours)

4B. Electricity, Magnetism, and Heat (3)
Prerequisite: Phys 4A; Math 77 or concurrently. Topics in classical physics including electrostatics, electric fields and potential, currents and electric circuits, magnetic fields, electromagnetic induction, Maxwell's Equations, heat and thermodynamics. General Education BREADTH, Division 1 *when taken with Phys 4BL.*

4BL. Laboratory in Electricity, Magnetism, and Heat (1)
Corequisite: Phys 4B. Experiments in electricity, magnetism, heat, and thermodynamics. (3 lab hours)

4C. Light and Modern Physics (3)
Prerequisite: Phys 4B; Math 77. Geometrical optics; electromagnetic radiation; physical optics; introduction to special relativity; quantum physics; and the physics of atoms, nuclei, and the solid state. General Education BREADTH, Division 1 *when taken with Phys 4CL.*

4CL. Laboratory in Light and Modern Physics (1)
Corequisite: Phys 4C. Experiments on geometrical and physical optics; the quantum nature of light; atomic spectra; radioactivity; semi-conductors; and superconductivity. (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. General Education BREADTH, Division 1. (4 lecture, 3 lab hours) (***Note:*** Phys 5A and 5B have been replaced by Phys 4A, 4B, and 4C plus one or more of Phys 4AL, 4BL. Phys 5B will be taught for the last time in fall 1993.)

10. Conceptual Physics (4)
Prerequisite: intermediate algebra. Basic ideas of physics and their relationship to the everyday environment. Observation and interpretation of physical phenomena, identification and elimination of misconceptions, proper terminology for physical quantities, scientific method, metric system. Memorable demonstrations in the lectures and household-related experiments in the lab. General Education BREADTH, Division 1. (3 lecture, 2 lab hours)

90. Directed Study (1-2; max total 3)
Prerequisite: any university-level physics course. Individually arranged course of study in some limited area of physics, either to remove a deficiency or to investigate in more depth. (1-2 hours to be arranged)

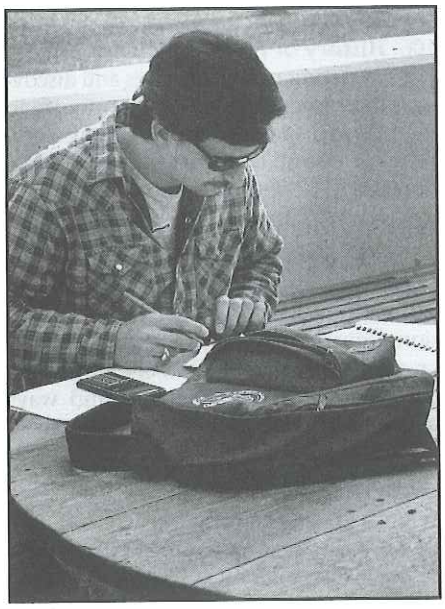
102. Modern Physics (3)
Prerequisite: Phys 5B. Fundamental concepts of atomic and nuclear structure, transitions and radiation. Includes discussions of relativistic mechanics, quantum mechanics, solid state physics. Special topics as they pertain to modern developments in physics, engineering, and chemistry.

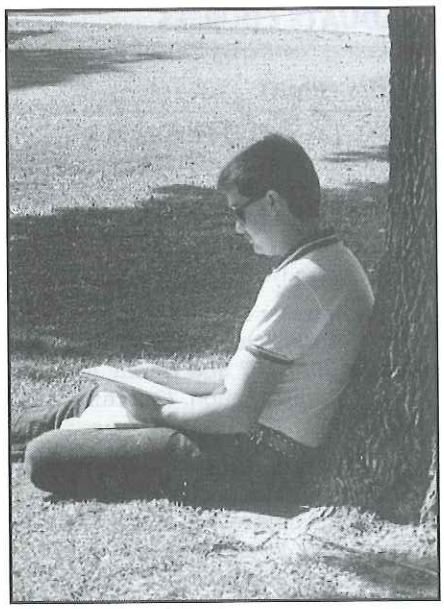
103. Physics Machine Shop Use and Safety (1)
Lecture, demonstrations, and practical experience in use of machine tools, as preparation for Phys 104, 181, 190, 290, 299. Emphasis on safety. ***CR/NC*** grading only.

104. Experimental Techniques in Solid State Physics (3)
Prerequisite: Phys 5B, 103. 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 110B and permission of instructor, or Chem 215. 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)

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)

136. Radiation Physics (3)
Prerequisite: Phys 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, 2B or 4A, 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 110B and permission of instructor, or Chem 215. 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 chair.

181. Senior Research Project (2)
Prerequisite: senior physics major or permission of instructor. Individual project, supervised by faculty member, to develop student's research skills. Student must report on project to Physics Seminar (Phys 180). Approved for ***SP*** grading.

190. Independent Study (1-3; max see reference)
See *Academic Placement — Independent Study*. Approved for ***SP*** grading.

GRADUATE COURSES

(See *Course Numbering System.*)

Physics (Phys)

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.

207. Radiotracer Methodology in the Natural Sciences (3)
(Same as Biol 207 and Chem 207.) See Biol 207 for description. (2 lecture, 3 lab hours)

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 and quantum mechanical theories; atomic and nuclear structure; the nature of the nucleus as deduced from classical and quantum mechanical theories; models of nuclear structure.

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.

262. Advanced Solid State Physics (3)
Binding and crystal structure, crystal electron theories, elementary excitations, transport theories, crystal defects, superconductivity. (Former Phys 275T section)

270. Advanced Mathematical Physics (3)
Prerequisite: Phys 170A. Covers three topics: group theory, including continuous (LIE) groups, LIE algebras, and an introduction to the theory of representations, Green's functions and their applications to physical problems, and integral equations including diagrammatic methods of solution. (Former Phys 275T section)

272. General Relativity (3)
Prerequisite: Phys 203A. The principle of equivalence, tensor calculus in curved spacetimes, the Einstein-Hilbert equations, the Schwarzschild solution tests of general relativity, gravitational radiation, introduction to cosmology. (Former Phys 275T section)

275T. Topics in Contemporary Physics (1-3; max total 6)
Advanced topics in such areas as modern optics, plasma physics, high energy physics, astrophysics, nuclear physics, biophysics. Some topics may have labs.

290. Independent Study (1-3; max see reference)
See *Academic Placement — Independent Study*. Approved for ***SP*** grading.

299. Thesis (2-6; max total 6)
Prerequisite: See *Criteria for Thesis and Project.* Preparation, completion, and submission of an acceptable thesis for the master's degree. Approved for ***SP*** grading.

PHYSICAL SCIENCE COURSES

Physical Science (P Sci)

ASTRONOMY

21. Elementary Astronomy (4)
Prerequisite: intermediate algebra. Basic concepts, theories, history, and laws of astronomy. Solar system, stellar evolution, quasars, pulsars, black holes, origin and development of the cosmos. Laboratory includes star and planet observation, lunar observation, physical principles particularly important for astronomy. General Education BREADTH, Division 1. (3 lecture, 2 lab hours)

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. General Education CAPSTONE Cluster course.

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. General Education CAPSTONE Cluster course.

180T. Topics in Physical Science (1-3; max total 9)
Detailed discussion of special topics within the realm of physical science.

IN-SERVICE COURSES

(See *Course Numbering System.*)

Physical Science (P Sci)

305. Physical Science for Secondary School Teachers (3, max total 6 in any one field)
Prerequisite: secondary credential and two years of teaching experience. Objectives, content, and instructional materials for the physical sciences; fundamental principles and recent developments. Emphasis may be on chemistry, geology, or physics.

350. Physical Science for Elementary School Teachers (3-6; max total 6 in any one field)
Maximum total credit 12 units; not more than 6 units in one field. Prerequisite: elementary credential. Selection of source materials and aids available for illustration of fundamental concepts and principles in physical science; laboratory work in construction, operation, and use of demonstrations and experiments in the elementary school.

Political Science

School of Social Sciences
Department of Political Science
PHILIP F. BEACH, *Chair*
Social Science Building, Room 129
(209) 278-2988

B.A. in Political Science
B.A. in Public Administration
M.A. in International Relations
Master of Public Administration (M.P.A.)
Minor in Political Science
Minor in Public Administration

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. 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 and public administration. A Minor in Political Science is chosen by students as a means of obtaining skills and knowledge important to their primary area of interest.

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.

The comparable program in public administration places 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. 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 prelaw students as majors than any other program at the university.

Faculty

Philip F. Beach, *Chair*

Political Science Advisers: (Freshmen and Sophomores) Alfred B. Evans Jr. and Jean Kingston (Juniors and Seniors) Philip F. Beach

Public Administration Advisers: (Freshmen and Sophomores) Adewole A. Umoja (Juniors and Seniors) John A. Rotstan

Prelaw Adviser: Don R. Broyles

Graduate Advisers: Marn J. Cha, Adewole A. Umoja (M.P.A.), Russell J. Mardon, and Freeman J. Wright (M.A.)

Don R. Broyles	Russell J. Mardon
Marn J. Cha	Bernard E. McGoldrick
Alfred B. Evans Jr.	David H. Provost
Harold H. Haak	Adewole A. Umoja
Lyman H. Heine Jr.	Freeman J. Wright
Jean Kingston	

In most instances, the faculty in the department have had experience practicing what they teach. 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.

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.

Bachelor of Arts Degree Requirements

Political Science Major ***Units***

Major requirements **36**
(see *Notes 1* and *2*)
Lower-division core: Pl Si 1, 90 ..... (6)
(to be completed prior to or concurrently with enrollment in the first 6 units of upper-division major courses)
Upper-division core: Pl Si 110 or 111, 120, 140, 150 ..... (12)
Upper-division Political Science electives: (exclude 101, 102, 187) ..... (18)
General Education **51**
Electives and remaining degree requirements **37**
see *Degree Requirements*); may be used toward a dual major or minor
Total **124**

Advising Notes

1. *CR/NC* grading is not permitted in the political science major.
2. Political science majors may not use Pl Si 1 or 120 for General Education 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* 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, African American studies, economics, English, geography, history, Chicano and Latin American studies, philosophy, sociology, or city and regional planning. Consult adviser for specifically recommended courses.

Bachelor of Arts Degree Requirements

Public Administration Major ***Units***

Major requirements **36**
(see *Notes 1* and *2*)
Lower-division core: Pl Si 1, 90 ..... (6)
(to be completed prior to or concurrently with enrollment in the first 6 units of upper-division major courses)
Upper-division core: Pl Si 150, 181, 182, 184, 185 ..... (15)
Upper-division electives ..... (15)
Elect from:
Pl Si 110, 111, 114, 170 ..... (6)
Pl Si 160, 163, 169T ..... (3)
Pl Si 183, 187, 188T, 189T, 190, 191 ..... (6)
General Education **51**
Electives and remaining degree requirements **37**
(see *Degree Requirements*); may be used toward a dual major or minor
Total **124**

Advising 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 General Education 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* 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, African American studies, economics, English, geography, history, Chicano and Latin American 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
Total **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
Total **21**

United States Constitution Requirement

The United States Constitution (including California State Constitution and local government) requirement for graduation will be fulfilled by Pl Si 2 or 101. No other political science class fulfills the United States Constitution requirement.

Credential Program

See Social Science Major for the Single Subject Waiver Program in social science.

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 9-unit component of the program which students select from the approved list of extra-departmental courses related to their 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 the 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*). Students with background deficiencies in political science usually may remedy these through a few upper-division political science courses selected by the program adviser. Any prerequisites required by extra-departmental courses must also be fulfilled unless waived by the department or program concerned.

Admission. Applicants may qualify for admission to the 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 (GRE); a written statement indicating why the applicant wishes to pursue the M.A. degree; and three letters of recommendation;
4. Recommendation for admission by the Admissions Committee of the Graduate Program in International Relations. Candidates will be recommended on the basis of the promise they show for successfully completing the program. Candidates will be evaluated using a combination of:
   a. grade point average (those with averages of less than 2.8 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 500 on either the verbal or quantitative part of the GRE must have compensating strength in other areas); applicants whose native language is not English must also achieve a minimum score of 570 on the Test of English as a Foreign Language;
   c. evaluation of the applicants written statement and letters of recommendation.

All candidates for the Master of Arts degree in International Relations must complete the 15 units of graduate seminars specified as the core program, which consists of Pl Si 200, 210, 220, 240, and 250. Nine units of approved electives from outside the department are also required along with an additional 6 units within the discipline of political science.

The additional 6 units of political science may be earned in one of the following four ways, depending on the interests and career objectives of the candidate:

1. For students declaring their intentions to pursue Ph.D. degrees, a master's thesis amounting to 6 units of credit is required.
2. Students declaring their intentions to teach political science at other than the university level may meet the 6-unit requirement by:
   - thesis or
   - project equivalent to 6 units of thesis.
3. Students declaring their intentions to pursue careers in fields other than political science may meet this 6-unit requirement by:
   - thesis or
   - approved project equivalent to 6 units of thesis or
   - 6 units of additional coursework in political science and written comprehensive examination.
4. Students declaring their intentions to pursue careers in the U.S. Foreign Service or other governmental agencies and international organizations may meet this 6-unit requirement by:
   - thesis or
   - approved project equivalent to 6 units of thesis or
   - 6 units of additional coursework in political science (courses must be in international relations and/or comparative politics) and written 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. This language examination will be required before enrollment in the thesis or taking the written comprehensive examinations. 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
Core Program	15
Thesis	6
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.

	Units
Core Program	15
Thesis or Project	6
Electives from approved list of extra-departmental courses	9
Total	30

Plan C. Students declaring their intention to pursue careers outside political science.

	Units
Core Program	15
Thesis, project, or 6 additional units of coursework in political science	6
Electives from approved list of extra-departmental courses	9
Written 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.

	Units
Core Program	15
Thesis, project, or six units of electives in political science drawn from the International Relations and/or comparative Government series	6
Electives from approved list of extra-departmental courses	9
Written examination if 6 additional units in political science are chosen	
Total	30

Graduate Program in Public Administration

The Graduate Public Administration Program offers a multidiscipline 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. In consultation with their advisers, students will select the remaining 18 units 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 students with a specialization suitable to public administration. To finish the program students 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 (NASPAA) and was designed following consultation with over a dozen senior public administrators in the Fresno area. Consistent with the NASPAA 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, 240, 241, 260	18
Subcore GPA 225 or MBA 221, GPA 230, 250, 280T, MBA 240	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; Nursing 226, 240; Political Science 210, 240, 250; Social Work 200, 203, 244, 246, 247; and Speech 268. Consult adviser for numerous other specialization and elective courses potentially suitable for M.P.A. candidates.

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 (GRE) or the Graduate Management Admission Test (GMAT); 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 4d 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 GRE or on the GMAT must have compensating strength in other areas);
   c. professional goals of the applicant;
   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 supervised 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 187 (5 units) internship experience must be completed before enrollment in second semester courses.

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. General Education BREADTH, Division 8.

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. General Education CORE. Not available for ***CR/NC*** grading. (CAN GOVT 2)

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. General Education BREADTH, Division 8.

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. (2 lecture, 2 lab hours) (Lab fee $15)

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. General Education CORE. 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)
Satisfies California state and local government requirement, if not used for political science major. 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. General Education CAPSTONE Cluster course.

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. General Education CAPSTONE Cluster course.

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.

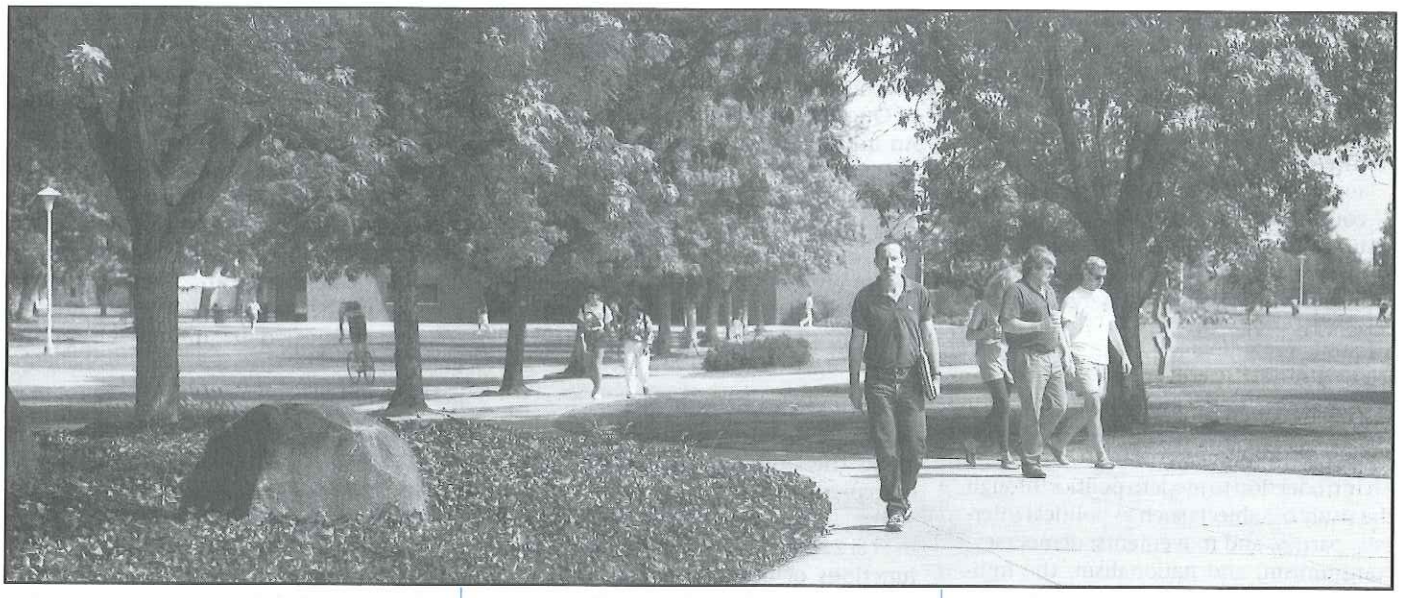
119T. Topics in Political Theory (1-4; max total 8)
Possible topics include theories of democracy; the Marxian tradition; political thought of specific authors, historical periods and countries; peace and war; church-state relations; the nature of politics and of political science.

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. General Education BREADTH, Division 8.

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. Russian Foreign Policy (3)
Historical and ideological sources of foreign policy of Russia and other former Soviet republics; 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; imperialism; 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. Russian Politics (3)
A study of the political systems of Russia and other former Soviet republics. Changes in relations between state and society; change and continuity in political culture; trends in policy making; issues of relations between nationality groups. General Education CAPSTONE Cluster course.

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.

145T. Area Studies in Asia (1-4; max total 8 if no topic repeated)
Government and politics of selected countries in East and Southeast Asia.

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)
Examines the institutional and political processes by which public policy is formulated, adopted, and implemented. Individual instruction on student papers (students with fundamental writing deficiencies will be required to enroll in Engl 1L, 1 unit, concurrently). General Education CAPSTONE Cluster course.

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.

158. Internship in Political Science (2-6; max total 6)
Prerequisite: 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. ***CR/NC*** grading only.

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 im-

plications 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, powers of the president, powers of Congress, federalism, and the contract clause and due process — economic rights through case studies of leading Supreme Court decisions.

171. Constitutional Law, Civil Liberties, and Civil Rights (3)
Free speech and association, freedom of press, commercial free speech, obscenity, religion guarantees, fourth, fifth, sixth, and eighth amendment issues, and social and political equality through case studies of leading Supreme Court decisions.

174. Politics and the Court (3)
An introduction to the judicial process: jurisprudence, courts and social policy, instruments and limitations of judicial power, fact finding, precedents and legal reasoning, statutory and constitutional interpretation, and the search for standards. (Former Pl Si 179T section)

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.

184. Public Budgeting and Economy Policy (3)
Examines the administrative and political considerations of revenue generation and expenditure; budget types; the budgetary process and analysis; capital budgeting and debt administration; intergovernmental fiscal relations; monetary and fiscal policy.

185. Public Personnel Management (3)
Examines the evolution of public personnel administration including the development of merit principles, equal employment opportunity, and affirmative action; recruitment, selection, and career development; classification techniques; theories of motivation; public sector labor relations.

187. Internship in Public Administration (2-6; max total 6)
Prerequisite: 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. *CR/NC* grading only.

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*. Approved for *SP* grading.

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: permission of instructor. Systematic analysis of major political cultures and economic systems. Emphasis upon the leading theoretical models of the contemporary international system, issues of political economy, and methods of cross-cultural research.

210. International Relations and Political Theory (3)
(Same as A Eth 201.) Prerequisite: permission of instructor. Inquiry into philosophies of international relations with particular emphasis on moral foundations of international law in light of Western political theory. Some contemporary problems selected for in-depth analysis and student research.

220. Seminar in Politics and Conflict (3)
Prerequisite: permission of instructor. Analysis of sources of political conflict and methods of conflict resolution with application to selected topics, such as the foreign policy of major powers, the dynamics of political transformation, interaction in regional subsystems, or national defense and arms control.

240. Seminar in Politics of Resources and Modernization (3)
Prerequisite: permission of instructor. Analysis of global interdependence and national examples in selected resource areas. Emphasis on approaches to modernization in developing nations and relations between rich nations and poor nations.

250. Seminar in Politics and Policy (3)
Prerequisite: permission of instructor. Policy formulation, implementation, and evaluation from a comparative perspective. Examines substantive policy issues common to modern industrial and developing nations from the perspectives of policy analysis and decision-making;

considers the role of bureaucracy, the welfare state, political economy, and competing ideologies.

290. Independent Study (3)
See *Academic Placement — Independent Study*. Approved for ***SP*** grading.

298. Project Equivalent to Thesis (6)
See *Criteria for Thesis and Project*. 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. Approved for ***SP*** grading.

299. Thesis (6)
See *Criteria for Thesis and Project*. Approved for ***SP*** grading.

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. (2 lecture, 2 lab hours) (Lab fee, $15)

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 MBA 201. 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 40 and 50 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.

240. Public Management Methods and Processes (3)
A survey of public management concepts, tools, and processes; policy planning and management; strategic thinking; interpersonal and problem solving skills; work design; performance monitoring; management control; information systems; program evaluation; and integrative as well as critical perspectives on management. (Former GPA 240A)

241. Resource Management (3).
Prerequisite: GPA 240. Administration of fiscal and human resources. Emphasis on resource acquisition, allocation, and development strategies; budgeting skills, debt, and financial management. Human asset management, labor relations, position classification and analysis, quality of work life and employment equity issues. (Former GPA 240B)

250. Ethics and Public Administration (3)
(Same as A Eth 202.) Prerequisite: 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)
Prerequisite: GPA 120G, 200, 210, 240. 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.

287. Internship in Public Administration (3)
Concurrent enrollment in either GPA 200 or 210. Supervised work experience for a realistic exposure to an organizational-bureaucratic environment for students in the M.P.A. Program who lack significant work experience in a public or not-for-profit organization. ***CR/NC*** grading only; not applicable for unit credit toward M.P.A. degree.

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*. Approved for ***SP*** grading.

299. Thesis (3)
Prerequisite: See *Criteria for Thesis and Project*. Preparation, completion, and submission of an acceptable thesis for the Master's degree. Approved for ***SP*** grading.

Psychology

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 preprofessional 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. Our undergraduate program provides a solid background for liberal arts majors choosing to enter business or other more specialized vocations immediately after graduation.

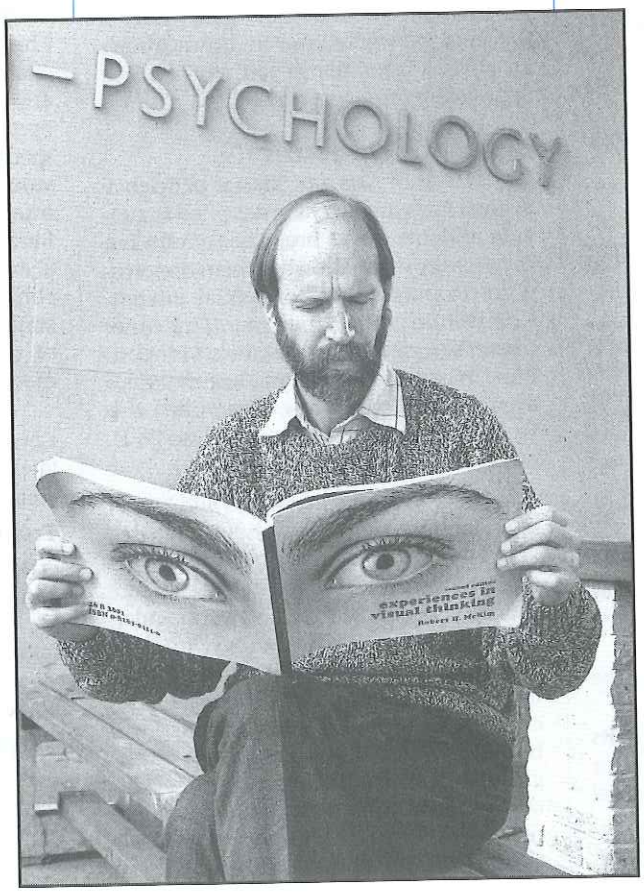
Faculty and Facilities

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.

