California State University, Fresno

General Catalog 1996-97

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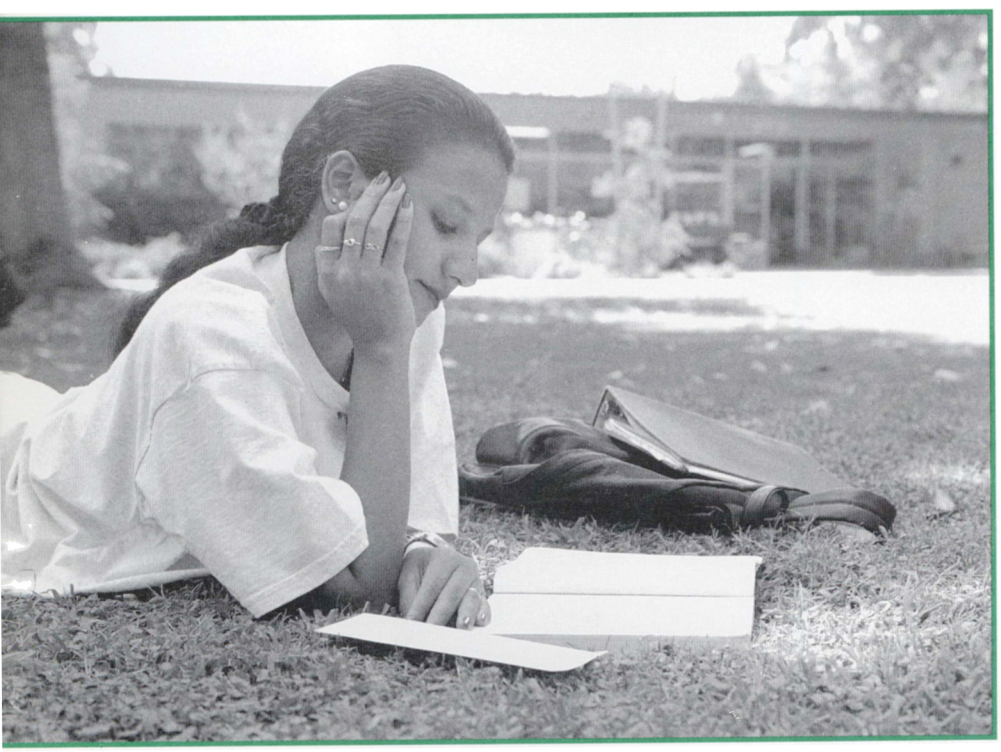
California State University, Fresno



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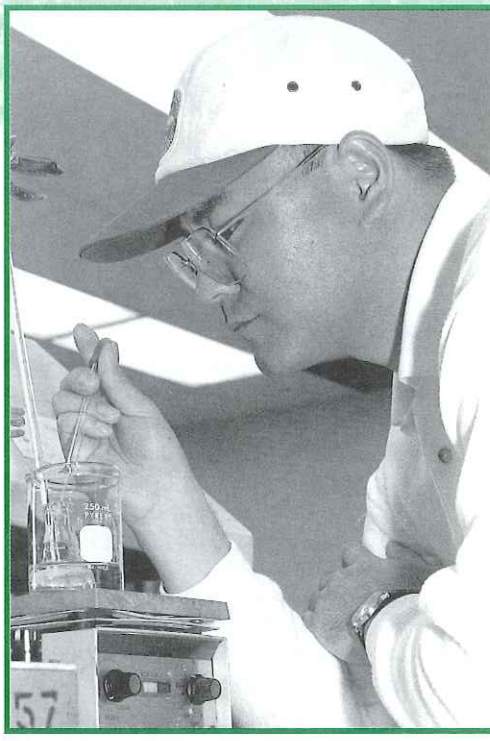

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Academic Calendar 1996–97

FALL SEMESTER 1996

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

AUGUST 1996

1 ADMISSION APPLICATION cycle for Spring 1997 begins (Aug. 1–Nov. 8)

2 Last day to submit an ADMISSION APPLICATION for Fall 1996 semester

5 Telephone REGISTRATION and ADD/DROP for Fall 1996 begins

9 Last day to submit ADMISSION DOCUMENTATION to attend the Fall 1996 semester

20 SEMESTER begins
ACADEMIC ASSEMBLY for faculty

26 INSTRUCTION begins
Auditors and "60+ Years" students may register
APPLICATION period for degrees to be granted in December 1996 begins (Aug. 26–Sept. 6)

30 Last day to:
- ▸ pay registration fees
- ▸ request permission for concurrent enrollment at another college

SEPTEMBER 1996

1-30 Filing period for Spring 1997 Student Teaching Applications — Multiple and Single Subject

2 Labor Day — no classes; all offices closed

3 NEW STUDENT CONVOCATION — welcoming event for new students

3-6 WELCOME WEEK '96 — activities and programs for new and continuing students, faculty, and staff

4 Last day to DROP CLASSES without a serious and compelling reason

6 Last day to file an application for BACHELOR'S and MASTER'S DEGREES to be granted in December 1996

9 Last day to:
- ▸ ADD CLASSES
- ▸ register for Credit by Examination
- ▸ file for refunds by resident students; nonresidents see *Schedule of Courses*, "Fee Refund Schedule"

23 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 1996

7 Last day for faculty