A comprehensive test library is maintained for programs in the testing and clinical areas. Complete video facilities are available for preparing training materials and for research and instruction. Several 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 of Psychology 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. There are openings in mental health, public schools, community colleges, and other agencies for these advanced students.



School of Natural Sciences
Department of Psychology
ROBERT V. LEVINE, *Chair*
Ed/Psych Building, Room 234
(209) 278-2691

B.A. in Psychology
M.A. in Psychology
M.S. in Psychology
Minor in Psychology
Pupil Personnel Credential with a Specialization in School Psychology

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. State and federal governments utilize psychologists in a variety of agencies and settings (mental hospitals, rehabilitation centers, prisons, employment testing, and personnel work). Finally, some psychologists are in private practice as counselors and psychotherapists, or consulting psychologists.

Faculty

Robert V. Levine, *Chair*
Undergraduate Adviser: Jean M. Ritter
Graduate Adviser: Michael D. Botwin

Sergio Aguilar
Barbara H. Basden
David R. Basden
Thomas E. Breen
Alan D. Button
Karen T. Carey
William C. Coe
Arnold M. Cooper
Pattey L. Fong
Samuel S. Franklin
Alex Gonzalez
Harrison E. Madden
Ernst Moerk
Terry G. Newell
Frank V. Powell
Matthew J. Sharps
Michael J. Thackrey
Marilyn S. Wilson

Bachelor of Arts Degree Requirements

Psychology Major	***Units***
Major requirements	**48**
A. *Applications Area* (select 3): Psych 160T, 162, 166, 169, 175, 176, 177	(9-11)
B. *Basic Content Area* (select 2): Psych 134, 150T, 154, 155	(7-8)
C. *Basic Processes Area* (select 2): Psych 120T, 121, 122, 124, 125, 128	(6-8)
D. *Assessment Area* (all 4): Psych 42, 144, 145, 149	(16)
E. *History and Systems:* Psych 182	(4)
F. *Psychology electives*	(1-6)
General Education	**51**
Electives and remaining degree requirements (see *Degree Requirements*); may be used toward a dual major or minor	**25-34***
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*). Courses may be selected from Psych 10, 36, 42 (CORE), 61, 132, 171. Consult the psychology department chair or department advising office for additional details.

Advising Notes

1. No course used to satisfy General Education CAPSTONE requirements may be used to satisfy psychology major requirements.
2. *CR/NC* grading is not permitted in the psychology major.
3. General Education and elective units may be used toward a dual major or minor (see *Dual Major* or departmental minor). Consult the appropriate department chair, program coordinator, or faculty adviser for further information.

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* units section and consult an adviser in the psychology department.

Credential Programs

The Department of Psychology offers the M.S. degree. Degree requirements coincide with those of the Pupil Personnel Services Credential with an Advanced Specialization in School Psychology.

Application forms and advising are available through the coordinator of the School Psychology Program within 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. Completion of the requirements for either master's degree prepares students for positions in community mental health service agencies, school settings, community college teaching, research, or entry into Ph.D. or Psy.D. programs in Psychology.

Admission to the Master of Arts and Master of Science programs in Psychology is based upon the satisfactory completion of prerequisite courses selected from the core courses required for the CSU Fresno undergraduate major in psychology, or their equivalent. Admission to the School Psychology Program requires additional, specific prerequisites. Classified standing will be based upon a combination of an undergraduate average of ***B*** or better in psychology courses, a total GRE Aptitude Test score of 1,000 (Verbal plus Quantitative) or a total score on the GRE Subject Test in Psychology equivalent to the 60th percentile (ETS norms), and three letters of recommendation. Applicants lacking in any area with compensating strengths in other areas may apply.

(See also *Admission to Graduate Standing, Advancement to Candidacy, Program Requirements,* and *Criteria for Thesis and Project.*)

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 M.A. and M.S. Degrees

	Units
Psych 244*	4
Psych 200T or 250T or 255T (one course)	3-4
Psych 220T or 225T (one course)	3-4
Psych 231*	3
Psych 299 (Thesis)	3-6
Total	**16-21**

*Grades of ***A*** or ***B*** must be earned in Psych 231 and Psych 244 for graduation credit in these courses.

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 (see 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 three-year, full-time graduate program and requires a minimum of 66 units. Practicum experience is required during the first

two years of coursework. The internship experience, completed during the third year of the program, requires a minimum of 1,200 hours with at least half of these hours completed in a school setting.

	Units
Core requirements (see page 426)	15-20
Electives (see below)	34-39
Internship in School Psychology (Psych 267)	12
Total	66

Students with an interest in clinical psychology should include the following courses among their electives: Psych 280, 281, 282, 284, 285 or 286 (4 units), 283T (3-4 units).

Students with an interest in clinical psychology should complete their fieldwork in a clinical or counseling setting.

Students who wish to become eligible for the Pupil Personnel Credential with a specialization in School Psychology as granted by the California Commission on Teacher Credentialing should contact the department for application materials and additional information.

The following electives, in addition to the core requirements, may be used to obtain a M.S. degree in Psychology:

Psych 277, 278, 279 (11 units); Psych 281, 282, 284, 285 (16 units); COUN 201, 240, 241, 280T (12 units)

Students with an interest in School Psychology should complete their practicum in a school setting. Contact the department for further details and other requirements.

Specific requirements for advancement to candidacy for all degrees and credentials include a score above the 60th percentile (ETS norms) on the GRE Subject Test in Psychology.

COURSES

Psychology (Psych)

Note: All psychology courses are open to majors and nonmajors.

10. Introduction to Psychology (4)
Not open to students with more than 6 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. General Education BREADTH, Division 3. (3 lecture, 2 lab hours) (CAN PSY 2)

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. General Education BREADTH, Division 3.

42. Introductory Statistics (4)
Prerequisite: Students must take the ELM exam; students who do not pass the exam must record a grade of *C* or better in a college-taught intermediate algebra course. Basic statistical methods for analysis of data; parametric tests of significance; linear regression and correlation; analysis of variance; introduction to non-parametric techniques. General Education CORE, Quantitative Reasoning. (May include lab hours) (Former Psych 142)

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. General Education BREADTH, Division 4.

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. General Education CAPSTONE Cluster course.

103. Maturity and Old Age (3)
(Same as Geron 103.) Psychological study of maturity and old age; physiological and sociological considerations.

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 42. 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 42. 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 42 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)

128. Cognitive Psychology (4)
Prerequisite: Psych 42. An introduction to theory and research in human information processing. Topics include attention, mental representation, imagery, problem solving, reasoning, language, and other higher mental processes. (Former Psych 120T section)

132. Psychology of Sexuality (3)
Prerequisite: upper-division standing. Psychological aspects of human sexual behavior: influence on personality, various behavioral manifestations and pathologies. General Education BREADTH, Division 4.

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 nonmajors. 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. General Education CAPSTONE Cluster course.

143. Intermediate Statistics (4)
Prerequisite: Psych 42. 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) (Lab fee, $15)

144. Research Designs and Experimental Methods (4)
Prerequisite: Psych 42. 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 42 (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, computer control, and processing), SPSS and BMD statistical packages, and other specialized computer programs for psychology. (3 lecture, 3 lab hours) (Lab fee, $15)

149. Psychological Testing (4)
Prerequisite: Psych 42. 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)

153. Developmental Psychology for Counselors (3)
Not open to psychology majors or students with credit in Psych 155. Empirical and theoretical treatment of developmental issues and life events from infancy to old age and their effect upon individuals, couples, and family relationships. Included are psychological, psychotherapeutic, and health implications of specific individual and family life events including childbirth, child rearing, childhood, adolescence, adulthood, marriage, divorce, blended families, stepparenting, and gero-psychology.

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 sociocultural 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.

162. Introduction to Clinical Psychology (4)
Overview of clinical psychology, including history, ethics, applied roles, conceptual and technical approaches to assessment and intervention, applying to graduate school, and anticipated future developments. (Former 160T section)

166. Abnormal Psychology (3)
Study of the origins, symptoms, and treatments of behavioral and personality disturbances from childhood through senescence; application of current DSM.

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. General Education BREADTH, Division 4.

172. Psychology of Women (3)
(Same as W S 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 COUN 174.)

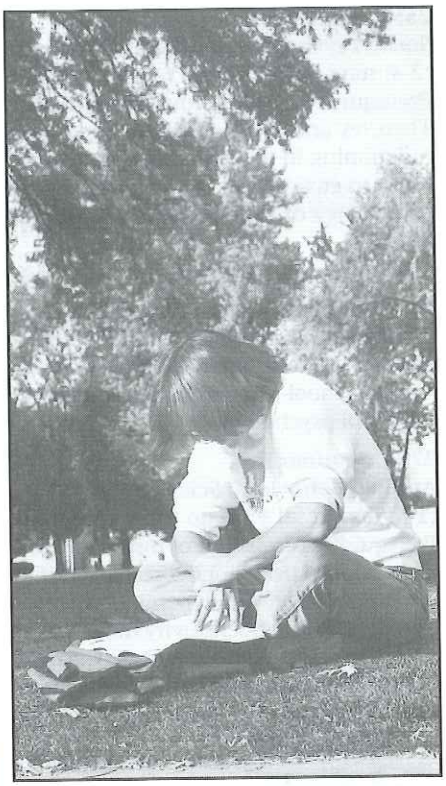
175. Family Counseling (3)
Theory and application of major counseling models. Family problems, relationships and systems. Application of child development principles, relevant communication theory and current research to therapy with couples, families, children, and groups.

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.

182. History and Systems (4)
Prerequisite: senior standing or permission of instructor; 12 upper-division units in the major. Historical, philosophical, and scientific background in psychology; review and integration of theoretical issues and current systems in the field. Lecture and discussion. Satisfies the senior major requirement for the B.A. in Psychology. (Former Psych 112)

190. Independent Study
(1-3; max see reference)
See *Academic Placement — Independent Study*. Approved for ***SP*** grading.

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.*)

Psychology (Psych)

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 (3)
(Same as A Eth 200.) Prerequisite: permission of instructor. Study of ethical issues, values, and problems in psychological research and practice. Topics include subject risk, confidentiality, court decisions, and licensing laws. Seminar format with student presentations.

240T. Seminar in Quantitative Methods for Behavioral Research
(2-4; max total 15 if no topic repeated)
Prerequisite: Psych 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. Internship in School Psychology (3-18; max total 18)
Prerequisite: Psych 281, 282, 284; 285 or 286, and permission of instructor. University and school-based supervised internship in school psychology.

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)

272. Seminar in Lab Teaching (1; max total 4)
Enrollment restricted to and required of graduate students teaching discussion sections in psychology laboratories. Class discussion of teaching techniques and procedures used to demonstrate principles in introductory psychology. Course may be repeated for a maximum of 4 units credit. (Former Psych 270T section)

277. Role and Function of the School Psychologist (3)
Prerequisite: graduate standing and admittance to School Psychology Program. State and federal education codes and court decisions related to the practice of school psychology; types of community resources and referral services. Includes on-site observations in schools. (Former Psych 277A)

278. Intervention and Prevention in School Psychology (4)
Prerequisite: Psych 277. Roles and responsibilities of the school psychologist including prevention, individual and group techniques for early intervention, and strategies for modification of individual programs and educational environments. Includes supervised practicum experience.

279. Consultation and Supervision (4)
Prerequisite: Psych 277. Types of consultation services offered by school psychologists and variables which influence consultation effectiveness including organizational and systems issues. Emphasizes development of consultation and supervisory skills. Includes supervised practicum experience.

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*. Approved for ***SP*** grading.

299. Thesis (3-6; max total 6)
Prerequisite: See *Criteria for Thesis and Project*. Preparation, completion, and submission of an acceptable thesis for the master's degree in compliance with Psychology Department regulations. Approved for ***SP*** grading.

Recreation Administration and Leisure Studies

School of Health and Social Work
Recreation Administration
and Leisure Studies Program
MICHAEL B. HOFFMAN, *Coordinator*
San Ramon 2, Room 23
(209) 278-2838

B.S. in Recreation Administration
Options:
Commercial Recreation
Public and Nonprofit Recreation
Therapeutic Recreation
Minor in Recreation Administration

The program offers a Bachelor of Science degree 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 acquire 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, accredited by the National Recreation and Park Association Council on Accreditation, offers a B.S. degree and a Minor in Recreation Administration. Preparation is provided within the major for three distinct degree options: commercial recreation, public and nonprofit recreation, and therapeutic recreation.

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, trends, current research, and professionalism.

Within the commercial recreation option, students develop specific competencies in the areas of accounting, finance, business management, marketing and decision sciences. Public and nonprofit recreation option students develop specific competencies related to the subject matter of courses in camp management, funding, resources, program planning and supervision, and management of voluntary resources. 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, and individual and small group counseling.

Under the guidance of a practitioner, students in recreation administration and leisure studies earn more than 1,000 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, nonprofit 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 leaders, supervisors — general or specialty; city and county recreation and park managers; state recreation specialists; state recreation consultants; managers or assistant managers of a resort area; managers or assistant managers of a membership club (racket, swim, golf, or fitness); hotel social directors; church recreation or youth directors; corporate recreation directors; school recreation directors; program or field directors in youth agencies; camp directors or assistant directors; armed forces recreation specialists; and others.

Faculty

Michael B. Hoffman, *Coordinator*
Andrew E. Hoff

Bachelor of Science Degree Requirements

Recreation Administration Major

Units

Major requirements **60-63**

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

RLS 55, 73, 73L, 121, 128, 179, 180 ..... (18)

Commercial Option ..... (45)

RLS 125, 152, 154, 158, 188 ..... (25)

Recreation electives:
Select from RLS 80, 120, 136, ... (6)

Select 14 units from: Acct 3, Art 30, 40, 60, 70, 80; B A 18, 189T; CSH 110; Drama 136, 137; Engl 160W; Fin 143, 146; FSc 50; H S 48; HRM 150; IS 50, 105W; MCJ 106, 152; Mgt 104, 106, 110, 127, 128; Music 9; OH 2; P E 105, 108, 114; Pl Si 181; RLS 80, 101, 132; Soc 130W ... (14)

Students in the Commercial Option are advised to complete the general business minor. Business courses taken in the minor cannot be counted in the major option. See a recreation administration faculty adviser for suggested courses.

Public and Nonprofit Option ..... (43)

RLS 120, 132, 134, 136, 138 and 185 or 186 .... (28)

Students must complete 3 units of coursework in each of the following tracks:

A. Art 30, 60, 70; I T 162 ..... (3)

B. Music 9 (guitar, piano or voice) 153; Drama 136, 137, 138A ..... (3)

C. PE AC 12, 18, 24, 101, 107; P E 108, 152 ..... (3)

D. CFS 38; H S 48; IS 105W; Mgt 104, 106; RLS 80, 101, 125, 142, 152 ..... (3)

E. Select 3 additional units from A-D ..... (3)

Therapeutic Option ..... (42-44)

RLS 142, 144A, 144B, 148, 187 ..... (25)

P E 105 or PhyAn 33 ... (3-5)

H S 48 ..... (3)

Students must complete a minimum of 3 units from each of the following:

A. Art 30, 60, 70 ..... (3)

B. Drama 136; Music 153; PE AC 12 ..... (3)

C. HSW 101; Psych 166 or 167 or 169 .... (3)

D. RLS 80, 101, 120, 132, 136, 152 ..... (3)

Additionally, for state and national certification, it is highly recommended that students take the following CAPSTONES: Psych 102; Crim 120.

General Education **51**

Electives and remaining degree requirements **15-25***

Total **128**

* This figure takes into consideration that Public and Nonprofit Option majors may also apply RLS 80, 101, Art 60 or 70, and Music 9 to General Education BREADTH, Divisions 4 and 5 requirements. Commercial Recreation Option majors may also apply Music 9, RLS 80, 101, Art 30, 40, 60, or 70 to General Education BREADTH, Divisions 4 and 5 requirements. Therapeutic Option majors may also apply Art 30, 60, 70, RLS 80, 101 to General Education BREADTH, Division 4 requirement. See the recreation administration and leisure studies program chair or faculty adviser for details.

Advising Notes

1. *CR/NC* grading is not permitted in the recreation administration major with the exception of RLS 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.

Recreation Administration Minor

The Minor in Recreation Administration consists of 26 units. The minor offers courses suitable for use in recreation programs in the public, nonprofit, commercial, and therapeutic settings. Students completing the therapeutic courses in the minor do not qualify for national or state certification.

Units

Minor core **13**

RLS 55, 73, 73L, 80 or 101, 128

Discipline **13**

Select one from the following:

Public/Nonprofit:
RLS 132, 120 or 136, 134, 138 ... (13)

Therapeutic:
RLS 142, 144A, 144B, 148 ..... (13)

Commercial:
RLS 125, 152, 154, 158 ..... (13)

Total **26**

COURSES

Recreation and Leisure Studies (RLS)

55. Introduction to Recreation and Leisure Service (3)
Philosophical, theoretical, and historical basis for recreation service in contemporary American society; exploration of the various facets of recreation and leisure service including public, private, therapeutic, and commercial recreation. (Former Rec 55) (CAN REC 2)

73. Leadership in Recreation Service (3)
Prerequisite: RLS 55. Theoretical and philosophical basis for leadership. Dynamics of leading recreation activities, developing basic program planning skills, and procedures for facility operations. (Former Rec 73)

73L. Leadership in Recreation Service Laboratory (1)
Concurrent with RLS 73. Practical leadership experience in supervised recreation settings. (Former Rec 73L)

75. The Journey: An Adventure Ropes Course Experience (1)
An experiential journey of self-awareness, esteem building, and group processing through initiative games and high ropes elements. (Students will have expenses of $30 related to field trips.) (Former RLS 192T section)

80. Outdoor Recreation (3)
History, development, and trends of outdoor recreation resources, agencies, and activities. Integration of the individual with the outdoor recreation experience. Overview of the implications of outdoor recreation experiences over the life span. General Education BREADTH, Division 4. (Students may incur minimal expenses related to field trips.) (Former Rec 80)

101. Leisure and Human Behavior (3)
Exploration of leisure as related to the individual and society. The forces and factors affecting its role on human behavior are examined within the context of current social issues. General Education BREADTH, Division 4. (Students may incur minimal expenses related to field trips.) (Former Rec 101)

120. Camp Management (3)
Prerequisite: RLS 73, 73L. Organization, supervision, and management of various types of camps. (Course fee for field trips, approximately $25) (Former Rec 160; RLS 160)

121. Community Recreation (3)
Prerequisite: RLS 55. Analysis of community agencies offering recreation services. Emphasis on assessing community recreation and leisure preferences. (Field trips may be required.) (Former Rec 151; RLS 151)

125. Understanding Special Populations in a Contemporary Society (3)
Prerequisite: RLS 55. Basic understanding of different special populations including important terms, etiology, facilities, trends, and relationship to recreation. (Field trips may be required.) (Former Rec 95; RLS 95)

128. Legal and Financial Aspects of Recreation Service (3)
Prerequisite: completion of core math requirement and RLS 121. Legal and financial aspects of recreation service; budget analysis, legal terminology, and their role in recreation administration. (Field trips may be required.) (Former Rec 168; RLS 168)

132. Foundations of Public and Nonprofit Leisure Services (3)
Prerequisite: RLS 55. Historical and philosophical foundations of public and nonprofit leisure service; review of selected service providers in areas including organization, service provision, legal base, funding, and current trends and issues. (Field trips may be required.) (Former Rec 192T section; RLS 140)

134. Developing Funding Resources for Leisure Services (3)
Prerequisite: RLS 128. Method and techniques related to financing public and nonprofit community agencies including funding sources, proposal development, foundation, in-kind contributions, and donor strategies. (Former Rec 192T section; RLS 172)

136. Developing and Utilizing Voluntary Resources (3)
Analysis of the special needs and strategies of volunteer resource management. Innovative application of voluntary resource development within a changing society. A community based project is required. (Former Rec 159; RLS 159)

138. Senior Project in Public and Nonprofit Recreation (4)
Not open to students with credit in RLS 148 or 158. Principles and procedures of planning programs for various age groups and settings. The development of a senior project is required. (Former RLS 173; RLS 173L)

142. Foundations of Therapeutic Recreation Service (3)
Prerequisite: RLS 55, P E 105. 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. (Former Rec 165; RLS 165)

144A. Methods in Therapeutic Recreation (3)
Prerequisite: RLS 142; RLS 144B concurrently. Analysis and application of therapeutic recreation techniques, adaptive games, and activities for atypical populations; appliances, testing, charting, narrative writing, and leisure counseling. (Former Rec 166; RLS 166)

"It's risk, adventure, and community participation and filled with caring, energetic students and faculty."

Erin Huffaker
Public and Nonprofit Option student,
on the Recreation Administration Program

144B. Facilitation Techniques in Therapeutic Recreation (3)
Prerequisite: RLS 142; RLS 144A concurrently. Practical experiences in applying therapeutic recreation principles and processes. (Former Rec 166L; RLS 166L)

146. Adventure Based Counseling (3)
Prerequisite: permission of instructor. Adventure based counseling skills will be explored through experiential therapy activities on the Journey Ropes Course and other outdoor pursuits. Students will learn specific sequencing, processing and leadership techniques. (Course fee for field trips, $30) (Former RLS 192T section)

148. Senior Project in Therapeutic Recreation (4)
Not open to students with credit in RLS 138. Prerequisite: senior standing or permission of instructor; RLS 128, 144A, 144B. A culminating experience in the therapeutic recreation option. Planning therapeutic programs for special populations. Practical program experiences with disability groups required. Satisfies the senior major requirement for the therapeutic recreation option of the B.S. in Recreation Administration. (3 lecture, 1 lab hour) (Former Rec 174; Rec 174L; RLS 174)

150. Perceptual Motor Development (3)
(See P E 150.) (Former Rec 150)

152. Foundations of Commercial Recreation (3)
Prerequisite: RLS 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.) (Former Rec 169; RLS 169)

154. Leisure: Prospects for Profit (3)
Prerequisite: RLS 152. 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.) (Former Rec 170; RLS 170)

158. Senior Project in Commercial Recreation (4)
Prerequisite: senior standing or permission of instructor; RLS 154. Culminating experience in the commercial recreation option. Concepts and methods in the development and analysis of potential markets, estimation of expenses and revenues, site evaluation, and program

planning and leadership in a commercial recreation enterprise. Hours arranged are based on student observations and evaluations of various commercial recreation businesses and are presented in a seminar format during the semester. Satisfies the senior major requirement for the commercial recreation option of the B.S. in Recreation Administration. (Field trips are required, students may incur expense; hours arranged.) (Former Rec 192T section; RLS 175)

179. Organization and Administration of Leisure Services (3)
Prerequisite: RLS 128 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. (Former Rec 179)

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. (Former Rec 180)

185. Internship in Nonprofit Recreation (12)
Prerequisite: completion of all major, General Education, and university graduation requirements. Directed supervisory experience with a nonprofit recreation agency. Individual development in administration, supervision, program planning, and community and public relations; supervised, directed full-time experience in the field of nonprofit 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.) ***CR/NC*** grading only. (Former Rec 185)

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.) ***CR/NC*** grading only. (Former Rec 186)

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.) ***CR/NC*** grading only. (Former Rec 187)

188. Internship in Commercial Recreation (12)
Prerequisite: completion of all major, General Education, and university graduation requirements. Students must be interning in a commercial recreation agency in order to register in RLS 188. 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.) ***CR/NC*** grading only. (Former Rec 188)

190. Independent Study (1-3; max see reference)
See *Academic Placement — Independent Study*. Approved for ***SP*** grading. (Former Rec 190)

192T. Topics in Recreation Administration (1-3; max total 8 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. (Former Rec 192T)

IN-SERVICE COURSES

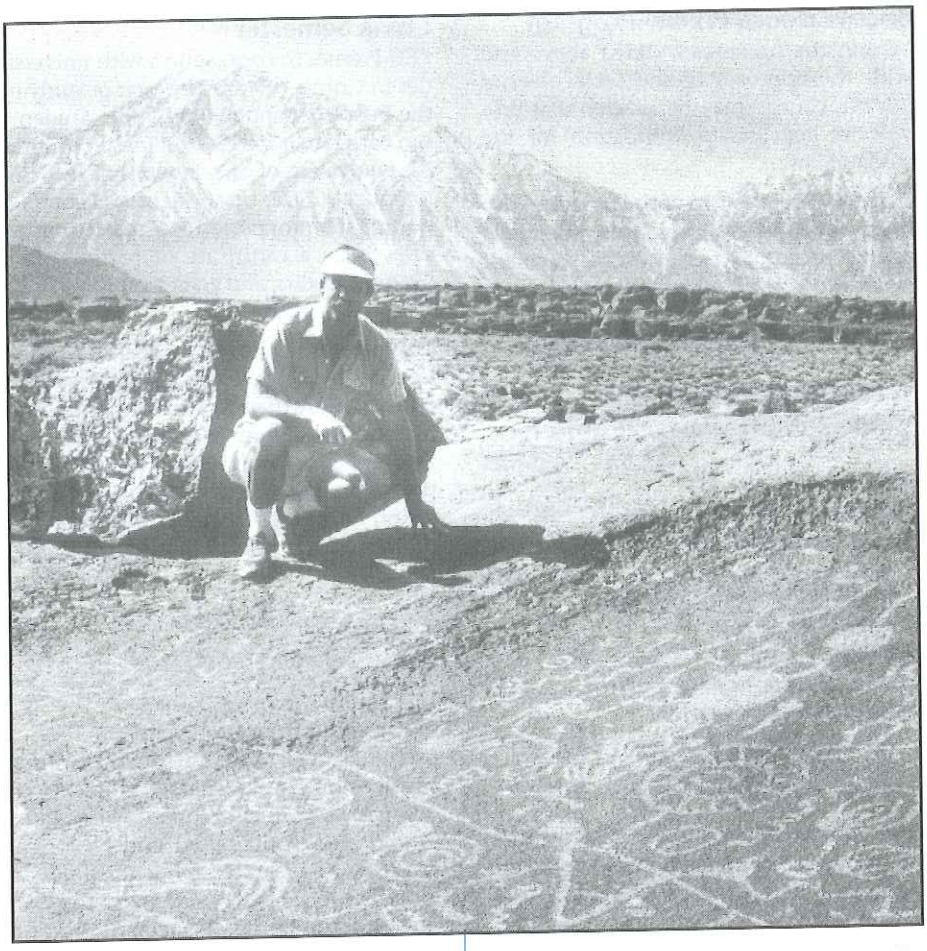
(See *Course Numbering System.*)

Recreation and Leisure Studies (RLS)

313. Recreation Activities (1-3; max total 6, may be repeated for credit)
Prerequisite: permission of instructor. Open to personnel working in recreation, students, and teachers. Design, application, and adaptation of activities and skills to various recreational settings. May be repeated for credit. (Former Rec 313)

330T. Topics in Recreation (1-3; max total 6, may be repeated for credit)
Prerequisite: permission of instructor. Study and critical analysis of problems relating to organization, administration, supervision, and management of agencies engaged in recreational/leisure services. May be repeated for credit provided different fields are covered. (Former Rec 330T)

Social Science Major



School of Social Sciences
PETER J. KLASSEN, *Dean*
Social Science Building, Room 108
(209) 278-3013
B.A. in Social Sciences

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 ensure a breadth of exposure to the social sciences.

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 40, 50, Eth S 1, Geog 2, Hist 1, 2, Pl Si 1, and Soc 1.

	Units
Major requirements	39
Approved upper-division electives, including the Senior Major Requirement (see *course list* in this section and *Notes 2* and *4*)	
Additional requirement	3-4
Statistics: Select from Geog 110, Math 11, Pl Si 90, Psych 42, Soc 25 or Speech 106	
General Education	51
Electives and remaining degree requirements	30-34*
(See *Degree Requirements*); may include a dual major or minor	
Total	124

*This figure takes into consideration that Math 11 or Psych 42 also may be applied to fulfill the General Education CORE, Math requirement if Algebra II was completed in high school (see *General Education*). Consult the social science major adviser in the History Department for additional details.

Advising 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* or departmental minor) or a secondary teaching credential (see *Single Subject Credential Program*). Consult the appropriate department chair, program coordinator, or faculty adviser for further information.
4. Social science majors may meet the Senior Major Requirement by taking the Senior Requirement in any of the participating departments. The courses fulfilling this requirement are listed in each of the respective department majors.

Approved Upper-Division Elective Courses. In satisfying the unit requirements listed below, students shall arrange their programs to ensure completion of a minimum of 6 units in at least four but no more than six disciplines, and no more than 18 units in any one. These disciplines include anthropology, criminology, economics, ethnic studies (African American studies, Chicano and Latin American studies, etc.), geography, history, political science, psychology, sociology, and city and regional planning.

	Units
The Record of Human Societies	
Western Societies	6
CLS 112, 114, 115; Econ 110; Geog 161, 166T, 172, 174T; Hist 111, 112, 120, 121A, 122, 125, 126, 130, 132A, 133, 171A, 172A, 173, 174, 175A, 178, 186; Pl Si 142T, 143T, 146T	
Non-Western Societies	6
Anth 123, 124, 131; Econ 114; Geog 176, 177T, 179, 180, 181T; Hist 107, 110, 142, 143A, 157; Pl Si 141, 144T	
Social Processes	6
Anth 150W; Crim 109, 141, 153; Econ 117, 131, 150, 161, 174, 178, 179, 180; Ethnic Studies: Af Am 144; CLS 116, 126, 128, 152, 160; W S 152; Geog 127, 150, 160, 162, 164, 165; Pl Si 120, 150, 151, 170, 174, 181; Psych 134, 154, 166, 173; Soc 111, 122, 131, 143, 144, 145,	

151, 157, 161, 162, 163, 164, 165, 168; Spch 108, 160, 163; C R P 100

Social Theory 6
Anth 104; Crim 100, 120; Econ 100A, 100B, 101, 108; Geog 160; Hist 135A, 135B; Pl Si 110, 111, 114, 140; Psych 182; Soc 152, 153

Methods and/or Techniques in the Social Sciences 3
CLS 142; Crim 170; Hist 100; Psych 144; Soc 175; Spch 166; Senior Major Requirement (see *Note 4*)

Special Topic 9
The special topic shall consist of a program of upper-division social science courses, approved by a social science 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 (African American studies, Chicano and Latin American studies, etc.), criminology, 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 101, 161, 162, 163, 164, 169T, 181, 186, 190, 192, 199; Econ 185, 190; Ethnic Studies: As Am 150, 190; Af Am 190; CLS 100, 101, 106, 108, 190; AIS 190; Geog 100, 102, 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, 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, 192

Social Science Prelaw Program

Within the framework stated above and with the approval of the social science adviser, courses may be selected that provide an appropriate foundation for the study of law.

A detailed description of the program outlined above is available from the social science prelaw adviser in the Department of Criminology. Students should be aware that without advisement, successful completion of this program is impossible.

Social Science Credential Single Subject Waiver Program

	Units
Core	
Lower-division survey courses	21
Upper-division work in one teaching area (e.g., history, geography, or political science)	18
Breadth	
Lower-division survey courses	9
Upper-division work in a second teaching area (e.g., history, geography, or political science)	9

The 57-unit Single Subject Waiver Program may be completed while earning a bachelor's degree in any area of study. Undergraduate students beginning their waiver programs should be advised, however, that bachelor degrees in history, geography, or political science are recommended for those intending to teach secondary social studies because they most closely parallel the Social Science Credential Requirements.

A detailed description of the program outlined above is available from the social science credential adviser, Dr. Jeronima Echeverria, 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.

China Semester

CSU Fresno, in cooperation with universities in China, offers a semester of study in the People's Republic of China. Students can earn credit for 12-18 semester units as the equivalent of one semester of academic work at CSUF. Upon successful completion of the program, the Chinese universities issue a certificate of participation. Courses, credits, and grades appear on CSU Fresno transcripts.

This program combines academic immersion in Chinese culture and language with travel to more than 15 areas of cultural and historic interest throughout China. Two weeks of travel are scheduled to follow the program. Program information and application forms are available from the Office of the Dean, Social Science Building, Room 108.

COURSES

Social Science (S Sci)

15. Man/Woman's Place in the Natural Environment (5)
Extended field trips, integrating cultural anthropology and archaeology to explain how past and present peoples have adapted to and altered biological and geological processes and features. Offered fall semester as part of "Man/Woman and the Natural Environment." General Education BREADTH, Division 8. (Field trip fees, $150) (Former Anth 15)

150T. Topics in the Social Sciences (1-3)
Discussion and analysis of current topics in the social sciences with an interdisciplinary focus and structure. Topics will be rotated.

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. ***CR/NC*** grading only.

Social Work Education

Students explore field placement opportunities.

School of Health and Social Work
Department of Social Work Education
BENJAMIN CUELLAR, *Chair*
San Ramon 2, Room 24
(209) 278-3992

B.A. in Social Work
M.S.W., Master of Social Work

The profession of social work is dedicated to meeting the diverse social service needs of special populations of individuals, families, groups, organizations, and communities. As a practice oriented profession, social work deals with social concerns that range from societal oppression to people's emotional/behavioral problems. The social work practitioner helps at risk populations which typically include the poor and homeless, abused/neglected children and adults, people of color, women, recent refugees, chronically mentally ill, developmentally disabled, physically ill or disabled, substance abusers, criminal offenders, and the aged.

In focusing on disadvantaged groups, social workers use a range of traditional and nontraditional methods to promote well-being, personal growth, and social justice, e.g., client and systems policy advocating, brokering, consulting individual, family, and group counseling/psychotherapy, mediating, researching, supervising, and teaching.

While the discipline of social work is deeply rooted in a rich, 100-year history of service, what social workers "do" is no longer traditionally defined. The role of the social worker is constantly expanding into innovative service fields wherever a compassionate response to human need is indicated.

The Department of Social Work Education offers two degree programs to educate beginning and advanced social work practitioners who can meet complex client needs within a diversity of public and private human service settings and who can perform in a variety of roles using multiple social work practice methodologies. The Bachelor of Arts degree program prepares students for beginning generalist social work practice as well as for graduate study in the human service field, including social work. The Master of Social Work prepares the learner for autonomous social work practice at multiple levels of intervention as well as for doctoral study in social work and related human service arenas. Both the B.A. and the M.S.W. programs are accredited by the Council on Social Work Education.

Faculty and Facilities

The faculty of the department represent a wide spectrum of theoretical orientations and approaches to professional social work practice. All have substantive practice experience and many have extensive research and social policy interests. In addition to the on-campus facilities of the university, the department uses the San Joaquin Valley's unique urban-rural configuration of people, agribusiness and social-political institutions, and the accompanying host of social service needs as the setting for in-the-field learning. Numerous public and private social service agencies in our region make their facilities and professional social work staff available for the internship/practicum element of the department's program. A representative sample of these settings include: Atascadero State Hospital; Big Brothers/Big Sisters of Fresno; California State Department of Corrections, Human Resources Development, Social Services, Youth Authority; Fresno Community Hospital; St. Agnes Hospital; Valley Children's Hospital; Veterans Administration Hospital; Vietnam Outreach Center; and Area Agency on Aging. Internship/practicum experiences are also available in the mental health, probation, and social services departments in the counties of Fresno, Merced, Tulare, and Stanislaus.

Career Opportunities

Graduates from the B.A. program typically find employment as social workers in county or state departments of social services; private agencies offering individual, group, or community services; poverty and mental health programs; social rehabilitation programs; human resources development programs for services to the handicapped, aged, and special population groups, medical and hospital programs, correctional programs, primary, secondary and higher education settings, and employee assistance programs in businesses and governmental agencies.

M.S.W. graduates can expect to hold additionally responsible but more advanced clinical, case management, training, administrative, program development or policy making/administrative positions in a broad spectrum of human service organizations.

The U.S. Department of Labor *Occupational Outlook Handbook 1988-89* projects the employment of social workers to increase faster than the average for all occupations through the year 2000 in response to the needs of a growing and aging population, especially in the Central California region. Special mention must be made regarding increased job opportunities in child welfare, mental health, substance abuse programs, school systems, and services for the elderly.

Faculty

Benjamin Cuellar, *Chair*

Undergraduate Advisers: James E. Aldredge, David L. Ellis, Robert L. Hatmaker, Sudarshan Kapoor, Ganesha Visweswaran

Graduate Advisers: All full-time faculty

Field Coordinator: Cora M. Adams

Andrew J. Alvarado
Frederick W. Childers
John B. Franz
Richard D. Ford
Mark G. Hanna
M. Lynn Jacobsson
Robert K. McMain
Erving C. Ruhl
Jon D. Shaver
Wynn C. Tabbert

Bachelor of Arts Degree Requirements

Social Work Major ***Units***

Major requirements 42
S Wrk 20, 123, 130, 135, 136, 140, 141, 175, 176, 181 (10 units), 185

Additional major requirements 18
(May also count toward General Education)
Econ 25, 40, or 50 ..... (3)
Biol 110, Genet 122 or 123 ..... (3)
Approved upper-division electives (see list in department office) ..... (9)
Chicano/Latino Studies ..... (3)
Six units from two of the following three areas: Anthropology, Sociology, Psychology ..... (6)
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)

General Education 51

Electives and remaining degree requirements 13-25*
(see *Degree Requirements*); may include a dual major or minor

Total 124

* This figure takes into consideration that, with proper selection, 15 units of additional requirements for the social work major also may be applied toward fulfilling General Education requirements (see *General Education*). Consult the social work department chair or your faculty adviser for details.

Advising 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* 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 coursework in Spanish.
6. A booklet describing the program more fully is available in the department office.
7. Students are encouraged to take S Wrk 140 prior to S Wrk 141.

Certificate in Alcohol/Drug Studies

The Department of Social Work Education is participating in a certificate of special study awarded to those students who successfully complete a minimum of 12 units of interdisciplinary academic coursework in the area of alcohol and drug abuse. (For complete details, see *Health and Social Work Interdisciplinary Courses* in this catalog.)

Master of Social Work Degree Requirements

In the 60-unit program, all students are required to take the following courses: S Wrk 200, 203, 214, 215, 216, 220, 224, 227, 246, 247, 291, 250 and 251, in addition to completing a project (298) or an individual thesis (299), for a total of 47 to 49 units. In consultation with their faculty advisers, students also enroll in either S Wrk 226 or 244 (3 units). The remaining 8 to 10 units may be selected from topics electives (S Wrk 271T, 272T), S Wrk 290 (Independent Study), or from other departments, subject to approval.

COURSES

Social Work (S Wrk)

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.

125. Social Services for the Aging (3)
(Same as Geron 125.) Students will be acquainted with the common bio-psychosocial needs of the aging in the United States 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.

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 members; community resources; laboratory skills development.

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.

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. (3 lecture, 2 lab hours)

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. (3 lecture, 2 lab hours)

175. Seminar in Human Services Research (3)
Introduction to social work research and evaluation of social work practice. Focuses on the scientific method, research design, sampling strategies, cultural, gender, and ethical considerations as these relate to social work and social work practice.

176. Seminar in Data Analysis and Presentation (3)
Introduction to statistical methods with a focus on analysis and interpretation of data. Application of research methods to problems of the evaluation of social work practice, as well as program development and evaluation.

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. Students are required to carry liability insurance during internships. *CR/NC* grading only.

185. Senior Capstone Seminar (3)
Open only to social work majors. Prerequisite: senior standing or permission of instructor, 5 units of S Wrk 181. Culminating senior seminar integrating theory and practice of social work, current trends in the profession. Satisfies the senior major requirement for the B.A. in Social Work.

190. Independent Study (1-3; max see reference)
See *Academic Placement — Independent Study*. Approved for *SP* grading.

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)
Philosophical and historical foundations of the profession of social work and the domain of social welfare. Includes review of major federally sponsored social policies and programs in the United States and the relationship between social problems, and programmatic professional responses.

203. Social Welfare Policy II (3)
Prerequisite: S Wrk 200. Analysis of social welfare policies and program operations, including the linkage of social, economic, cultural, political, legislative, administrative and legal dimensions. Comparison of various policy analysis frameworks; the legislative process and involvement of social workers therein.

214. Human Behavior and Social Environment: Individuals and Families (3)
A bio-psycho-social system's perspective of the transactional context for the adaptive-maladaptive continuum of human behavior throughout the life span.

215. Human Behavior and Social Environment: Small Group, Organizational, and Community Behavior (3)
Theories of small groups, organizational, and community behavior from a social system's perspective.

216. Human Behavior and Social Environment: Cultural Diversity and Oppression (3)
Theoretical knowledge base and implications for advanced social work practice with culturally diverse and oppressed populations.

220. Seminar in Foundations for Social Work Practice (3)
Seminar about the development of social work practice with an emphasis upon intervention with individuals, families, small groups, organizations and communities.

224. Seminar in Advanced Clinical Social Work Practice with Individuals (3)
Prerequisite: S Wrk 220 and concurrent enrollment in S Wrk 250. Analysis and application of the theories, principles and techniques of clinical social work practice with individuals.

226. Seminar in Advanced Clinical Social Work Practice with Groups (3)
Prerequisite: S Wrk 220 and 224. Analysis and application of the theories, principles and techniques of clinical social work practice with small groups.

227. Seminar in Advanced Clinical Social Work Practice with Couples and Families (3)
Prerequisite: S Wrk 200 and 224. Analysis and application of theories, principles and techniques of clinical social work practice with couples and families.

244. Seminar in Social Work Practice with Small Groups (3)
Prerequisite: S Wrk 200 and 220 and concurrent enrollment in S Wrk 250/251. The theory and practice of social work with small groups, including task, natural support, and self-help groups.

246. Seminar in Social Work Practice with Formal Organizations (3)
Prerequisite: S Wrk 200. Theory and practice of the administration of formal social service organizations.

247. Seminar in Social Work Practice with Communities (3)
Prerequisite: S Wrk 200. Theory and practice of social work intervention with communities.

250. Field Instructed Practice (2-8; max total 8)
Prerequisite: permission of field coordinator. Advanced, field-instructed practice experiences in work with individuals, groups, families, formal organizations, and communities; applying the theories and concepts of social work practice. Students are required to carry liability insurance during internships. Approved for ***SP*** grading. *CR/NC* grading only.

251. Field Instructed Practice (2-8; max 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. Students are required to carry liability insurance during internships. Approved for ***SP*** grading. *CR/NC* grading only.

271T. Seminar in Social Work Specializations (1-3; max total 8)
In-depth study of specific treatment modalities 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.

273. Sex Therapy (3)
Prerequisite: permission of instructor. Emphasizes the recent developments in the understanding and identification of sexual disorders and, therefore, the appropriate means for therapeutic intervention. The focus is on commonly experienced sexual problems or disorders, treatment procedures, and evaluation of sexual therapy. (Former S Wrk 271T section)

290. Independent Study (1-3; max see reference)
See *Academic Placement — Independent Study*. Approved for ***SP*** grading.

291. Advanced Social Work Research (3)
Prerequisite: prior statistics course. Strategies for advanced social work research methodology and analysis. (Former S Wrk 292A; S Wrk 292B)

298. Project (2-4; max total 4)
Prerequisite: S Wrk 291. See *Criteria for Thesis and Project*. 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. Approved for ***SP*** grading.

299. Thesis (3-6; max total 6)
Prerequisite: S Wrk 291. See *Criteria for Thesis and Project*. Preparation, completion, and submission of an acceptable thesis for the master's degree. Approved for ***SP*** grading.

IN-SERVICE COURSE

(See *Course Numbering System*.)

Social Work (S Wrk)

301. Seminar in Social Work Topics (1-3)

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 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 (SRL). Recent faculty research included studies of the history of crime, intermarriage, family power, and discrimination in contemporary courtrooms.

The SRL conducts applied research on topics of local concern. Recent SRL 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.

School of Social Sciences
Department of Sociology
ELIZABETH N. NELSON, *Chair*
Social Science Building, Room 227
(209) 278-2234

B.A. in Sociology
Minor in Sociology

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

Elizabeth N. Nelson, *Chair*

Alfred J. Claassen
S. John Dackawich
Robert D. Fischer
Elizabeth Hartung
Albert I. McLeod
Edward E. Nelson
Robert S. Palacio
John N. Tinker
Chandler Washburne

Bachelor of Arts Degree Requirements

Sociology Major	***Units***
Major requirements	**39**
Core: Soc 1, 25, 153, 175	(12)
Select two: Soc 151, 152, 162	(6)
Sociology upper-division electives	(21)
General Education	**51**
Electives and remaining degree requirements (see *Degree Requirements*); may be used toward a dual major or minor	**34-43***
Total	**124**

*This figure takes into consideration the fact that a General Education CORE, Critical Thinking course (Soc 3) and a maximum of two BREADTH courses (Soc 1 and 131) may be applied to satisfy the sociology major requirements (see *General Education*). Consult the sociology department chair or faculty adviser for additional details.

Advising 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* 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
Total	**21**

A sociology course used to satisfy General Education CAPSTONE may be used as part of the Sociology Minor.

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. General Education BREADTH, Division 8. (CAN SOC 2)

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. General Education BREADTH, Division 8. (CAN SOC 4)

3. Analysis of Social Life (3)
Introduction to critical thinking and sociological analysis. Evaluation of popular and sociological interpretations of social phenomena. Analysis of computerized data sets. Topics covered and assignments vary with instructor. General Education CORE, Critical Thinking. (2 lecture, 2 lab hours) (Lab fee, $15)

25. Quantitative Methods in the Social Sciences (3)
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. (2 lecture, 2 lab hours) (Lab fee, $15)

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. General Education CAPSTONE Cluster course.

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. General Education BREADTH, Division 9.

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.

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. General Education CAPSTONE Cluster course.

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. General Education CAPSTONE Cluster course.

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.

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)
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. General Education CAPSTONE Cluster course.

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. General Education CAPSTONE Cluster course.

161. Population Analysis (3)
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. General Education CAPSTONE Cluster course.

164. Political Sociology (3)
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.

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)
(Same as Geron 166.) Aging and the aged with special emphasis on urban American society; demographic dynamics; problems of the aged; gerontological research methodology.

168. Interpersonal Relationships (3)
Exploration of the basic elements of interpersonal relationships including listening, disclosure, feedback, empathy. (Former Soc 150T section)

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.

174. Computer Data Analysis (1)
An introduction to the use of one of the most widely utilized computer packages in the social sciences — SPSS (Statistical Package for the Social Sciences). No prior knowledge of computers is necessary. ***CR/NC*** grading only.

175. Sociological Research Methods (3)
Prerequisite: Soc 25. The research process with special emphasis on measurement, sampling, data collection, data analysis, and report preparation. Basic assumptions and dilemmas of social science research.

190. Independent Study (1-3; max see reference)
See *Academic Placement — Independent Study*. Approved for ***SP*** grading.

Speech Communication

School of Arts and Humanities
Department of Speech Communication
JOHN A. CAGLE, *Chair*
Speech Arts Building, Room 15
(209) 278-2826

B.A. in Speech Communication
M.A. in Speech
Option: Speech Communication
Minor in Speech Communication
Single Subject Teaching Credential in English/Speech
Communication Skills for Professionals Certificate

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 Communication Skills for Professionals 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 1990s, 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, 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.

At a university reception, **(from left)** *John Cagle and George Diestel converse with Nobel Peace Prize Laureate Elie Wiesel.*

Faculty

John A. Cagle, *Chair*
Graduate Adviser: Katherine L. Adams
Undergraduate Adviser: Hal W. Bochin
Credential Adviser: Gail A. Sorensen

R. Gene Anderson
Melanie M. Bloom
Vincent L. Bloom
Carl W. Carmichael
Connie J. Conlee
George E. Diestel
Douglas Fraleigh
L. Ralph Hennings
David T. Natharius
Robert G. Powell
David F. Quadro
Steven L. Renshaw
W. Richard Ullmann

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
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, 149, 160, 162, 164, 166, 179, 190	
Organizational: Spch 103, 106, 108, 160, 162, 163, 164, 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, 149, 164	
In the ***Professional Track,*** select from: Spch 106, 108, 163, 164, 165, 167, 168, 169, 170, 176	
Electives: Select from any upper-division speech communication course cited above and/or from Spch 115, 120, 188T, 189	(6)
General Education	**51**
Electives and remaining degree requirements	**28-34***
(see *Degree Requirements*) may be used toward a dual major or minor	
Total	**124**

* Spch 3, 4, and 5 may be used to satisfy General Education requirements; thus the number of elective units may vary from 28-34.

Advising 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* 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
Core requirements	**15**
Spch 5, 7, 8, 100, 140	
Electives	**6**
Approved upper-division speech communication courses	
Total	**21**

Note: Spch 4 is recommended for use in General Education BREADTH Division 4.

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. Teacher education students will take the following courses:

General Education Prerequisites: Spch 3, 4; Drama 22

Credential Program: Engl 182, 189, 193T; Ling 100, 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 8, Spch 115, Spch 140; 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.

Communication Skills for Professionals 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 General Education basic speech requirement.

Certificate Requirements. Check with department prior to beginning certificate requirements regarding program status.

	Units
Communication Theory: Spch 100	3
Professional Writing Skills: IS 105W, Engl 164, 166, MCJ 10	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**

The new Communication Skills for Professionals 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 communication related professions.

Master of Arts Degree Requirements

Speech Communication Option

The graduate program in speech communication is designed to extend the competencies of students in the study of human communication. Graduate assistantships in forensics and an Assistant Lecturer Program for teaching provide students with opportunities for financial assistance and additional educational experiences.

The graduate program in speech communication assumes undergraduate preparation equivalent to a CSU Fresno major or minor in speech communication. The Speech Communication Department offers a 30-33 unit Master of Arts degree with courses of study in three primary interest areas:

A. Rhetoric and Public Address: Spch 215 (topic in rhetoric and public address), 241, 242M, 243, and 244;
B. Communication: Spch 205, 215 (topic in communication), 262, 263, 264M, 265, and 266; and
C. Applied Communication: Spch 215 (topic in applied communication), 214, 268, 270M, and 276.

Under the direction of a graduate adviser, each student prepares and submits a coherent program individually designed within the following framework:

Thesis or Project	*Units*
Spch 200	3
Select two courses from *each primary* interest area	18
Spch 242M, 264M, or 270M	3
Approved elective in department other than Speech Communication	3
Spch 299 or 298: Thesis or Project	3-6
Total	**30-33**

Comprehensive Examination	*Units*
Spch 200	3
Select two courses from *each primary* interest area	18
Select one additional seminar from Area A, B, or C	3
Spch 242M, 264M, or 270M	3
Approved elective in department other than Speech Communication	3
Total	**30**

Advising Notes

1. The selection of one methodology course (M) does not preclude taking other methodology courses.
2. Spch 290 may be included in a student's graduate program with the approval of the student's graduate committee so long as the student has at least 18 units of graduate seminars on the course of study.

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* grading only; not applicable toward 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. General Education CORE. (CAN SPCH 4)

4. Introduction to Interpersonal Communication (3)
Introduction to various theories of interpersonal communication; participation in experiences designed to enhance competence in interpersonal relationships. General Education BREADTH, Division 4.

5. Argumentation (3)
Logical analysis, evidence, reasoning, and proof used in arriving at rational decisions as demonstrated through presentation of public speeches and debates. General Education CORE, Critical Thinking. (CAN SPCH 6)

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. General Education CORE.

8. Group Discussion (3)
Communication in group thinking and problem solving through preparation and presentation of panels and symposia on public issues. General Education CORE.

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 argu-

ment, 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. (Lab fee, $15)

107. Critical Thinking in the Age of Information (3)
Examines the relationships between communication and critical thinking in the age of information. Topics include the relationship between communication and cognition, models of argument, the media and critical thinking, and methods for enhancing critical thinking competence. (Former Spch 188T section)

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 CTET 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.

116. Communication and Humor (3)
Develop your sense of humor and learn to incorporate humor into your world by examining humor theories, social and personal functions of humor. Focuses on (1) stand-up comedy, writing, and presentation, or (2) application of techniques for management, sales, marketing, teaching, and health related fields. (Former Spch 188T section)

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.

140. Rhetorical Theory (3)
An examination and analysis of significant theories and theorists of rhetoric from the classical to the modern period. Emphasis on preparation of research papers reflecting rhetorical principles of communication.

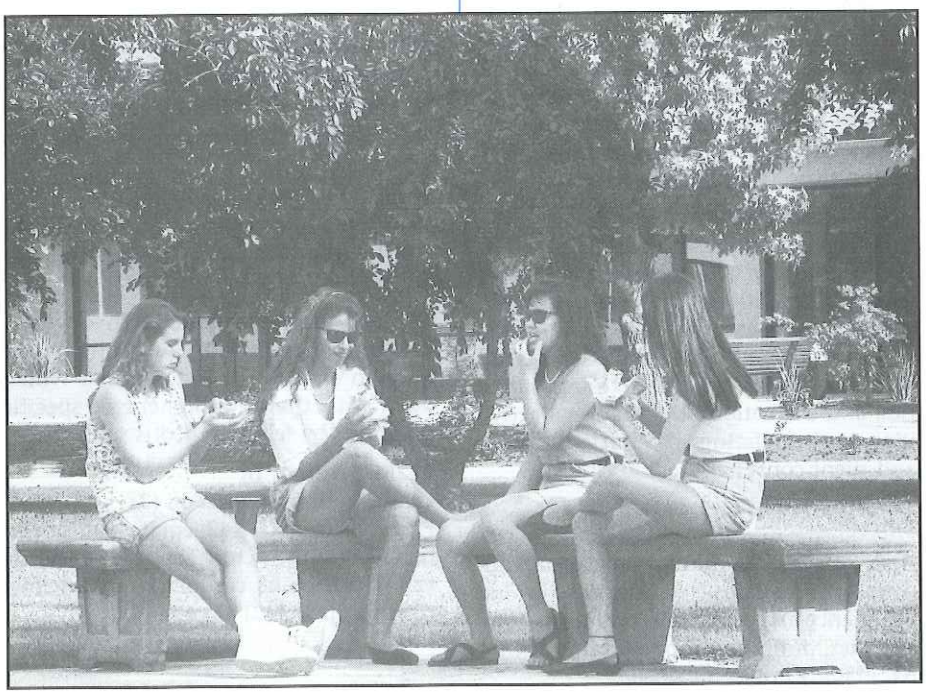
142. Rhetorical Criticism (3)
An examination of classical and contemporary principles of rhetorical criticism. Preparation and presentation of written analyses utilizing these principles in analyzing and evaluating rhetorical events.

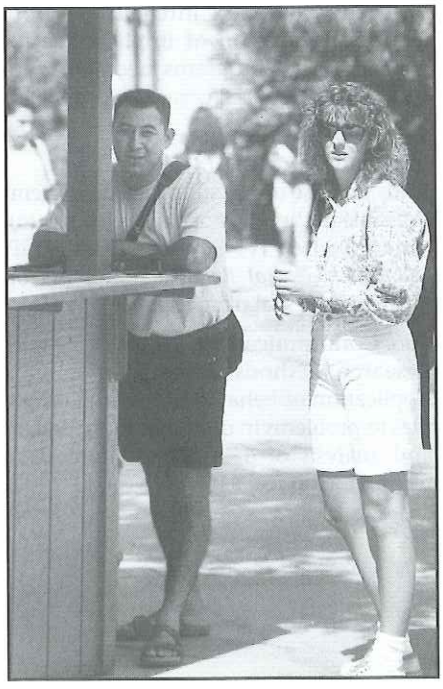
146. British Political Communication (3)
A systems approach to the study of British institutions and communication. Study of government, press, broadcasting, education, and the criminal justice system to facilitate instruction in the evaluation of political messages. Emphasis given the 18th, 19th, and 20th centuries.

147. Contemporary Protest Rhetoric (3)
Examination and analysis of significant contemporary protest movements in the United States. Includes an investigation of rhetorical theories and practices of protest organizations and control agencies. Analysis of strategies, outcomes, and implications that influenced American culture will be reflected in assignments and activities. (Former Spch 188T section)

148. American Public Address (3)
An examination of significant American speakers and speeches set in an environment of social and political history. The course is designed to acquaint students with the role of public address within the forces of American history.

149. Freedom of Speech (3)
Examines the tradition of freedom of speech and expression in the American democracy. Focuses upon the First Amendment to the Constitution and major case laws which impact contemporary standards for public discourse, politics, broadcast, and journalism.





150. Communication and Aging (3)
(Same as Geron 150.) Focusing on the communication aspects of the aging process, organized around the major communication components of intrapersonal, interpersonal, and mass communication with addition of such topics as attitudes, stereotypes, nonverbal, and the communication aspects of health care. (Former Spch 188T section)

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)
Seminar on the nature and effects of social influence, with special emphasis on attitude formation and change, conformity, behavior, "brain washing," 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. (Lab fee $15)

166. Communication Research Methods (3)
Application of behavioral research principles to problems in quantification, design, and analysis of data in communication research. (Lab fee, $15)

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)
Examination of organizational communication from a multiple discipline perspective. Through the study of theory and experiential learning in simulations, students develop skills necessary for planning, staffing, developing, decision-making, and problem-solving in organizations.

169. Communication and Conflict (3)
Examination of the role of communication in conflict in interpersonal, small groups, organizational, and societal settings. Through experiential learning, case study analyses, and practice of intervention skills, students address conflict styles, strategies, tactics, third-party intervention, and mediation techniques.

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.

171. Communication and Planning Change in the Social System (3)
Provides students with an understanding of the communication processes involved in the evolution of social systems. Students will examine a full range of social settings (small groups, organizations, cultures, etc.) from a variety of theoretical and analytical perspectives. (Former Spch 188T section)

176. Communication Consulting and 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 nonprofit organizations. ***CR/NC*** grading only.

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*. Approved for ***SP*** grading.

GRADUATE COURSES

(See *Course Numbering System.*)

Speech Communication (Spch)

200. Introduction to Graduate Study (3)
Prerequisite: minor equivalent or permission of instructor. Seminar in research procedures and materials. Required of all majors during the first semester of graduate work.

205. Seminar in Argumentation (3)
Prerequisite: Spch 105, 140, or permission of instructor. Examination of traditional and contemporary argumentation theory and research. Analysis of argument fields, theories of argument, argument as epistemic, argument and persuasion, argument and critical thinking.

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. Approved for ***SP*** grading.

241. Seminar in Rhetorical Theory (3)
Prerequisite: Spch 140, equivalent, or permission of instructor. A seminar which deals with the development of specific principles by selected theorists.

242M. Seminar in Contemporary Criticism (3)
Prerequisite: Spch 142, equivalent, or permission of instructor. The role of rhetorical criticism in contemporary society. (Former Spch 242)

243. Seminar in the History of American Public Address (3)
Prerequisite: Spch 142, 146, 148, equivalent, or permission of instructor. A detailed study of selected men and women who have influenced political, religious, and social problems in American history.

244. Seminar in Contemporary Public Address (3)
Prerequisite: Spch 142, 146, 148, equivalent, or permission of instructor. 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)
Prerequisite: Spch 100, equivalent, or permission of instructor. 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)
Prerequisite: Spch 108, equivalent, or permission of instructor. 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.

264M. Seminar in Communication Research Methods (3)
Prerequisite: Spch 106, 166, equivalent, or permission of instructor. 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. (Lab fee, $15) (Former Spch 264)

265. Seminar in Interpersonal Communication (3)
Prerequisite: Spch 162, equivalent, or permission of instructor. 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.

266. Seminar in Intercultural Communication (3)
Prerequisite: Spch 164, equivalent, or permission of instructor. An examination of current quantitative and qualitative theory and research in intercultural communication. Implications and applications to various kinds of human relationships and various aspects of those relationships, e.g., interpersonal, organizational, national, international, communication competence, and acculturation.

268. Seminar in Organizational Communication (3)
Prerequisite: Spch 168, equivalent, or permission of instructor. 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.

270M. Seminar in Applied Communication Research (3)
Prerequisite: Spch 106, 166, equivalent, or permission of instructor. Application of quantitative and qualitative assessment techniques in the analysis of communication in contemporary organizations including instrumentation, administration techniques, methods of analysis, report writing, and intervention strategies. (Lab fee, $15)

276. Seminar in Communication Training and Development (3)
Prerequisite: Spch 176, equivalent, or permission of instructor. In-depth view and application of approaches to training in communication skills in organizations including needs assessment for training, workshop and seminar development, and evaluation of interventions.

290. Independent Study (1-3; max see reference)
See *Academic Placement — Independent Study*. Approved for ***SP*** grading.

298. Project (2-6; max total 6)
Prerequisite: prior advancement to candidacy, appropriate methodological tools (Spch 242M, 264M, or 270M), equivalent, or permission of student's committee. See *Criteria for Thesis and Project.* 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. Approved for ***SP*** grading.

299. Thesis (2-6; max total 6)
Prerequisite: appropriate methodological tools (Spch 242M, 264M, or 270M), equivalent, or permission of student's committee. See *Criteria for Thesis and Project.* Preparation, completion, and submission of an acceptable thesis for the master's degree. Approved for ***SP*** grading.

Note: Students must have earned at least a ***C*** in all courses considered as meeting the prerequisite requirements.

IN-SERVICE COURSE

(See *Course Numbering System.*)

Speech Communication (Spch)

303. Topics in Speech (1-3; repeatable with different topics)
Prerequisite: permission of instructor. Application of the theories in speech arts.

THEATRE ARTS Drama and Dance

School of Arts and Humanities
Department of Theatre Arts
RONALD D. JOHNSON, *Chair*
Speech Arts Building, Room 33
(209) 278-3987

B.A. in Theatre Arts
Dance Option
Minor in Theatre Arts
Dance
Drama
Single Subject Teaching Credential
English/Drama

Photo by Dave Fultz

Winfield (Matt Elkins) woos Viola (Mendy Garcia) in the national award-winning CSUF production of "Indulgences in the Louisville Harem," which was performed in the 1993 Kennedy Center/American College Theatre Festival in Washington, D.C.

The theatre arts major offers you the opportunity to develop your skills in acting, directing, dance performance, choreography, playwriting, management, children's theatre, technical production, scene design, costume design, lighting design, history, literature, and teaching. After completing our program, you will have the background 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 or dance can be one of the more exciting times in your life because it will develop communication and performing skills 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 Department is ready to serve you.

The Theatre Arts Department is an accredited institutional member of the National Association of Schools of Theatre (NAST) and is a member of the American Theatre in Higher Education, United States Institute of Theatre Technology, California Educational Theatre Association, and the Southern California Educational Theatre Association. The department regularly participates in the American College Theatre Festival (ACTF) and the American College Dance Festival (ACDF). Students, faculty, and productions have been awarded many regional and national honors from both ACTF and ACDF.

CSU Fresno's national and international award-winning Theatre Arts Department offers you 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 10 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 (ETC) and the University Dance Theatre (UDT) are student organizations that produce their own plays and dance concerts. Playwrights Theatre is dedicated to the production of original plays. Theatre for Young Audiences, 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 newly renovated theatre complex consists of a 374-seat proscenium theatre and a 192-seat arena theatre. We also have a 100-seat lab theatre. You will work closely with 14 faculty members who are current in their craft and professionally active in acting, directing, dance, design, and technical production. 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.

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, *Chair*
Credential Adviser: Kim V. Morin

Jeanette P. Bryon
Dan Carrion
M. C. Drake
Thomas Whit Ellis
Edward F. EmanuEL
Ruth H. Griffin
Janet Loring
Kathleen S. McKinley
Terry C. Miller
Bradley J. Myers
Robert G. Ware

Bachelor of Arts Degree Requirements

Theatre Arts Major and Minor

The theatre arts major, dance option, and minors 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 follow a track of advanced courses specializing in the areas of Acting or Design/Technology, or students may opt for advanced courses covering a broad range of study by selecting the General track. Students may also pursue a teaching credential through the Single Subject Waiver Program in English/Drama. The Theatre Arts Program offers through the dance option intensive studies in dance performance, choreography, and theory. This option provides preparation for graduate studies or a professional career.

Theatre Arts Major	***Units***
Major requirements	**53**
(See *Note 1*)	
Core: Drama 10, 33, 34, 110, 139, 163, 185, 186	(24)
Production: Drama 15 and/or Drama 115	(8)
Concentration (select one)	(21)
Acting	
Dance 20, Drama 30, 35, 135	(12)
Select 6 units from the following courses: Drama 133A, 133B, 188T (Topics in Acting)	(6)
Approved electives: Drama 15/115 and 89/189 excluded (See *Note 2*)	(3)
Design/Technology	
Drama 180A, 181A, 182A	(9)
Select 9 units from the following courses: Drama 134A, 134B, 135, 155, 157, 180B, 181B, 182B	(9)
Approved electives: Drama 15/115 and 89/189 excluded (See *Note 2*)	(3)
General	
Select 6 units from *each* of the following course groupings:	
Group 1: Dance 20, Drama 30, 35, 133A, 133B, 138B	(6)
Group 2: Drama 134A, 134B, 135, 180A, 181A, 182A	(6)
Group 3: Drama 131, 138A, 140, 151, 188T	(6)
Approved electives: Drama 15/115 and 89/189 excluded (See *Note 2*)	(3)
General Education	**51**
Electives and remaining degree requirements	**20-26***
(See *Degree Requirements*), may be used toward a dual major or minor	
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*). The two courses that may be selected are Drama 34 and 163. Consult the theatre arts department chair or faculty adviser for additional details.

Advising Notes

1. New majors must enroll in Drama 10 (fall) and acting concentration students must enroll in Dance 20 (spring) during their first year in the program.
2. Students must meet with their adviser each semester for program approval.
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.
5. General Education and elective units may be used toward a dual major or minor (see *Dual Major* or departmental minor). Consult the appropriate departmental chair, program coordinator, or faculty adviser for further information.

Theatre Arts Major (Dance Option)	***Units***
Option requirements	**55**
Drama 33, 34, 134B or 181B or 182A	(9)
Dance 20, 159, 164A, 164B, 166, 167, 168, 170, 171	(30)
Production: Dance 115	(4)
Dance 117A, B, C, or D (must enroll in one section each semester)	(6)
Dance 158A, B, C, or D (must enroll in one section each semester)	(6)
General Education	**51**
Electives and remaining degree requirements	**18-24***
(See *Degree Requirements*), may be used toward a dual major or minor	
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*). These two courses are Dance 171 and Drama 34.

Advising 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) 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* or departmental minor). Consult the appropriate department chair, program coordinator, or faculty adviser for further information.

Theatre Arts Minor (Drama)	***Units***
Drama 10, 33, 34, 163	12
Drama 15 and 115	2
Approved electives (upper division)	6
Total	**20**

Theatre Arts Minor (Dance)	***Units***
Dance 20	3
Dance 117A, 117B, 117C, 158A, 158B, 158C	8
Dance 166, 164A or 164B, 168, 170	9
Drama 115	1
Approved electives	3
Total	**24**

Credential Program

Consult the theatre arts credential adviser concerning the required course of study for the Single Subject Waiver Program in English-Drama.

COURSES

Theatre Arts (Drama)

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. Not available for *CR/NC* grading.

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. General Education BREADTH, Division 4.

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 nonmajors 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 acting, voice, and movement. Characterization process and dramatic text analysis which include exploration of diverse cultural perspectives. Development of stage presence, ensemble awareness, and rehearsal/performance techniques. General Education BREADTH, Division 4.

33. Fundamentals of Acting (3)
Open to theatre arts majors and minors only or by permission of instructor. Nonmajors, see *Drama 32*. Fundamental techniques and theories of acting; development of individual insight, skill, and discipline in the presentation of dramatic materials. (CAN DRAM 8)

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. General Education BREADTH, Division 4.

35. Intermediate Acting (3)
Prerequisite: Drama 33. Intermediate studies in acting including text analysis, expansion of the actor's character range and audition techniques.

62. Theatre Today (3)
Not open to theatre arts majors. Perspectives on contemporary theatre forms and productions. General Education BREADTH, Division 5.

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.

110. Design for the Theatre (3)
Comprehensive study of design aesthetics and application of design to theatrical production, including scenery, costume, lighting, sound, and make-up. Laboratory application, material for major public performance.

115. Dramatic Arts Laboratory (1-2; max total 9)
(See Drama 15.) Not available for *CR/NC* grading.

130. Screenwriting (3; max total 9)
(Same as MCJ 130.) Principles and techniques in the preparation and marketing of film scripts. (Former Drama 188T section)

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)
Prerequisite: Drama 35. **(A)** Advanced techniques of voice, movement, emotion, and characterization, developed through improvisation and scene study. **(B)** Period styles of acting.

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. Emphasis on basic techniques; introduction to prosthetics. 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 (3; max total 6)
(Same as CTET 137.) Basic techniques for the use of dramatization in elementary education; sociodrama, dramatization of school subjects, creative dramatic play; simplified staging techniques.

138A-B. Children's Theatre (A-3) (B-3; max total 6)
(A) Theory, practice, and applications of theatre for children and adolescents; children's plays are examined through reading, discussion, and scene study. **(B)** Prerequisite: permission of instructor. Theatre for Young Audiences Tour; experience touring children's theatre productions for 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.

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.

151. Stage and Production Management (3)
Principles and techniques of stage and production management as applied to professional, educational, and community theatre and applied media; production, audition, rehearsal process, and organization; technical and performance process and procedures; production personnel and cost management. (Former Drama 188T section)

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. (Lab fee, $15)

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. General Education BREADTH, Division 5.

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; max total 6)
Costume design for theatre and dance incorporating analysis of script, research of historical period, selection of fabric, preparation of budget, and rendering of plates. Emphasis on illustration 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.)

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-19th century; analysis of representative examples. General Education CAPSTONE Cluster course.

186. History of the Theatre and Drama II (3)
Prerequisite: Drama 163. From Ibsen to the present; analysis of representative examples.

"The quality of training in both the academic and performance aspects of the CSUF theatre program is very high and has proven invaluable in the pursuit of my goal to become — and remain — a professional actor."

Robert Westenberg
Alumnus from New York
Stage and Television Actor

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*. Approved for ***SP*** grading.

194. Shakespeare (4)
(See Engl 189.)

IN-SERVICE COURSE

(See *Course Numbering System.*)

Theatre Arts (Drama)

303. Topics in Theatre Arts (1-3)
In-service training in selected areas of drama/theatre arts.

COURSES

Dance (Dance)

A maximum of 12 units of dance technique courses (Dance 116, 117, 118, 155, 158) may be credited toward the minimum B.A. graduation requirement of 124 units for dance majors.

20. Movement/Space (3)
Fundamental theories and technique of movement for performance required for study in the Theatre Arts and Dance Option programs.

115. Dance Laboratory (1; max total 9)
Group laboratory experience in presentation of productions for public performance. Not available for ***CR/NC*** grading.

116. Introduction to Dance (3)
Exploration of basic concepts, techniques and styles through study problems, video and critical readings. Dance concert attendance may be required. General Education BREADTH, Division 4.

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.

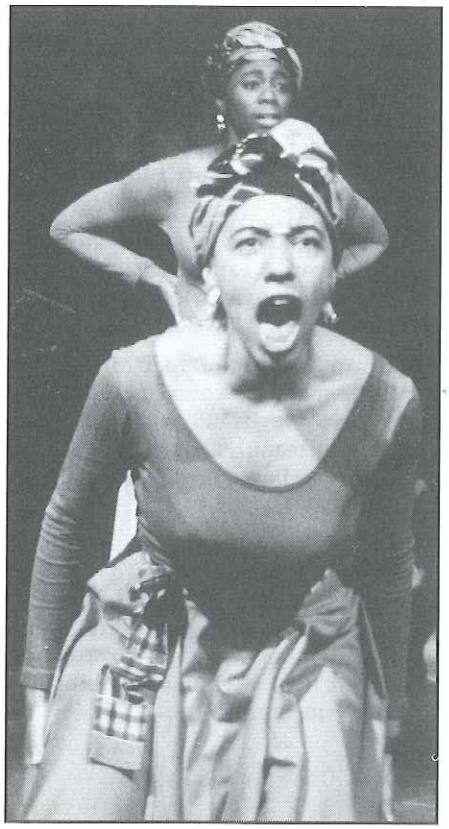
158C. Ballet Technique (2; max total 12)
Prerequisite: permission of instructor. Intermediate-advanced level of ballet technique. Concentrated study and practice of French, Russian, Italian, and Danish concepts and theories of technique.

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)
Study of Western Classical Music Theory and History as it relates to dance exposure to world music. Rhythmic analysis and 20th century approaches to music composition and dance. Development of dancer's percussive and vocal abilities.

160. Creative Movement for Children (3)
Introduction to the basic concepts, principles, and methodology needed to develop an awareness of the aesthetic experience through dance and creative movement. The aesthetic qualities of dance are stressed



to develop the use of creative intelligence and imagination.

161. Musical Theatre (3)
Training of actors for musical auditions through fundamental voice and movement techniques, study of how music and lyrics combine to suggest character, and study of relationship of song, scene, and choreography in various styles. (Former Dance 174T section)

162. Physical Theatre (3)
Development of actor's physical instrument of flexibility, strength, and control. Geared to extraverted physical theatre forms, i.e., Commedia Dell'Arte, Melodrama, and Vaudeville. Scripts developed through ensemble improvisation. (Former Dance 174T section)

163. Portable Dance Troupe Company Class (2; max total 8)
Prerequisite: permission of instructor. By audition only, held in fall semester and meets for two semesters. A repertory class consisting of rehearsing, understudying, and performing roles. This laboratory experience leads toward performances and touring.

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: permission of instructor. Choreography is approached through the exploration of resources, including improvisation, use, and development of ideas, knowledge of forms, and development of craft. Choreography will be presented in class and performed.

168. 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. (Former Dance 175A)

169. Body Image, Language, and Nonverbal Expression (3)
An investigation into the nature of posture and gesture as configurations of expressive, nonverbal expression. (Former Dance 175B)

170. Balance BodyMind (3)
Study of the alignment of the body and continuum between inner, cellular awareness and outer awareness of body through space. Promotes greater ease in movement; reduced emotional stress; knowledge of the body as process. Nondancers encouraged to enroll.

171. Philosophical Bases and Trends in Dance (3)
The elements and principles common to all arts and their relationship to dance. General Education BREADTH, Division 5.

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.

Women's Studies

School of Social Sciences
Women's Studies Program
MARCIA E. BEDARD, *Coordinator*
Social Science Building, Room 226
(209) 278-2858

Minor in Women's Studies

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.

Career Opportunities

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 and Latin American 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 6 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, electives may be chosen from special topics courses on women offered periodically by certain departments.

Certificate of Alcohol/Drug Studies

The Women's Studies Program is participating in a certificate of special study awarded to those students who successfully complete a minimum of 12 units of interdisciplinary academic coursework in the area of alcohol and drug abuse. (For complete details, see *Health and Social Work Interdisciplinary Courses* in this catalog.)

Victim Services Certificate

The Women's Studies Program is participating in a certificate of special study awarded to those students who successfully complete a minimum of 12 units of interdisciplinary academic coursework in the area of victim abuse. (For complete details, see *Criminology Department* or *School of Education and Human Development.*)

COURSES

Women's Studies (W S)

10. Introduction to Women's Studies (3)
Introductory interdisciplinary course designed to provide a foundation for Women's Studies; focus on women in the areas of sociology, psychology, history, economics, politics, and the arts. General Education BREADTH, Division 9.

12. Critical Thinking: Gender Issues (3)
An introductory course for students who may not have had any formal coursework in either critical thinking or women's studies. Designed to teach critical thinking and communication skills, using topics of sex and gender as subject matter. General Education Core, Critical Thinking.

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 interest in the Women's Movement, covering a wide variety of issues. (See *Schedule of Courses* for specific topics.)

101. Women in History (3)
(See Hist 101.) General Education BREADTH, Division 9.

102T. Topics in Women's History (3; max total 6 if no topic repeated) (Same as Hist 102T.) Prerequisite: W S 101 or permission of instructor. (See *Schedule of Courses* for specific topics.)

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. ***CR/NC*** grading only.

109. Incest (1)
An exploration of the victim, the victimizer, and the family dynamics of incest, as well as the psychological and sociological implications of the family secret. An all-day workshop held on two consecutive Saturdays. ***CR/NC*** grading only.

112. Assertiveness 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. *CR/NC* grading only.

114. Women in Family Contexts (3)
Prerequisite: W S 10 or W S 131 or permission of instructor. Women in diverse family settings; the gendered division of labor; domestic violence; female-headed households; power relations in families; diversity of race, class, and sexual orientation; and conflicting family ideologies in society.

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. An all-day workshop held on two consecutive Saturdays. *CR/NC* grading only.

118. Women and Aging (3)
(Same as Gerontology 118.) An exploration into the myths and realities of the aging process, with a focus on women. Confronts the issues of aging in order to stimulate constructive change and positive alternatives for women.

120. Women of Color in the United States (3)
The situation of racial ethnic women is examined and analyzed. Topics include: family, work, history, health, and literature, as well as the place of women of color in the Women's Movement and the development of distinct feminism(s) in racial ethnic communities.

126. Women and Violence: Public Policy and the Law (3)
(Same as Crim 126.) Historical and contemporary issues in public policy responses to violence against women. Gender bias in the legal system and policing violence against women. Theory and research on problems in government policy and enforcement of the law.

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.) General Education BREADTH, Division 9.

132. Women and Work (3)
(See Soc 132.)

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 one of the following areas: China, Southeast Asia, India, Africa, Middle East, Latin America. General Education BREADTH, Division 9.

137. African American Women (3)
(See Af Am 137.) General Education CAPSTONE Cluster course.

148. Women and Religion (3)
Seminar to explore many facets of women's religious experience, including history of women in institutional churches, theologies of liberation and oppression, women's religious experience, and feminist spirituality.

150T. Topics in Women's Studies (1-4; max total 12)
Topics of current interest in the Women's Movement, covering a wide variety of issues. (See *Schedule of Courses* for specific topics.)

152. The Chicano Family (3)
(See CLS 152.) General Education CAPSTONE Cluster course.

157. Social Construction of Motherhood (3)
Prerequisite: W S 10 or W S 131 or permission of instructor. Theories of social construction show how social meaning is applied to women's mothering, creating both "ideal" mothers and deviants. Examines contemporary problems in social construction of motherhood created by new technology.

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.

161T. Peer Education (1; max total 4)
Topics: sexual assault, sexual harassment, alcohol and drug abuse, or eating disorders. Students learn curriculum content, develop teaching and group facilitation skills, and make presentations to campus peer groups. Permission of instructor. May be taken up to four times if no topic repeated. *CR/NC* grading only.

162. Community Service (1-3)
Prerequisite: 9 hours of W S courses and permission of instructor and sponsoring agency. Individually planned experience which relates student's classroom studies to practical experience in a women's community service agency. *CR/NC* grading only. (Minimum of 3 field hours per unit.)

163. Consciousness Raising: Group Leader (1; max total 2)
Prerequisite: W S 10 and permission of instructor. Students learn skills in facilitating group discussion and review content of W S 10 course; students lead a consciousness raising discussion group of students currently taking W S 10. *CR/NC* grading only. (2 lab hours)

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.

168T. Women and Literature (4)
(See Engl 168T.)

170. Women: Culture and Biology (3)
(See Anth 170.) General Education CAPSTONE Cluster course.

172. Psychology of Women (3)
(See Psych 172.)

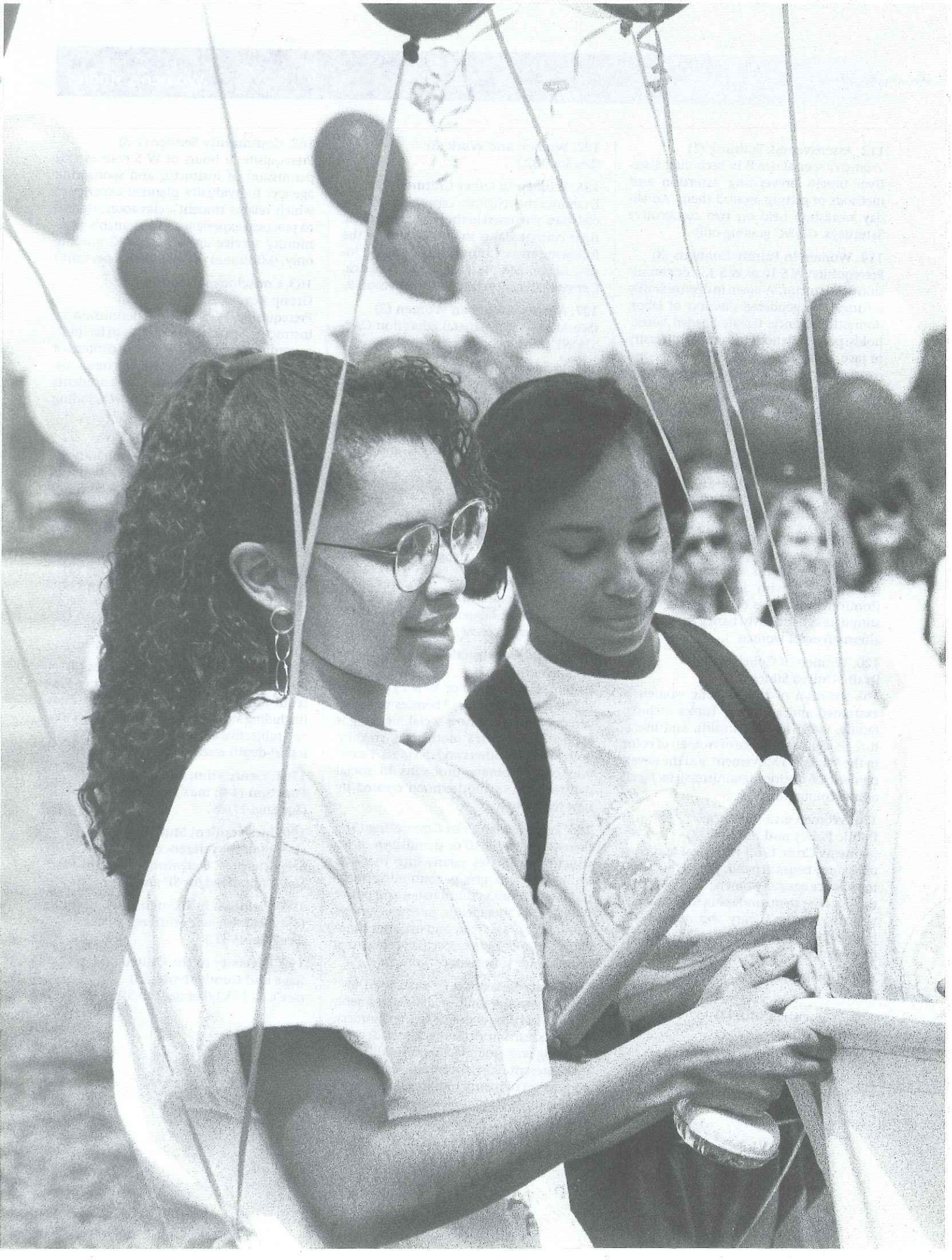
175. Seminar in Women's Studies (3)
Primarily for women's studies minors. Prerequisite: 15 units in women's studies (including W S 10). A synthesis of objective and subjective experience in women's studies. In-depth research project required.

176T. Genre Film: Form and Function (1-4; max total 8)
(See Engl 176T.)

190. Independent Study (1-3; max see reference)
See *Academic Placement — Independent Study*. Approved for ***SP*** grading.

194T. Seminar in Women and Literature (4; repeatable with different topics)
(See Engl 194T.)

195. Diversity in the United States: Race and Gender Issues (3)
(See CLS 195.) (Former Eth S 195)



Special Programs

"No race can
prosper
till it learns
that there is
as much dignity
in tilling a field
as in writing a
poem."

Booker T. Washington

Special Programs

American English Institute

The American English Institute (AEI), which has been a CSUF program for 20 years, is designed to prepare international students for American university studies by offering instruction in English as a second language. Students receive up to 21 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 120 international students enroll at the institute. Students have come from more than 25 different countries.

Admission Requirements and Application Procedure. Applicants must be older than 17 years of age. 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 will receive I-20s. Since processing and mailing of the I-20s takes time, students should apply at least six weeks before the session begins. For further information, call or write to **Dr. Ellen Lipp, Director; American English Institute; California State University, Fresno; 5240 N. Jackson Ave., Room 127; Fresno, CA 93740-0074. Phone: (209) 278-2097. FAX: (209) 278-5586.**

Calendar and Fees. AEI has three sessions each year: spring is 14 weeks, summer is 10 weeks, and fall is 14 weeks. A special three-week winter session is also offered. The form I-20 is not issued for the special three-week session. The institute charges students application, tuition, health, and student service fees. Interested students should contact the institute to get specific information on fees and session dates.

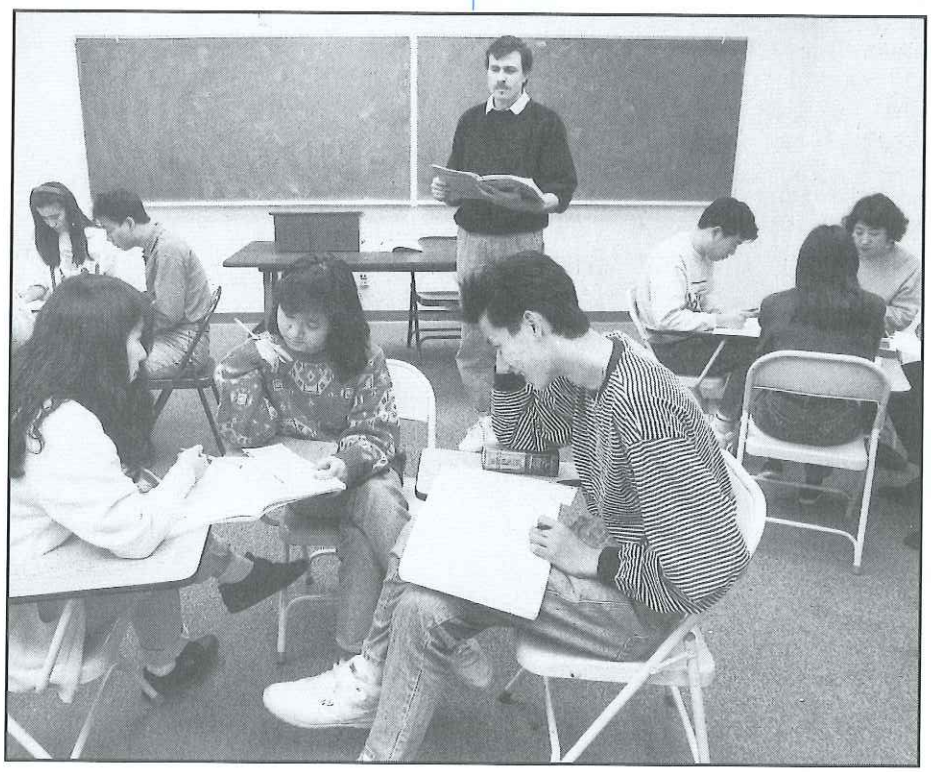
Instruction Offered. AEI has an effective topic-based curriculum which focuses on students' needs and interests. Topics such as current events and American culture become the basis for authentic listening, speaking, reading and writing tasks. While the lower levels of instruction have a slightly different program, the basic intensive program includes the following courses: reading and writing, listening and speaking, grammar, TOEFL preparation, and computer laboratory. Some levels of instruction have additional labs.

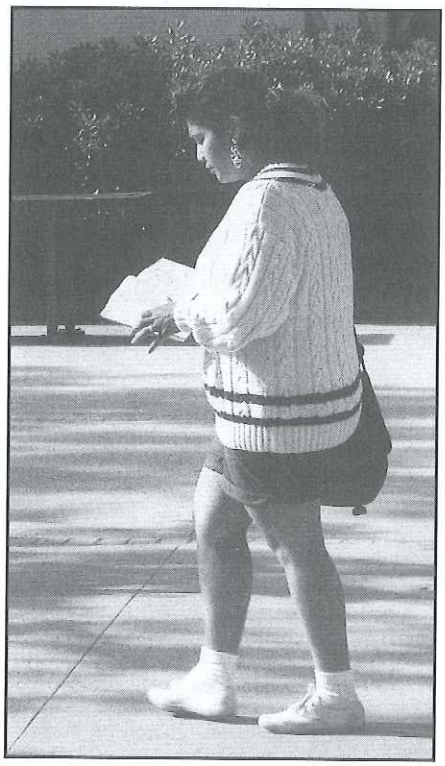
Special Programs. When arrangements are made in advance, and if there is sufficient interest, AEI can also offer special classes and programs. AEI staff is eager to work with university faculty on special English programs for academic purposes. For example, recently we offered a special English program for business purposes.

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. Applied ethics courses are intended to enhance the students' appreciation of their own values throughout life.

While the program has neither a major nor minor, inclusion of several applied ethics courses in the students' curricula should be beneficial in a number of careers and in life itself. Several applied ethics courses 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.*) General Education BREADTH, Division 6.

101. Introduction to Professional Ethics (3)
(See *Phil 122.*)

102A.* Economics, Ethics, and Civilization (3)
(See *B A 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.*) General Education 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*. Approved for ***SP*** grading.

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 course in applied ethics or special background. Intensive investigation of issues in applied ethics, normally requiring substantial student participation and discussion.

200. Ethics in Psychology (3)
(See *Psych 231.*)

201. International Relations and Political Theory (3)
(See *Pl Si 210.*)

202. Ethics and Public Administration (3)
(See *GPA 250.*)

**A Eth 102A may be substituted for B A 101.*

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, **Dr. Sudarshan Kapoor, (209) 278-2013, (209) 278-3992,** or any member of the Asian Studies Committee.

Asian Studies Minor

A Minor in Asian Studies consists of 21 units, including a minimum of 9 upper-division units. Specific requirements:

1. Six to 9 units in one of the areas listed under Section I or II.
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 3 units of electives from Section 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 coordinator. 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

Chin 1A-1B	Elementary Chinese (3-3)
Chin 2A-2B	Intermediate Chinese (3-3)
Japn 1A-1B	Elementary Japanese (3-3)
Japn 2A-2B	Intermediate Japanese (3-3)
Skt 10A-B	Sanskrit (3-3)

Philosophy and Religion

Phil 136	Buddhism (3)
Phil 137	Hinduism (3)
Phil 138	Chinese Thought (3)
Phil 172T	Seminar in Religious Issues (1-4)

Section II. Social Sciences

Anth 123	Peoples and Cultures of Southeast Asia (3)
Anth 124	Peoples and Cultures of East Asia (3)
Anth 155	Folk Medicine (3)
Anth 181	Cultures and Foods of East Asia (3)
Anth 186	Tradition and Change in China and Japan (3)
Econ 114	Economic Development of Poor Nations (3)
Econ 182	Political Economy of China (3)
Econ 188T	Special Topics (1-3; max total 6)
Geog 177T	Asian Regions (3; max total 9 if no area repeated)
Hist 6	East Asian Civilization
Hist 191	Modern Far East, 1843-1949 (3)
Hist 192	Modern Far East, 1949-Present (3)
Hist 199T	Studies in Far Eastern History (1-3; max total 6 if no topic repeated)
Pl Si 145T	Area Studies in Asia (3)
Pl Si 183	Comparative Administration (3)
S Wrk 122T	Gandhi and Nonviolence (3)

Section III. Courses Partially Related to Asia

Ag Ec 140	International Agriculture (3)

Additional courses may be selected with prior approval from the coordinator.

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 Child, Family, and Consumer Sciences.

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. See course descriptions in this catalog.

	Units
Major requirements	**48**
Required courses	(33)
CFS 37, 138, 139	(9)
CFS 131 or Soc 165	(3)
CFS 134 or Psych 178	(3)
COUN 150, 174	(6)
C D 80	(3)
Psych 101, 136	(6)
Spch 162	(3)
Approved electives	(15)
(See adviser to obtain an approved list of elective courses)	
General Education requirements	**51**
Electives and remaining degree requirements	**25**
(see *Degree Requirements*); may be used toward a minor	
Total	**124**

Advising 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.
5. Upper-division units (e.g., 100-level courses) may not be applied toward the 40 upper-division unit degree requirement until 45 units have been completed.

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 student's academic and career choices, is identified through the combined efforts of the Cooperative Education Section of the Career Development Center and the various academic departments. Placement arrangements are negotiated with local cooperating employers in the San Joaquin Valley, as well as throughout California and the 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 **Career Development and Employment Services at (209) 278-2703** or visit the center in Joyal Administration Building, Room 256.

The following courses offer field experiences that may qualify as cooperative education. Check with the academic department for enrollment requirements:

Ag Ec 194	Agribusiness Internship
A Sci 194	Agricultural Internship
C E 193	Internship in Civil Engineering
COUN 239	Field Practice in Professional Services Counseling
COUN 249A	Field Practice in Elementary School Counseling
COUN 249B	Field Practice in Middle or High School Counseling
C Sci 194	Cooperative Education
CTET 122	Fieldwork in Outdoor Education
ECE 193	Electrical and Computer Engineering Cooperative Internship
Engl 185	English Internship Seminar
Engl 186	Internship in English
Enol 194	Enology Internship
H Ec 193	Cooperative Education
H S 185F	Fieldwork in Health
I E 193	Industrial Engineering Cooperative Internship
I T 194	Cooperative Education in Industrial Technology
M E 193	Mechanical Engineering Cooperative Internship
Nutr 193	Supervised Work Experience
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
SPED 160F	Fieldwork in Special Education

International Programs

The university offers two programs under this heading, a campus program and an overseas program. The campus program 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 postadmission English language testing. As a result of such testing, any student may be required to register for certain courses.

Campus Program

The International (Campus) Program provides courses to help international students gain adequate skill in the use of the English language and sufficient familiarity with American customs and tradition to obtain maximum benefit from their experience at an American university. The following program, taught through the Linguistics Department, is required of all entering international students, unless ex-

cused from part or all of it by the International Studies Courses (*I S C*) Petitions Committee on the advice of the persons concerned with the instruction and administration of the program. This decision is based on a consideration of test scores and other data supplied by the student with his or her application. (See *International Student Services and Programs.*) After arrival on campus, examinations and an interview may lead to the student's being excused from certain courses.

First Semester Program. Most students are required to enroll in E F L 10 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 and/or E F L 21. With permission of their international counselor, students may enroll in other regular courses.

Other Undergraduate Courses. E F L 110W is often required of transfer students who have completed English 1 or its equivalent and 56 units of coursework.

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 the student's 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. *CR/NC* grading only; not applicable toward baccalaureate degree requirements.

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. (Lab fee, $15)

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. (Lab fee, $15)

International Studies Course (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. (2 seminar hours)

International Programs (Overseas)

Developing intercultural communication skills and international understanding among its students is a vital mission of The California State University (CSU). Since its inception in 1963, the CSU International Programs has contributed to this effort by providing qualified students an affordable opportunity to continue their studies abroad for a full academic year. Nearly 11,000 CSU students have taken advantage of this unique study option.

International Programs participants earn resident academic credit at their CSU campuses while they pursue full-time study at a host university or special study center abroad. The International Programs serves the needs of students in more than 100 designated academic majors. Affiliated with 36 recognized universities and institutions of higher education in 16 countries, the International Programs also offers a wide selection of study locales and learning environments.

The affiliated institutions are: the University of Queensland (Australia); the University of São Paulo (Brazil); the universities of the Province of Quebec (Canada); the University of Copenhagen through Denmark's International Study Program; 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 (Tokyo, Japan); the Universidad Iberoamericana (Mexico City, Mexico); Massey University and Lincoln University (New Zealand); the universities of Granada and Madrid (Spain); Uppsala Universitet (Sweden); National Chengchi University (Taipei, Taiwan); Bradford, Bristol, Kingston, and Sheffield universities and the University of Wales, Swansea (the United Kingdom); and the University of Zimbabwe (Harare). Obtain information on academic course offerings available at these locations in the *International Programs Bulletin* from the International Programs representative on campus.

The International Programs pays all tuition and administrative costs for participating California resident students to the same extent that such funds would be expended to support similar costs in California. Participants are responsible for all personal costs, such as transportation, room and board, living expenses, and home campus fees. Participants remain eligible to receive any form of financial aid (except work-study) for which they can individually qualify.

To qualify for admission to the International Programs, students must have upper-division or graduate standing at a CSU campus by the time of departure. California Community Colleges transfer students are eligible to apply directly from their community college if they can meet this requirement. Students must also possess a current cumulative grade point average of 2.75 or 3.0, depending on the program for which they apply. Some programs also have language study and/or other coursework prerequisites.

Obtain information and application materials from the International Student Services and Programs Office, Joyal Administration, Room 211 or call (209) 278-2782. Or, write to: The California State University International Programs, 400 Golden Shore, Suite 300, Long Beach, CA 90802-4275. Applications must be submitted by February 1 for the next academic year overseas.

COURSES

CSUF students under The California State University International Programs register concurrently on campus and at the host institution abroad, with credit assigned in terms of CSUF courses. Undergraduate students who find appropriate study opportunities at the host institution but no local counterpart course may use Inde-

pendent Study 190, and International Studies Abroad 92 or 192. Graduate students may use Independent Study 290 and International Studies Abroad 292.

International Studies Abroad (I S A)

92. Projects in Study Abroad: (Subject) (Units variable; max total 18)
Open only to students in The California State University International Programs. Study undertaken in a university abroad under the auspices of The California State University.

192. Projects in Study Abroad: (Subject) (Units variable; max total 18)
Open only to students in The California State University International Programs. Study undertaken in a university abroad under the auspices of The California State University.

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. 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 107 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. Coursework completed will be treated as transfer coursework, but students will be allowed to retain catalog rights for CSU Fresno degrees.

To qualify, a participant must: (1) be currently enrolled as a full-time undergraduate student at CSUF and in the term prior to exchange; (2) be a sophomore, junior and in some cases have senior status during the exchange; (3) have a minimum 2.5 GPA at the end of the fall semester and at the completion of the term prior to exchange; (4) be in good standing at CSUF. The program is closed to foreign students and postbaccalaureates. Applications are accepted mid-January through late February.

For more information about this opportunity for educational travel and study in a new environment, contact **Ruth Saludes**, NSE coordinator, International Student Services Office, Joyal Administration Building, Room 211. **Phone: (209) 278-2782.**

Revising and Editing Skills

The following minicourses 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 1-unit courses. These courses may be taken prior to, concurrently with, or after Engl 1 or A. Classes are taught by members of the English and Linguistics departments.

COURSES

Revising and Editing Skills (R E S)

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 is emphasized. (Former B W E 4A)

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. (Former B W E 4B)

4C. Sentence Structure (1)
Developing skill in writing clear, mature sentences. Focus 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. (Former B W E 4C)

4D. Punctuation (1)
Learning to use punctuation marks so readers readily understand the writer's ideas. Particular attention to the use of commas, semicolons, apostrophes, and dashes. A minimum number of unvarying rules are emphasized. (Former B W E 4D)

4E. Paragraph and Essay Organization (1)
Developing skills in identifying the subtopics which make up the central idea of a paragraph or essay, in expanding and supporting ideas, and in arranging them so the writer's purpose is carried out as effectively as possible. (Former B W E 4E)

Russian Area Studies

The Interdisciplinary Minor in Russian Area Studies complements a number of academic majors and will prove helpful to students seeking employment with public or private organizations dealing extensively with Russia and associated states.

Russian Area Studies 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 are 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, Geography of the CIS, Russian Politics), including at least 6 units selected from the departments of geography, history, and political science.

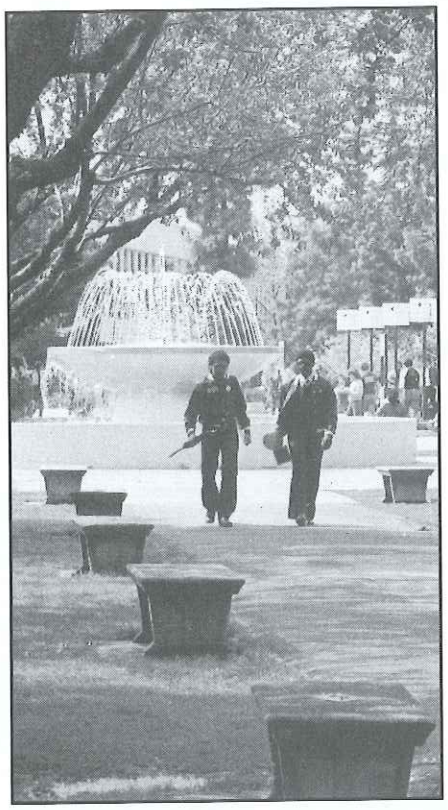
Likewise, students with a major in geography, history, or political science must choose their units within these areas so they are in addition to, and not duplicates of, the course requirements for their major.

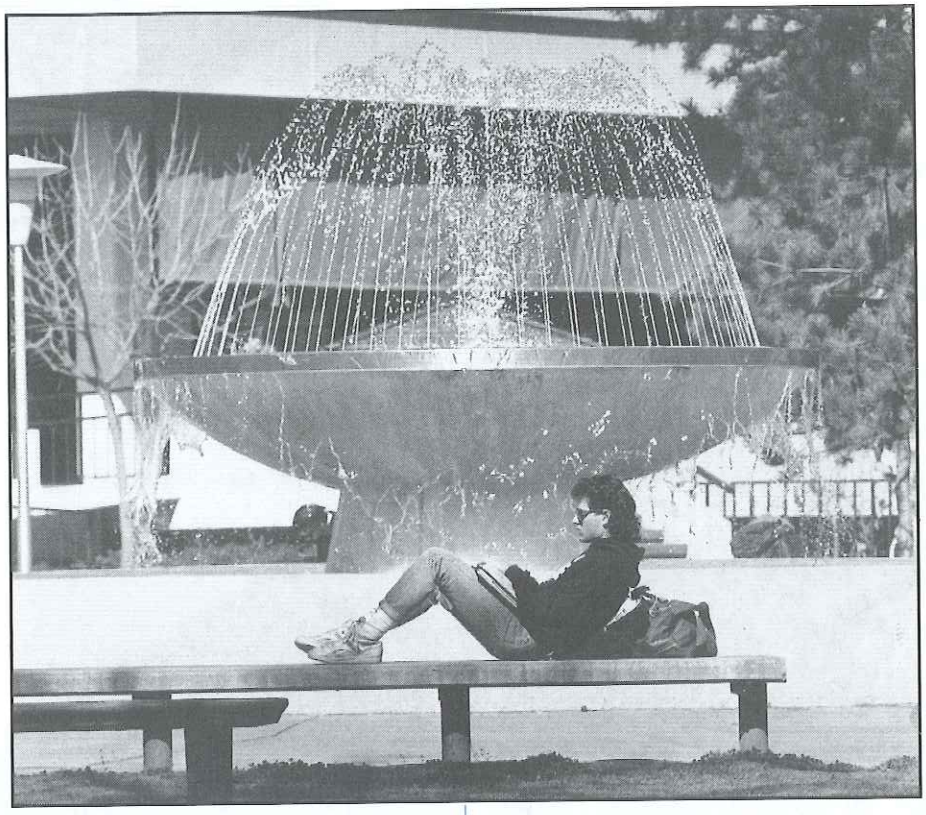
Courses taken to meet the CAPSTONE requirement of General Education may also be used to fulfill the requirements for the Russian Area Studies minor.

COURSES

Russian Language

Russ 1A-B	Elementary Russian (4-4)
Russ 2A-B	Intermediate Russian (4-4)
Russ 101	Composition, Translation, and Applied Linguistics (3)
Russ 118A-B	Twentieth Century Literature (3-3)
Russ 190	Independent Study (1-3)





Russian Literature

Russ 110	Landmarks in Russian Literature (3)
Russ 148	Masterpieces of Russian Literature (3)
Russ 190	Independent Study (1-3)

Russian and Soviet Culture

Russ 103T	Topics in Russian Culture (3)
Russ 127T	Soviet Russian Topics (3)

Russian and Soviet History

Hist 142	Tsarist Russia (3)
Hist 143A	The Soviet Union (3)

Geography of the CIS

Geog 176	Geography of the Commonwealth of Independent States — Formerly USSR (3)

Russian Politics

Pl Si 125	Russian Foreign Policy (3)
Pl Si 141	Russian Politics (3)

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 coursework from two or more departments, must be submitted for the approval of the dean, Division of Graduate Studies. Proposals that could be accommodated by an existing master's degree or option at CSU Fresno as in the use of elective courses are not approved.

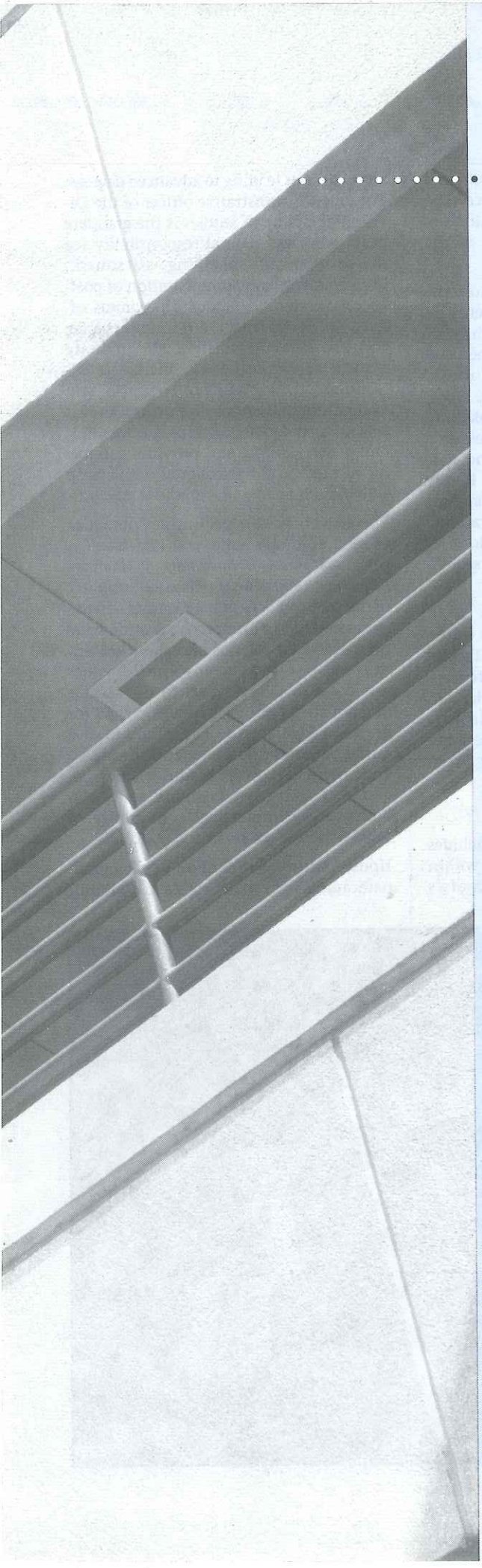
General Eligibility

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. A minimum of 30 units is required, and at least 70 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.



Division of Graduate Studies

"I never think of the future. It comes soon enough."

Albert Einstein

Graduate Studies

Division of Graduate Studies
Thomas Administration Building, Room 132
(209) 278-2448
FAX: (209) 278-4658

Vivian A. Vidoli, Dean
David A. Ross, Assistant to the Dean

Students studying for advanced degrees at CSU Fresno are a distinctive and valued part of the university. One in five students enrolled at this campus has already earned a bachelor's degree and is engaged in additional study at a more advanced level as a postbaccalaureate or graduate student. More than 4,000 such students are enrolled in studies leading to a graduate degree at either the master's or doctoral level, or to the attainment of an advanced credential, or the awarding of a certificate of advanced studies.

There are many reasons, both academic and personal, that have drawn these individuals to CSU Fresno. Some have come in recognition of the excellence of the university's graduate programs, many of which are nationally recognized by external accrediting agencies. Others have been attracted by a sterling group of graduate faculty members who take seriously the requirement to be teacher-scholars and have garnered many awards in teaching and research. Other students have come because of the availability of outstanding facilities that encourage student research and professional development. The natural laboratories of the adjacent Sierra Nevada mountain range and the geography of the large central valley of California provide exciting dimensions for those interested in environmental and ecological research. Collaborative sites jointly operated with governmental agencies and other universities exist in areas such as biomedical research, marine sciences, engineering, agriculture, business, and education. With a campus focus on both applied and theoretical research, students can be more readily assured of an opportunity to match their interests with those of the faculty members.

Successful graduate students consider the Henry Madden Library to be a powerful resource. Madden Library holdings include three-quarters of a million volumes and nearly 3,000 periodicals and major collections in areas such as music, maps, governmental documents, rare books, and curriculum materials. Library services, such as the interlibrary loan program and electronic database searches, ensure library support for students. University librarians are instrumental in assisting graduate students in acquiring information resources and archival records and searching various databases.

The university also has a history of attracting scholars from many areas of the world. These scholars may join the faculty or present special lectures, and often engage in joint research and publication efforts with CSUF faculty. Through these scholars, graduate students are exposed to a significant network of nationally recognized colleagues.

Administrative Organization

The Division of Graduate Studies includes all departments and academic units within the university that offer graduate courses and programs leading to advanced degrees. The chief administrative officer of the Division of Graduate Studies is the graduate dean, who has general responsibility for the development, planning, assessment, improvement, and administration of postbaccalaureate and graduate programs offered by the university. Within this charge, the division administers all graduate student record functions, including admissions, student academic progress, and evaluations; develops opportunities for providing student fellowships, scholarships, and assistantships; and provides support for research and professional scholarship activities for faculty and graduate students.

The university adheres to the Council of Graduate Schools statement issued in *Organization and Administration of Graduate Education,* 1990, that it is the responsibility of the Division of Graduate Studies and the graduate dean to bring an institution wide perspective to all postbaccalaureate endeavors, to serve as an advocate for issues and constituencies critical to the success of graduate programs, to develop ways for graduate education to contribute to and enhance undergraduate education, to champion support of graduate students, and to ensure that graduate education enlivens the intellectual community of scholars at the university.

Housed within the division are the graduate admissions staff, thesis consultant,

and degree evaluator, who advise both domestic and foreign students about the status of their applications for admission, requirements and regulations for completion of a graduate degree, or other special problems that may arise. Staff in the division also serve as general advisers to graduate students.

The responsibilities of the Division of Graduate Studies are complex and decentralized to include the eight academic schools of the university and the departments within these schools housing the graduate programs offered by the campus. Each program has a graduate program coordinator who is a member of the graduate faculty group for the program. The Corps of Graduate Advisers includes all of the designated graduate program coordinators who often serve as the initial point of contact for entering graduate students. Responsibility for the quality and scheduling of courses, including special topics, the preparation of course syllabi, examinations, and thesis, rests initially with faculty members in the department who constitute the graduate faculty group.

As a member of the graduate group, the major professor for a student is responsible for guiding the student in selecting appropriate courses, research problems, and professional experiences. Moreover, the major professor is important as both a colleague and mentor in facilitating the intellectual development and maturation of the student within the discipline. The chief consultative body responsible for formulating and recommending policies, standards, and procedures is the CSUF Graduate Committee. This committee is composed of eight faculty members elected by the faculty, one graduate student member, and the graduate dean.

The Graduate Student Body

The Division of Graduate Studies is proud of the diversity of its graduate student body. Graduate students come from a variety of ethnic, racial, and age groups, and represent many nationalities and countries throughout the world. They present a mosaic of personal values, beliefs, and experiences that enrich the dialogue of campus conversations. Whether these students are recent graduates of bachelor's degree programs or are returning students, they constitute a dynamic group on campus. The diversity of the student body thus presents a very special opportunity for all part-time and full-time graduate students to establish a vast, collegial network.

For those students who make up the graduate student body, success in the pursuit of a graduate degree depends upon active cooperation with their faculty advisers and instructors. Graduate students are expected to develop the ability to critically seek out and analyze facts, sift evidence, master theories and advanced techniques of professional inquiry, and demonstrate these abilities orally and in writing. Moreover, they must risk giving their informed opinions and be ready to accept criticism and advice rendered by faculty mentors and student colleagues. The pursuit of an advanced degree also requires that participants demonstrate an essential degree of independence and self-motivation in acquiring knowledge in their field of study. The rewards for those who succeed are many, as evidenced by the rapidly growing number of individuals nationwide who earn a graduate degree. Currently, more than 300,000 master's degrees and 40,000 doctoral degrees are awarded annually in the United States.

Graduate Degrees and Programs

There is great variety in the nature and scope of the graduate programs, options, concentrations, and emphases available at CSUF. Those that are officially recognized and for which the university is authorized to confer a degree are listed below. Additional areas of specialization although not officially recognized on transcripts or diplomas may be obtained through selection of appropriate elective courses.

Master's Degrees and Authorized Options

Accountancy, M.S.*
Financial Accounting • Taxation
Agricultural Business, M.S.
Agriculture, M.S.*
Agricultural Chemistry • Animal Science • Food Science and Nutrition
Art, M.A.
Biology, M.A.
Business Administration, M.B.A.
Chemistry, M.S.
Civil Engineering, M.S.
Communicative Disorders, M.A.*
Education of the Deaf • Speech Pathology
Computer Science, M.S.
Counseling, M.S.*
Marriage, Family and Child Counseling
Criminology, M.S.
Education, M.A.*
Administration and Supervision • Counseling and Student Services • Curriculum and Instruction • Early Childhood Education • Reading
English, M.A.*
Composition • Creative Writing • Literature • Nonfiction Prose
Geography, M.A.
Geology, M.S.
Health Science, M.S.*
Environmental Health Science • Health Education • Health Services Administration
History, M.A.
Home Economics, M.S.*
Home Economics Education
Industrial Technology, M.S.
International Relations, M.A.
Linguistics, M.A.
English as a Second Language • French • German
Marine Sciences, M.S.
Mass Communication, M.A.
Mathematics, M.A.
Music, M.A.*
History and Literature • Music Education • Performance • Theory and Composition
Nursing, M.S.*
Administration/Supervision • Clinical Specialization • Nursing Education • Primary Care/Nurse Practitioner
Physical Education, M.A.
Exercise Science
Physical Therapy, M.P.T.
Physics, M.S.
Plant Science, M.S.*
Crop Science • Plant Protection • Soils/Irrigation
Psychology, M.A., M.S.
Public Administration, M.P.A.
Public Health, M.P.H.
Environmental and Occupational Health • Health Administration • Health Promotion
Rehabilitation Counseling, M.S.
Social Work, M.S.W.
Spanish, M.A.
Special Education, M.A.
Special Major, M.A.
Speech, M.A.*
Speech Communication

External Degree Program

Engineering, M.S.*
Electrical • Mechanical

Doctoral Degree

Educational Leadership, Ed.D.

Certificates of Advanced Study

Biotechnology
Educational Technology
English Composition

*In these programs, a student may *not* earn a degree without also declaring an option.

Financial Aid, Fellowships and Scholarships

In addition to the information found in the Financial Aid section of this catalog, the Division of Graduate Studies publishes information on opportunities for funding graduate students. This is available to students at no cost upon request to the Division of Graduate Studies.

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 their major fields, and the special qualities necessary to the duties assigned.

Eligibility for an initial assistantship appointment requires that graduate students be admitted to at least conditional classified graduate standing. Subsequent appointments require that students demonstrate satisfactory progress toward completion of their graduate degrees.

Assistants work under the direction of a regular faculty member and assist 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. Assistants receive a stipend ranging from $1,636 to $10,680 for the academic year. For information, write to the chair of your major department.

Graduate Student Research Awards and Travel Grants

Awards of $500 are available each semester on a competitive basis to students in the form of grants for research associated with a 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, contact the *Division of Graduate Studies (209) 278-2448.*

California Graduate Equity Fellowship Program

In an effort to increase the number of students from underrepresented populations, funds are available to students in a master's degree program provided these students satisfy all required criteria. Recipients must: 1) maintain a grade point average of 3.0 or better, 2) belong to one of the following underrepresented groups: African American, 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. Additional information may be obtained from the Division of Graduate Studies.

State Graduate Fellowships

The Student Aid Commission also administers the State Graduate Fellowship Program for tuition assistance for master's and doctoral students. To apply, complete the Free Application for Federal Student Aid (FAFSA), and return it by March 1. In addition, complete and mail the Student Aid Commission GPA Verification Form to the Commission by March 1. These forms are available at the Financial Aid Office.

California Predoctoral Program for Undergraduate and Graduate Students

The objective of this program is to increase the number of California State University minority students, disabled students, and women students in academic fields where they are underrepresented and to encourage them to continue their studies through the earning of a doctorate. The program provides travel funds for qualified students to visit institutions that grant the doctorate and/or attend professional meetings with a faculty sponsor. Students in the program will be eligible to participate in a summer research program at a UC or CSU campus. Additional information is available through the Division of Graduate Studies.

University Scholarships for Graduate Students

Postbaccalaureate/graduate students may apply for CSUF scholarships through the Office of Financial Aid, Joyal 297, between November 1 and February 1 each academic year. Such an application is necessary to compete for award monies available from the university and from individual departmental resources.

In addition, CSUF also awards yearly to graduate students two Rodman Presidential Fellowships of $3,500 each and one Leon Peters Scholarship of $1,000. Rodman Fellows may obtain a second year of funding if satisfactory progress is maintained. Nominations for the Rodman and Peters awards originate from the graduate degree program directors.

Definition of Full-Time Student

Depending on the use of the term, there are several definitions of full time. *For the purpose 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 the purpose of financial aid (loans, veteran's 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 halftime are defined to be 9 to $11^1/_2$ and 6 to $8^1/_2$ "equivalent units," respectively.

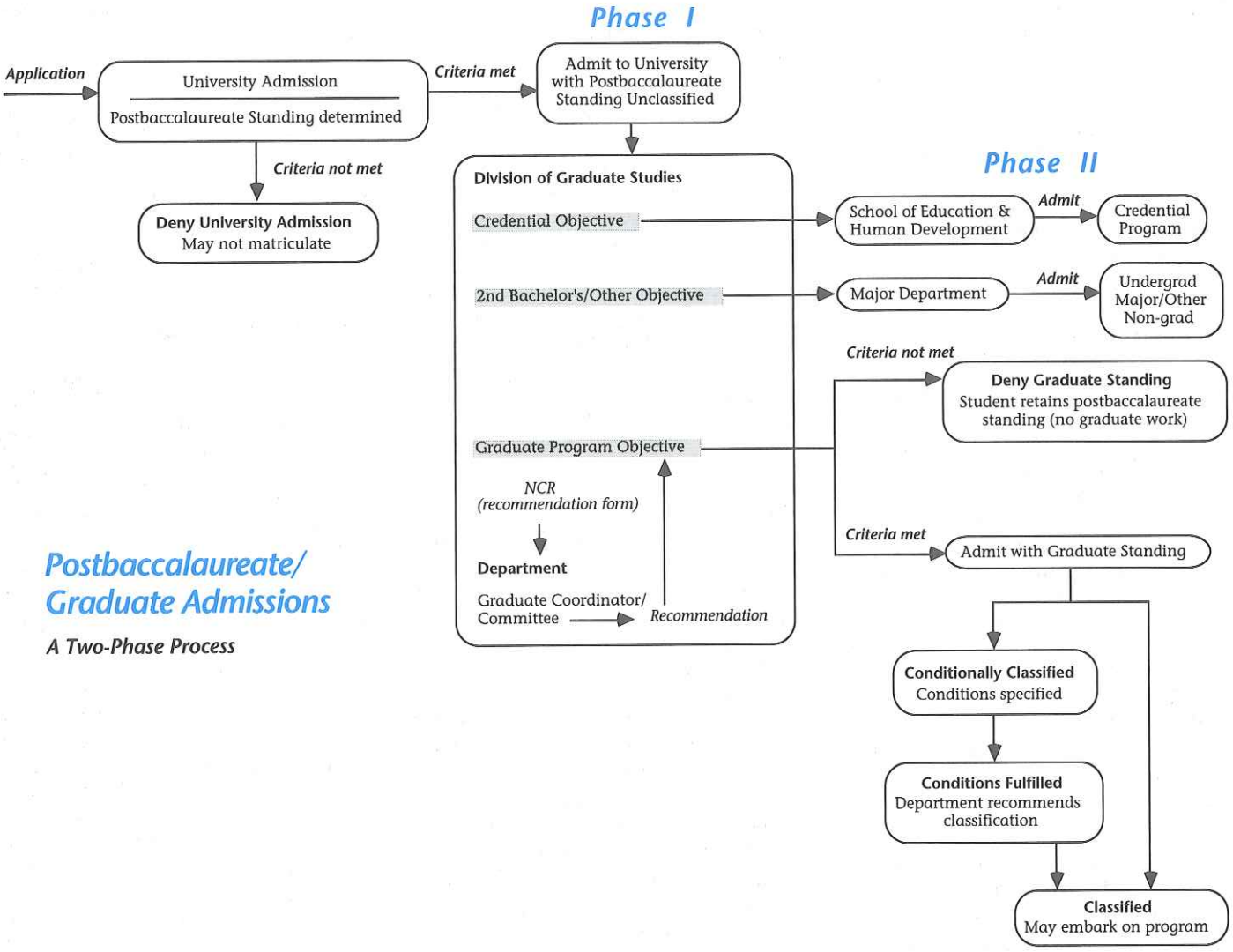
Under certain circumstances, a student enrolled in Graduate Continuation (zero units) to complete requirements for the master's degree (including Thesis 299, Project 298, and the Comprehensive Examination) may qualify for full-time status or a fraction thereof. The Graduate Office will verify the student's appropriate status in such cases through his or her major adviser upon request from the student.

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 is 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*.

Application for Graduate Admission

Students are encouraged to plan and apply for graduate admission as early as possible. Completed applications are considered as they are received and thus there are many benefits to applying early. For example, it is often the case that available financial awards such as teaching assistantships and other financial aid resources, which are limited in number, may be granted only to the early applicants. Be aware, too, that a



Postbaccalaureate/ Graduate Admissions

A Two-Phase Process

decision on an incomplete application is likely to be delayed. In many instances this occurs when supporting documents such as official transcripts, scores from standardized tests (GRE, GMAT, MAT), portfolios of writing samples, letters of recommendation, etc. are not received. Applicants are advised to ensure that these materials are requested and forwarded prior to or at the same time as the submission of their application. The Graduate Admissions Office keeps a record of all applications during the time they are being considered and may be consulted for information on the status of an application. Students apply to the university through a common admission booklet which may be obtained from the Graduate Office. Students are also referred to the admission requirements described for each graduate degree program elsewhere in this catalog.

Graduate and Postbaccalaureate Admission Requirements

Graduate Standing. Admission to the university for postbaccalaureate students who wish to pursue a specific graduate program occurs at two phases: admission to the university and admission to the Division of Graduate Studies. Acceptance by the university does not guarantee admission by the Division of Graduate Studies to a specific graduate program. Only those students who are admitted to both the university and the Division of Graduate Studies will be granted graduate standing in a master's or joint doctoral degree program. See the *Admissions diagram* above.

Postbaccalaureate Standing. Postbaccalaureate applicants may apply for a credential or certificate objective, or may wish to enroll in coursework without declaring a program objective. Postbaccalaureate students may also apply for a second baccalaureate degree. These students may be admitted to the university in postbaccalaureate standing. Depending on the objective, the CSU will consider an application for admission as follows:

General Requirements. The general requirements for admission to graduate and postbaccalaureate studies at a California State University campus are in accordance with university regulations as well as Title V, chapter 1, subchapter 3 of the *California Code of Regulations*. Specifically, a student shall: (1) have completed a four-year college course of study and hold an acceptable baccalaureate degree from an institution accredited by a regional accrediting association, or shall have completed equivalent academic preparation as determined

by appropriate campus authorities; (2) be in good academic standing at the last college or university attended; (3) have attained a grade point average of at least 2.5 (A=4.0) in the last 60 semester (90 quarter) units attempted; and (4) satisfactorily meet the professional, personal, scholastic, and other standards for graduate study, including qualifying examinations, as appropriate campus authorities may prescribe. In unusual circumstances, a campus may make exceptions to these criteria.

All postbaccalaureate students who meet the general admission requirements indicated above are initially admitted as follows:

Postbaccalaureate Unclassified Standing. To enroll in courses for professional or personal growth, you must be admitted as a postbaccalaureate unclassified student. By meeting the general requirements, you are eligible for admission as a postbaccalaureate unclassified, nondegree-seeking student. Some departments may restrict enrollment of unclassified students due to heavy enrollment pressure. Admission in this status does not constitute admission to, or assurance of, consideration for admission to any other graduate degree or credential programs.

Admission to postbaccalaureate classified standing in credential programs is the responsibility of the School of Education and Human Development.

Students who meet the admissions requirements for credential or certificate programs may be granted admission as follows:

Postbaccalaureate Classified Standing. Students in this category have satisfied additional professional, personal, scholastic, and other standards — including qualifying examinations — prescribed by the campus.

Admission to Postbaccalaureate Classified Standing does not constitute admission to or consideration for admission to a graduate degree program or another credential or certificate program.

Admission to Graduate Degree Programs with Graduate Standing

Admission to graduate standing is the responsibility of the Division of Graduate Studies. Students admitted to graduate standing have met the general requirements for university admission. Students have also met the additional requirements and standards of the Division of Graduate Studies for admission to a graduate degree program, including academic preparation, evidence of scholarly and professional ability (standardized test scores and letters of recommendation), and other requirements as described for each program in the appropriate section of this catalog.

All applicants to a CSUF master's degree program are required to submit appropriate admission test scores with the university Application to Graduate/Postbaccalaureate Studies. Admission will require submission of scores on the Graduate Record Examination (GRE) General Tests, or for accountancy and business students, the Graduate Management Admission Test (GMAT). Applicants for admission to the agricultural business and MPA programs may submit either GRE or GMAT scores. For application information to the GRE, visit the Graduate Office in Thomas Administration 132. GMAT information is available in the Sid Craig School of Business and Administrative Sciences Graduate Office in Peters Building 183.

Applicants to the joint doctoral program in Educational Leadership (Ed.D.) are required to submit official scores of the Graduate Record Examination (GRE) or the Miller Analogies Test (MAT). For other requirements, contact the CSUF/UCD Joint Doctoral Program.

All applicants granted graduate standing by the Division of Graduate Studies are admitted to a graduate program as follows:

Graduate Conditionally Classified Standing. Students may be admitted to a graduate degree program in this category if, in the opinion of the appropriate campus authority, the student can remedy deficiencies by additional preparation.

Note: Students who have been granted conditionally classified 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 maximum 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 20 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.

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 coursework undertaken for use toward the master's degree.

Graduate Classified Standing. This category is granted to those students who fully meet all admission requirements of the Division of Graduate Studies. It enables the student to pursue a graduate degree and fulfill all of the professional, personal, scholastic, and other standards — including qualifying examinations — prescribed by the campus.

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*.)

Change of Major

On occasion, postbaccalaureate/graduate students may wish to change their major or degree objective. These students must meet the admissions requirements of the new program. Students wishing to change their major/objective are required to contact the Division of Graduate Studies and apply for the change formally.

Second Master's Degree

Students planning to engage in study toward a second master's degree must obtain prior approval from the graduate dean. Students may not earn a second master's degree in the same field. Students may not complete two degrees in the same semester.

Certificate of Advanced Study

A Certificate of Advanced Study may be earned in a limited number of approved, nondegree programs. Such programs provide useful coursework and professional experiences that emphasize the acquisition of advanced technical skills of a practical, applied nature. For a current list of such programs, consult the Division of Graduate Studies, 278-2448. Applicants to a Certificate of Advanced Study program must meet the specific admission requirements of the individual program and the university. These include admission to postbaccalaureate standing and the submission of relevant test scores. With prior approval, those pursuing study toward a master's degree may also pursue study toward a Certificate of Advanced Study. Double-counting of units on the certificate and on the graduate program, though limited, is possible. Those whose sole objective is the

earning of the Certificate of Advanced Study are ineligible to receive graduate assistantships, fellowships, and other awards designed for those pursuing a graduate degree. Once requirements for the award of the Certificate of Advanced Study are completed, the student files an application for this purpose with the Division of Graduate Studies.

Second Bachelor's Degree

Postbaccalaureate students interested in pursuing a second bachelor's degree or a second undergraduate major should read the relevant portion of the university catalog (*Second Baccalaureate* and/or *Second Major*) and contact the appropriate academic department or the Division of Graduate Studies for advice.

Unvalidated Standing

A graduate of a nonaccredited college may be granted admission with *unvalidated unclassified postbaccalaureate 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 postbaccalaureate 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*.) When a student with unvalidated postbaccalaureate standing has met the above requirements, it is his or her responsibility to request a new statement of standing from the Graduate Admissions Office.

International Student Admissions

The Division of Graduate Studies seeks to bring students from all parts of the world to the campus. Since English is the language of instruction at the university, students should be prepared to write their theses, examinations, and seminar papers in English. Applicants whose native languages are not English must have acquired competence in the English language prior to enrolling in a graduate program or prerequisite courses in order to avoid any delay or difficulty in pursuing their studies.

TOEFL Requirement

All graduate and postbaccalaureate applicants, regardless of citizenship, whose native languages are other than English, must demonstrate competence in English. Those applicants must receive a minimum score of 550 on the Test of English as a Foreign Language (TOEFL). Some graduate programs may require a higher score. Applicants to the English program must attain a score of 600.

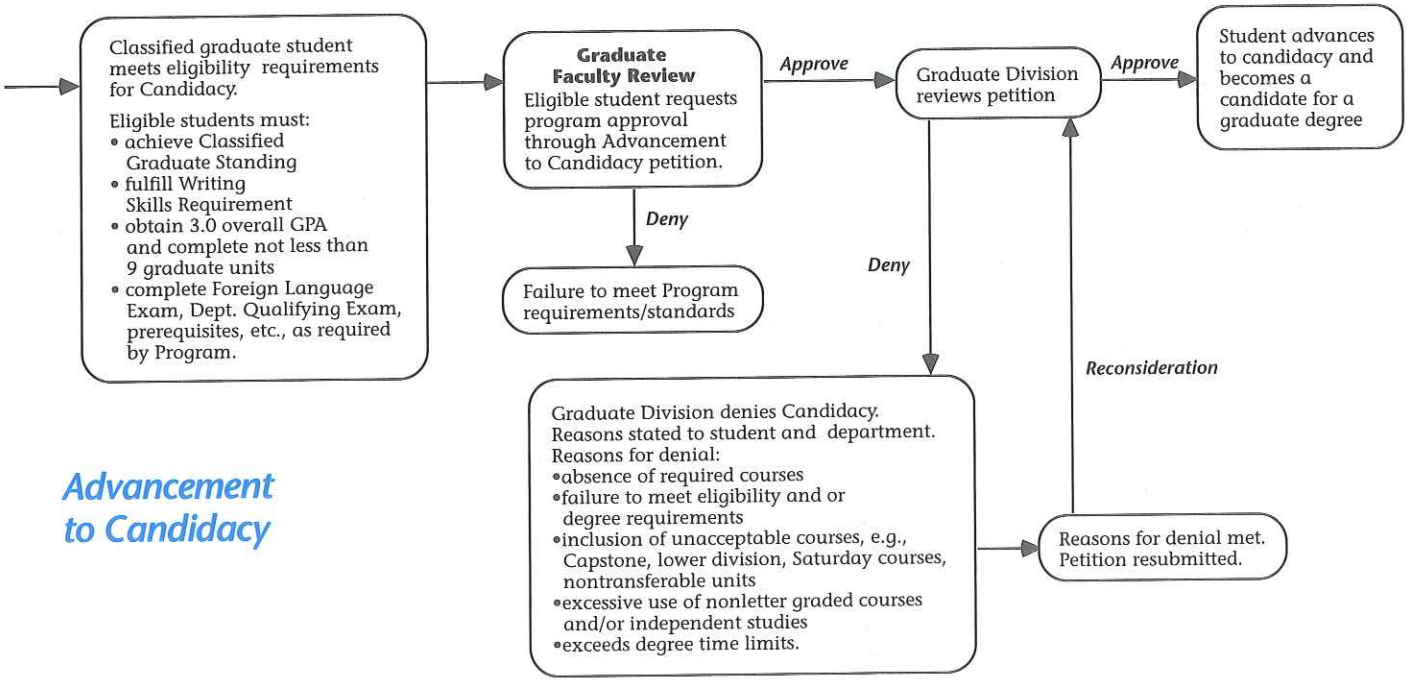
It is highly recommended that TOEFL scores, Graduate Record Examination Aptitude Test scores, application, and official academic documents reach the university Admissions Office at least six months before the semester for which admission is desired. Applicants to the Accountancy and MBA programs must submit Graduate Management Admissions Test scores; applicants to the MPA and Agricultural Business programs may submit either GMAT or GRE 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 Services Office; California State University, Fresno; 1700 E. Bullard, Suite 101; Fresno, CA 93740, U.S.A.**

Requests for applications for international postbaccalaureate/graduate admission should be directed to **International Graduate Admissions; California State University, Fresno; 5241 N. Maple Ave.; Fresno, CA 93740-0051, U.S.A.**

During the first semester at CSU Fresno, foreign graduate students whose native language is not English may be required to enroll in special courses in English to help improve writing skills and to provide the greatest possibility of success in graduate studies.

Advancement to Candidacy



Advancement to Candidacy

Eligibility for Advancement. Classified graduate standing gives a student permission to work toward qualifying for candidacy. See *Advancement to Candidacy diagram* below. 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. Eligibility requirements for advancement to candidacy include the following:

1. Classified Graduate Standing. A student should be classified by the semester in which a maximum of 10 units to be used toward the master's degree is completed. Not more than 10 units (including transfer and postbaccalaureate 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 Subject Test or departmental qualifying examination. The Graduate Record Examination Subject Test in the major field is required of students working toward the Master of Arts degree in biology, international relations (government), psychology, and the Master of Science degrees in geology, marine sciences, and physics. A departmental qualifying examination is required in agricultural business, agriculture (agricultural chemistry and food science and nutrition) art, criminology, geography, mass communication, mathematics, nursing, physical education, physics, plant science, rehabilitation counseling, and speech.
4. A minimum grade point average of 3.0 (both overall program and at CSU Fresno) on all upper-division and graduate coursework from the date of embarking on the first course of the proposed master's degree program. (See also, *Grade Requirements*.) Those enrolling in coursework not related to the graduate degree are encouraged to request *CR/NC* grading.
5. Satisfactory completion of the foreign language requirement for those programs having such a requirement. (See *Foreign Language Requirement*.)
6. Departmental recommendation for advancement to candidacy on a petition form available from the Division of Graduate Studies. 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 or her adviser, lists the coherent set of courses which, when approved, will constitute his or her degree program.
7. Completion in graduate standing at CSUF 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, 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 cannot be advanced to candidacy and 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*.) 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 the program adviser. The written departmental qualifying examination may be used to meet this requirement.

Foreign Language Requirement

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 Languages and Literatures 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.

Application for Advancement to Candidacy

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 within 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 university Graduate Committee 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 de-

gree. 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 CSU Fresno 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. The off-campus institution must also have listed the units as postbaccalaureate graduate units on the student's transcript. Credit at CSU Fresno will be granted if it is judged by appropriate university authorities to be particularly relevant to the individual student's program. The student must present appropriate documentation, including official transcripts of work completed and xerographic copies from the catalog of the institution where the transfer work was taken, as follows: the relevant course description(s), evidence that the course(s) may be used toward a degree at that institution, the course numbering and grading systems. Extension and concurrent credit are not regularly used on master's degree programs. Concurrent (open university) enrollment is restricted to nondegree-seeking professionals and may not be used to bypass 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 or her program. If approved, a maximum of 9 transfer (including CSUF 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 Committee.
   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. Neither CAPSTONE nor undergraduate writing "W" courses may be used in fulfillment of the program requirements of the master's degree.
   e. Credit for coursework earned through ***CR/NC*** may not be applied toward the master's degree unless the course was designated as available for ***CR/NC*** only in the *Schedule of Courses* when taken. A maximum of 6 units of ***CR/NC*** only courses may be applied to a 30-unit master's degree program and a maximum of 12 units of ***CR/NC*** only courses may be applied to a 60-unit program. Exception: M.S.W. students may use 16 units of such credit.
   f. With approval of the departmental graduate adviser, postbaccalaureate/graduate 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. However, the amount of postbaccalaureate credit used toward the master's degree may not exceed one-third of the student's entire approved program. At CSU Fresno, students must file a formal request at the Admissions/Records Office, Joyal Building, to post extension, including summer session, coursework on the regular session transcripts.
   g. Courses may not be included on the advancement to candidacy form if they do not fall within the 5-year limit. See *Postbaccalaureate Credit.*
   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. Substitutions for regular departmental requirements must be accompanied by 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 or 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 university Graduate Committee, it may be changed only on the written request of the student and his or her department or school adviser and with the approval of the dean, Division of Graduate Studies. Forms for requesting such program adjustment are available in the Office of the Division of Graduate Studies.

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 courses 298 or 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 or her approved program
   c. completed at least 9 units of his or her approved program on the Fresno campus
   d. completed any course in research techniques required by his or her 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 or her department
   f. secured approval of his or her thesis plan from the division or department graduate committee and filed an official thesis committee assignment form with the Division of Graduate Studies.
2. Enrollment in thesis units 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 or her 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. Parallel rules apply to project enrollment.
3. A student whose thesis work is planned to extend over more than the semester in which he or she first enrolls may select one of the following options (with the approval of his or her graduate adviser): (a) register in 299 each term the student 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*.) Parallel rules apply to project students.
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 final 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 thesis submission deadline established by the dean of the Division of Graduate Studies. 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 final 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 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 the *Guidelines for Thesis Preparation*; copies are available in the Kennel Bookstore.
7. The final publication copy of the thesis (an original for microfilming and two 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, 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.
8. Doctoral students should obtain dissertation guidelines from the degree program office.

Thesis or Project Research Involving Human Subjects and Animal Subjects

Students conducting thesis research involving human subjects should not begin use of human subjects until written approval from the departmental Human Subjects Committee and, where review demands, the University Committee on Protection of Human Subjects, has been received. Guidelines and forms for protocols can be obtained from the departmental office. Students should allow at least two weeks for a required CPHS review.

Students planning to conduct research involving live animals housed on campus must receive approval of the research from the Animal Care and Use Committee. Forms may be obtained from the university Grants and Research Office.

Continuous Enrollment

It is the policy of the Division of Graduate Studies 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 enrolled in any regular session 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 grade was given should apply for a planned educational leave of absence. The continuous enrollment policy applies during three terms: fall, spring, and summer. Students must accomplish such enrollment prior to the end of the second week of the term. (See also *Other Graduate Curricula — Graduate Studies and Planned Educational Leave of Absence.*)

Time Limitations and Validation

Exclusive of prerequisite coursework, 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 about provisions for military extensions. Outdated coursework 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*. The following provisions also apply to master's degree programs.

A student admitted to a master's degree program in conditionally 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 coursework 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 or her approved program.

To be eligible for the granting of the master's degree, a student must have maintained a ***B*** average on his or her complete approved program as well as on all courses after and including the first semester's work on the 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 coursework taken from the first semester of the approved master's degree program. A minimum GPA 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 also to the university Graduate Committee. Grade protests must be submitted to the Student Academic Petitions Committee through the director of advising services according to university policy. Information concerning grade protest procedures is available in the Office of the Dean of Student Affairs.

Request That Master's Degree Be Granted

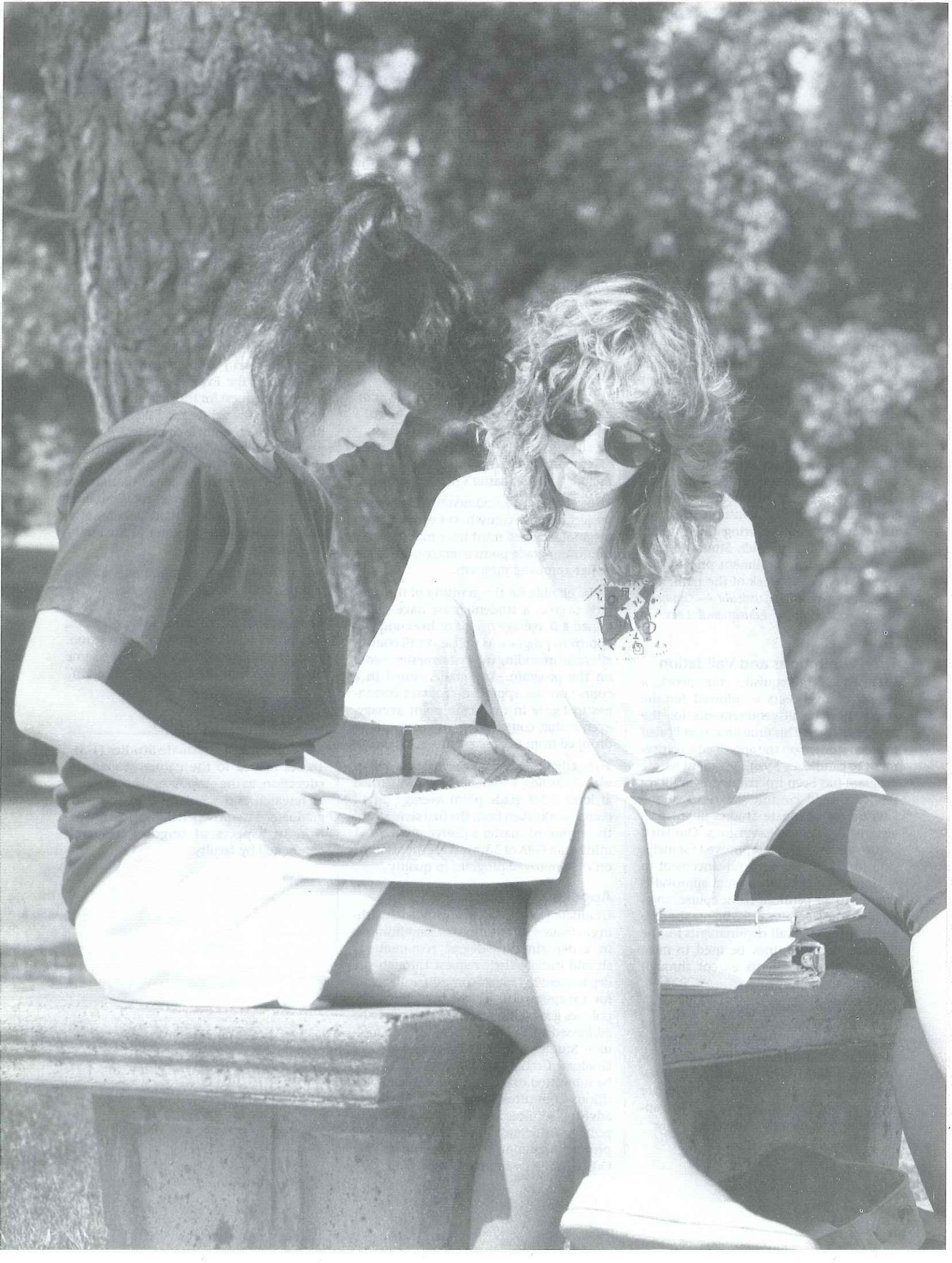
A request that the master's degree be granted (which includes the graduation fee payable in the Cashier's Office) must be filed in the first two weeks of the semester in which the work is to be completed In addition, applicants must be enrolled (See *Continuous Enrollment*). During the summer, the request should be filed before the end of the second week of the first session. (See *Academic Calendar* and *Fees and Expenses* in this catalog, and the *Schedule of Courses*.) Application forms are available in the Evaluations Office. Prior to filing a request for the master's degree to be granted, the student should check with the graduate committee chair 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 will be awarded approximately six months after the end of the semester or final summer session.

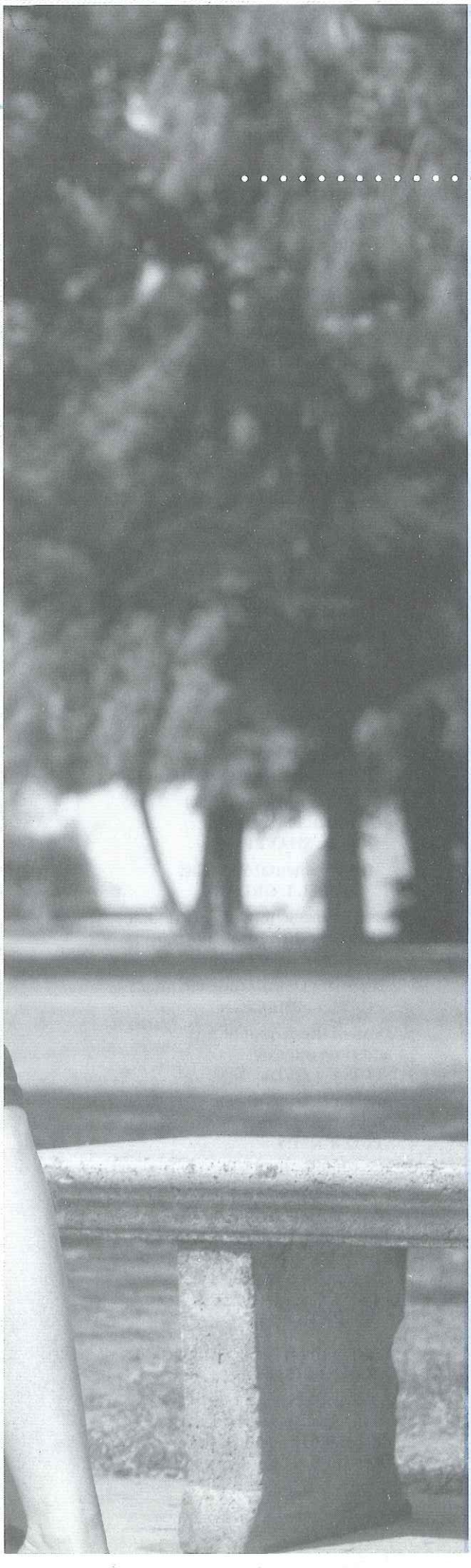
Failure to complete requirements for the degree during the semester (or summer) of the application necessitates the filing of a new application, including a reapplication fee, for the semester of actual completion. Such reapplication is subject to the same time schedule as the original application.

COURSE

Graduate Studies (G S)

300T. Topics in Graduate Studies (1-3)
Topics related to the nature of graduate education, to the purpose and background of research and scholarly activity in the graduate enterprise, including participation in aspects of ongoing research conducted by faculty.





University Administration and Policies

"Don't think for a moment that you've got it made with a college degree and can jive your way up the career ladder. You've got to work your way up — hard and continuously."

Marian Wright Edelman

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.

Donald H. Bruegman
Sidney B. Cox
Rutherford B. Gaston, Chair
Gary Pruitt
Lawrence Jones
Sister Ruth Marie Nickerson, Vice Chair
Armando O. Rodriguez
Angie Rios
Rose Shamlin
Gerald L. Tahajian
Ernest E. Velasquez
John D. Welty
Daniel K. Whitehurst

Administration and Administrative Staff

President
JOHN D. WELTY

Assistant to the President
LEA YBARRA

Executive Assistant/
Director, Human Resources
ARTHUR V. N. WINT

Director of Personnel Services
NITA R. KOBE

Payroll Officer
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Director of Budget and Internal Audit
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Director of Athletics
GARY A. CUNNINGHAM

Senior Associate Athletic Director
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Associate Athletic Director
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Communications
SCOTT L. JOHNSON

Assistant Athletic Director/
Academic Affairs
ROBERT G. KNUDSEN

Assistant Athletic Director/
Business Affairs
LES SNYDER

Assistant Athletic Director/Marketing
DEENA JOHNSON

Provost and Vice President for Academic Affairs
ALEXANDER GONZALEZ

Associate Provost for Academic
Planning and Student Services
To be appointed

Associate Vice President/
Dean of Undergraduate Studies
J. LEONARD SALAZAR

Associate Vice President for
Academic Affairs — Academic Personnel
To be appointed

Acting Director
of Institutional Research
JEANNINE M. S. RAYMOND

Associate Provost for
Academic Resources
HELEN J. GIGLIOTTI

Director of Admissions/
Records/Evaluations
RICHARD L. BACKER

Admissions Officer
CARROLL C. COTTEN

Registrar
MINERVA ESCOBEDO

Coordinator, Advising and
Testing Services
J. RICHARD ARNDT

Coordinator, Orientation
and Transition Services
PEG HAYWARD

Coordinator of Veterans Services
CLAUDIA MORRISON

Director of Computing,
Communications, and Media Services
JAMES R. MORRIS

Director of Media Services
RUSS A. HART

Director of Technical Services
GAIL WYNNE

Director of Customer Services,
PPX Planning
JAMES E. FORDEN

Director of Administrative Services
RIK H. CLAUSEN

Director of the Developmental
Learning Resource Center
To be appointed

Director of Financial Aid
JOSEPH W. HEUSTON JR.

Director of University
Grants and Research
JON D. SHAVER

Developmental Specialist
DANIEL J. GRIFFIN

Dean of the School of Agricultural
Sciences and Technology
DANIEL P. BARTELL

Associate Dean, Academic Affairs
CARL L. PHERSON

Dean of the School of Arts
and Humanities
LUIS F. COSTA

Interim Dean of the Sid Craig School of
Business and Administrative Sciences
PETER SIMIS

Assistant to the Dean
CHARLOTTE J. HIATT

Dean of the School of Education
and Human Development and
Director of Teacher Education
BARBARA G. BURCH

Associate Dean
ROBERT H. MONKE

Dean of the School of Engineering
ELDEN K. SHAW

Dean of the School of
Health and Social Work
RICHARD D. FORD

Dean of the School of Natural Sciences
KIN-PING WONG

Associate Dean
STANLEY M. ZIEGLER

Dean of the School of Social Sciences
PETER J. KLASSEN

Dean of Library Services
MICHAEL GORMAN

Associate University Librarian for Planning and Development
STEPHANIE HILLMAN

Associate University Librarian for Administration
SANDRA L. GOTHE

Acquisitions/Periodicals Department
RUTH A. KALLENBERG

Catalogue Department
VINCENT J. SMITH JR.

Circulation Services
PATRICIA I. LAVIGNA

Collection Development
A. GERALD GOTHE

Curriculum and Juvenile Collections
BETTY JO PETERSON

Government Documents Department
THOMAS J. EBERT

Library Automation Coordinator
HYE OK PARK

Map Library
SUSANNE HAFFNER

Multicultural Center
CHRISTINA E. CARTER

Music Library
JANET BOCHIN

Reference Department
BERNICE LACKS

Special Collections Department
RONALD J. MAHONEY

Dean of the Division of Graduate Studies
VIVIAN A. VIDOLI

Assistant to the Dean
DAVID A. ROSS

Joint Doctoral Program Coordinator
ROSEMARY PAPALEWIS

Dean of the Division of Extended Education
AUDREY S. ANDERSO

Director of International Programs
PETER J. KLASSEN

Director of International Student Services and Programs
CAROL B. MUNSHOWER

Armenian Studies Program Coordinator
DICKRAN K. KOUYMJIAN

Dean of Student Affairs
WILLIAM H. CORCORAN

Associate Dean
MANUEL PEREZ

Director of Career Development and Employment Services
RAYMOND CASTILLO

Assistant Director
CAROLINE WILLIAMS

Director of Educational Opportunity Program and Retention Services
ROBERT P. HERNANDEZ

Assistant Director
MAXINE MCDONALD

Coordinator of University Migrant Services/Director, CAMP
RAUL MORENO

Director of Housing
JOHN C. WETZEL

Assistant Director
CHARLES C. MILLER

Director, HUSE/McNair Program
RAYMOND GUTIERREZ

Director of Special Programs
ARLENE L. BIRELINE

Coordinator, Reentry Programs
ANGELA CISNEROS

Coordinator, Disabled Student Services
WELDON PERCY

Director of Student Health and Counseling Services
ROBERT M. PAULL, M.D.

Director of Student Life and Development
THOMAS P. BOYLE

Director of University Outreach Services
FRANCES PEÑA

Director of Upward Bound
PERRY ANGLE

Vice President for Administration
To be appointed

Accounting Officer
ROBERT P. VEGA

Director of Facilities Planning
SUSAN M. ALDRICH

Acting Director of Plant Operations
DAVID HERNANDEZ

Director of Procurement and Administrative Services
JAMES P. VAN AUKEN

Environmental Health and Safety Officer
DAVID TERSTEGEN

University Police Chief
WILLIAM A. ANDERSON

Vice President for University Advancement
LYNN D. HEMINK

Director of Public Information
JAMES B. MILLER

Director of Development
To be appointed

Executive Director of the Alumni Association
LINDA VAN KIRK

Director of Auxiliary Services
To be appointed

California State University, Fresno Foundation
The Agricultural Foundation of California State University, Fresno
California State University, Fresno Association Inc.

Associate General Manager, CSUF Foundation
JON D. SHAVER

University Student Union, Acting Director
THOMAS P. BOYLE

Controller
PETER PRESTEGARD

Director of Food Services
JIM PRINCE

Bookstore Manager
LAWRENCE F. TAYLOR

California State University, Fresno Athletic Corporation
Chair, Board of Directors
LYNN D. HEMINK

Department Chairs and Program Coordinators

School of Agricultural Sciences and Technology

Agricultural Economics
DENNIS L. NEF

Animal Sciences and Agricultural Education
ANNE V. RODIEK

Child, Family, and Consumer Sciences
NINA J. DILBECK

Enology, Food Science, and Nutrition
N. JOANNE CAID

Industrial Technology
KENNETH D. MOSHIER

Plant Science and Mechanized Agriculture
SAYED A. BADR

School of Arts and Humanities

Art
RICHARD W. DELANEY

English
CRAIG BERNTHAL

Foreign Languages and Literatures
MAURICE C. GENDRON

Linguistics
GERALD R. McMENAMIN

Mass Communication and Journalism
R. C. ADAMS

Music
JACK R. FORTNER

Philosophy
ANN E. BERLINER

Speech Communication
JOHN A. CAGLE

Theatre Arts
RONALD D. JOHNSON

Sid Craig School of Business and Administrative Sciences

Accountancy
DENNIS M. BAKER

Aerospace Studies
LTC DARREL W. HAHN

Finance and Business Law
JAMES M. HIGHSMITH

Graduate Business Program Director
DONALD N. STENGEL

Information Systems and Decision Sciences (Acting)
KELLY J. BLACK

Management
GERALD L. JONES

Marketing and Logistics
GERALD O. BRYAN

Military Science
LTC DAVID BENTLEY

School of Education and Human Development

Interdepartmental Programs:

Center for Educational Research and Services Program Coordinator
SUSAN M. TRACZ

Curriculum and Instruction M.A. Program Coordinator
THERESA R. PEREZ

Graduate Programs Coordinator
ROBERT H. MONKE

International Education Programs Coordinator
BERTA GONZALEZ

Liberal Studies Program Coordinator
JACQUES S. BENNINGA

Multiple Subject Program Coordinator (Interim)
BERTA GONZALEZ

Single Subject Program Coordinator
JOLYNE S. DAUGHTRY

Victim Services Certificate Program Coordinator
JOAN HENDERSON

Counseling and Special Education
H. DAN SMITH

Counselor Education Program Coordinator
JUAN C. GARCIA

Rehabilitation Counseling Coordinator
ANITA LEAL-IDROGO

Special Education Program Coordinator
JANICE A. CHAVEZ

Curriculum, Teaching, and Educational Technology
THERESA R. PEREZ

Educational Research, Administration, and Foundations
DAVID E. TANNER

Education Administration Program Coordinator
DONALD G. COLEMAN

Literacy and Early Education
JACQUES S. BENNINGA

Bilingual/Cross-Cultural Education Program Coordinator
FINIAN McGINN

Early Childhood Education Program Coordinator
DORIS O. SMITH

Language Development Specialist Program Coordinator
ROBERT H. PRITCHARD

Reading Recovery Project Director
JUDITH C. NEAL

Reading Program Coordinator
BONNIE L. DUTTON

School of Engineering

Civil and Surveying Engineering
KARL E. LONGLEY

Computer Science
WALTER READ

Electrical and Computer Engineering
MEDHAT A. H. IBRAHIM

Mechanical and Industrial Engineering
WALTER V. LOSCUTOFF

School of Health and Social Work

Communicative Disorders
KENNETH G. SHIPLEY

Health Science
RONALD C. SCHULTZ

Nursing (Interim)
MARIAMMA K. MATHAI

Physical Education and Human Performance
JOANNE W. SCHROLL

Physical Therapy
DARLENE L. STEWART

Recreation Administration and Leisure Studies Program Coordinator
MICHAEL B. HOFFMAN

Social Work Education
BENJAMIN CUELLAR

School of Natural Sciences

Biology
RONALD L. EVANS

Chemistry
DAVID L. ZELLMER

Geology
ROBERT D. MERRILL

Mathematics
RUDOLPH M. NAJAR

Physics
BRANDT KEHOE

Psychology
ROBERT V. LEVINE

School of Social Sciences

Anthropology
MARY A. LUDWIG

Chicano and Latin American Studies
MANUEL FIGUEROA

Criminology
MAX D. FUTRELL

Economics
DON R. LEET

Ethnic Studies Program Coordinator
LILY B. SMALL

Geography
LAWRENCE E. ESTAVILLE JR.

City and Regional Planning Program Coordinator
WAYNE V. MERCHEN

History
JOHN C. KENDALL

Political Science
PHILIP F. BEACH

Sociology
ELIZABETH N. NELSON

Women's Studies Program Coordinator (Acting)
MARCIA E. BEDARD

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 is 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 prior written objection from the student specifying information that the student requests not to 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 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. Disclosure may also be made to other persons or organizations under certain conditions (e.g., as part of accreditation or program evaluation; in response to a court order or subpoena; in connection with financial aid; to other institutions to which the student is transferring).

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 Code of Regulations*, 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

CSU 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. This is not an admissions requirement but shall be required of students at the beginning of their second term of enrollment. Proof of measles and rubella immunizations shall also be required for certain groups of enrolled students who have increased exposure to these diseases. 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 fieldwork involving preschool-age children, school-age children, or taking place in a hospital or health care setting. The Student Health Center provides immunizations without cost to those students unable to obtain acceptable proof of immunizations.

Nondiscrimination Policy

California State University, Fresno is committed to a program of equal opportunity for all, regardless of race, color, national origin, sex, religion or disability. Concerns in CSU Fresno's Policy Statement and the Affirmative Action Program include equal opportunity in employment, admissions, recruitment, financial aid, placement counseling, curricula, and housing for students. These concerns are recognized by the university as basic to our equal opportunity goals.

Persons who are aggrieved may pursue a complaint informally or formally under the University Anti-discrimination Policy and Complaint Procedures. Inquiries should be directed to Arthur V. N. Wint, executive assistant to the president/director of human resources, Upstairs Cafeteria, Room 201, phone (209) 278-2364.

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 CSU Fresno. Such programs and activities include admission of students and employment.

Inquiries concerning the application of Title IX to programs and activities of CSU Fresno may be referred to Arthur V. N. Wint, executive assistant to the president/director of human resources, Upstairs Cafeteria, Room 201, phone (209) 278-2364; William H. Corcoran, dean of student affairs, Joyal Administration Building, Room 224, phone (209) 278-2541; Terry Noble, personnel director, Auxiliary Services, 2771 E. Shaw, phone (209) 278-2574; or the Office for Civil Rights, Region IX, Old Federal Building, 50 United Nations Plaza, Room 239, San Francisco, CA 94102, phone (415) 556-7000.

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 CSU 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 Carol Munshower, the individual designated by the university president to review student complaints. She 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 Carol Munshower, Joyal Administration Building, Room 211, phone (209) 278-2782.

Disabled. The California State University does not discriminate on the basis of disability in admission or access to, or treatment or employment in, its programs and activities. The American Disabilities Act of 1990 and Section 504 of the Rehabilitation Act of 1973, as amended, and the regulations adopted thereunder prohibit such discrimination. Arthur V. N. Wint has been designated to coordinate the efforts of CSU Fresno to comply with the acts and their implementing regulations. Inquiries concerning compliance may be addressed to Arthur V. N. Wint, executive assistant to the president/director of human resources, Upstairs Cafeteria, Room 201, phone (209) 278-2364.

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.

Age, Marital Status, Religion, or Sexual Preference. The California State University does not discriminate on the basis of age, marital status, religion, or sexual preference.

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 Code of Regulations*. These sections are:

Article 1.1, Title 5,
California Code of Regulations
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 nonaccidental 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, nonacademic, 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: Interim Suspension; Campus Emergency. 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.

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 ensure 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.

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.

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 or she 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.

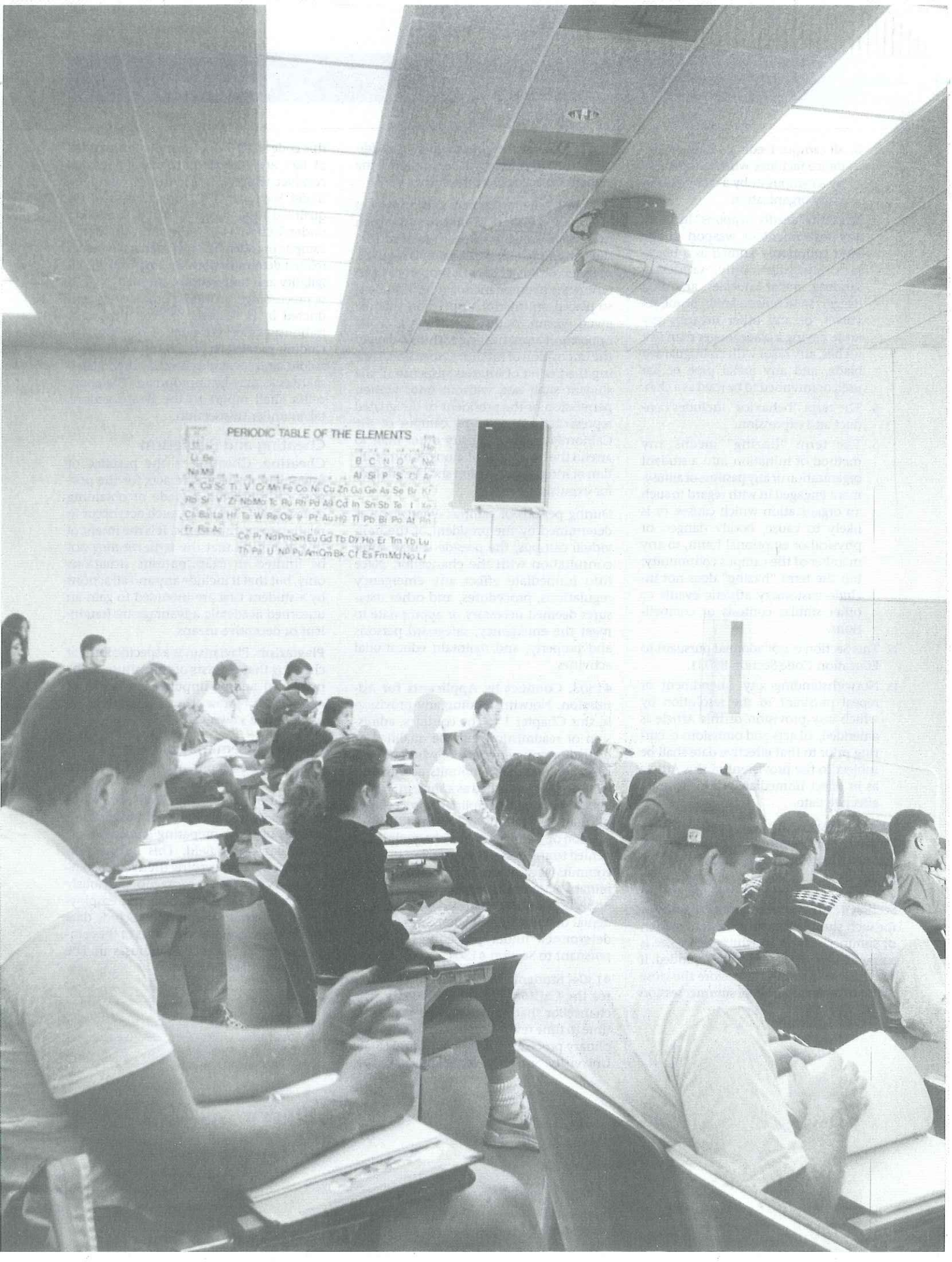
Cheating and Plagiarism

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 Services 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.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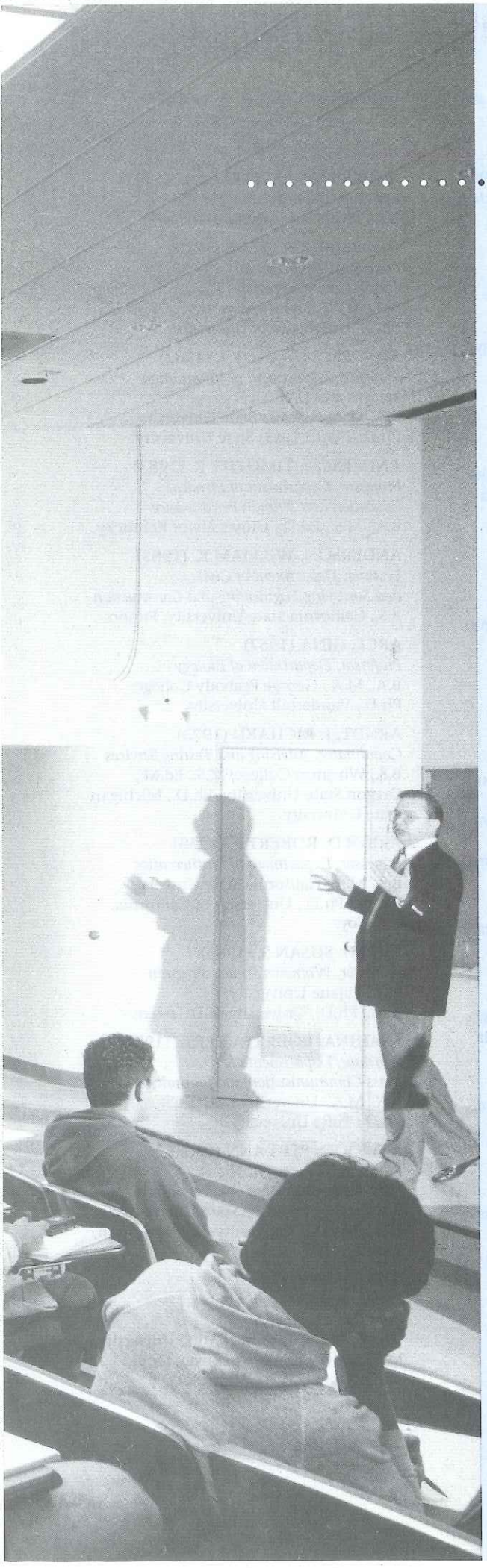

Faculty and Administration

"Those having torches will pass them on to others."

Plato

Faculty and Administration 1992-93

***Note:** Numbers in parentheses indicate year of appointment at California State University, Fresno.*

WELTY, JOHN D., President (1991)
Professor, Department of Counseling and Special Education
B.S., Western Illinois State University; M.A., Michigan State University; Ed.D., Indiana University.

ABHOLD, RAYMOND H. (1989)
Professor, Department of Biology
B.S., University of Washington; M.S., Ph.D., Rutgers University, New Brunswick.

ABRAMSON, SHAREEN (1981)
Professor, Department of Literacy and Early Education
B.A., University of California, Los Angeles; M.A., Antioch University; Ph.D., Vanderbilt University.

ADAMS, CORA M. (1986)
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)
Professor, Department of Speech Communication
B.S., M.A., University of Wyoming; Ph.D., University of Utah.

ADAMS, PAUL D. (1987)
Professor, Department of Mass Communication and Journalism
B.A., University of Oklahoma, Norman; M.A., Ph.D., University of Texas at Austin.

ADAMS, R. C. (1965)
Professor, Chair, Department of Mass Communication and Journalism
B.A., Idaho State College; M.A., Ph.D., University of Oregon.

ADRIAN, MERLE S. (1973)
Professor, Department of Industrial Technology
B.S., M.A., California State University, Fresno; Ed.D., University of Southern California.

AGUILAR-GAXIOLA, SERGIO (1990)
Associate Professor, Department of Psychology
M.D., Autonomous University of Guadalajara (Mexico); M.S., Ph.D., Vanderbilt University.

ALAMELDIN, TAREK K. (1990)
Associate Professor, Department of Computer Science
B.S., Ain Shams University, Cairo (Egypt); M.S., Columbia University; Ph.D., University of Pennsylvania.

ALDREDGE, JAMES E. (1990)
Associate Professor, Department of Social Work Education
B.S., M.P.A., California State University, Fresno; Ph.D., University of Southern California.

ALDRICH, KENNETH R. (1988)
Lecturer, Department of Physical Education and Human Performance
B.A., California State University, San Bernardino; M.A., University of Oregon.

ALDRICH, LESLIE L. (1955)
Professor, Department of Industrial Technology
B.A., Willamette University; M.A., Oregon State College.

ALLENDER, JUDITH A. (1987)
Associate Professor, Department of Nursing
B.S., State University of New York at Plattsburgh; M.Ed., Xavier University; M.S.N., Wright State University; Ed.D., University of Southern California.

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.

AMARAL, JACINTA (1988)
Associate Professor, Chair, Department of Foreign Languages and Literatures
B.A., Wells College; M.A., New York University; Ph.D., Yale University.

AMARAL, PEDRO (1987)
Associate Professor, Department of Philosophy
B.A., Ph.D., University of Pittsburgh.

ANDERSON, AUDREY SPRINGS (1987)
Dean, Division of Extended Education; Professor, Department of Child, Family, and Consumer Sciences
B.S., M.S., Ed.D., Northern Illinois University.

ANDERSON, DAVID C. (1966)
Professor, Department of Management
B.S., M.S., West Virginia University; D.B.A., Georgia State University.

ANDERSON, LAWRENCE L. (1971)
Professor, Department of Art
B.A., M.A., San Jose State College.

ANDERSON, R. GENE (1970)
Professor, Department of Speech Communication
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)
Professor, Department of Physical Education and Human Performance
B.A., M.S., Ed.D., University of Kentucky.

ANDERSON, WILLIAM K. (1985)
Lecturer, Department of Civil and Surveying Engineering and Construction
B.S., 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)
Coordinator, Advising and Testing Services
B.S., Wheaton College; M.S., Ed.M., Oregon State University; Ph.D., Michigan State University.

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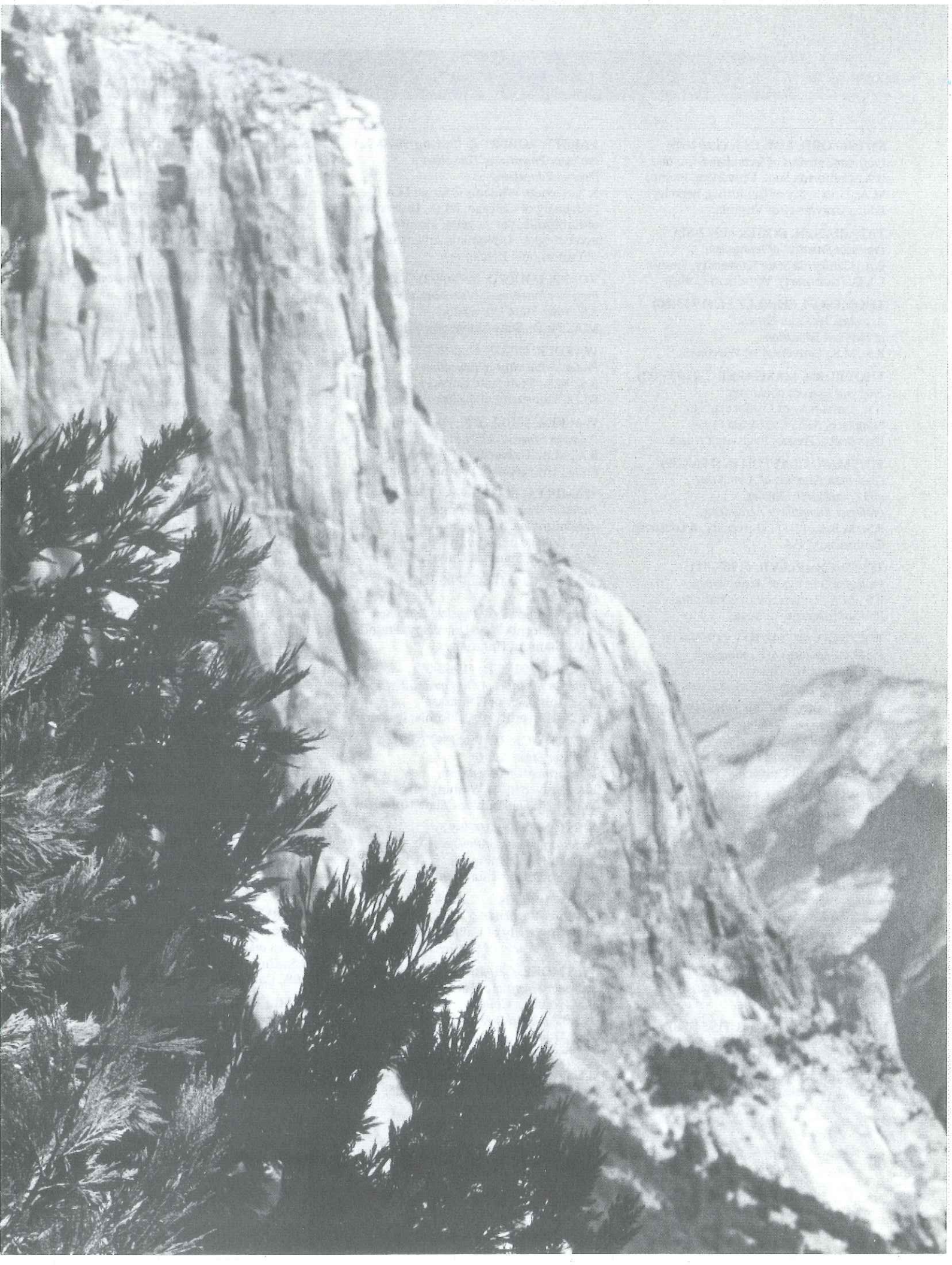
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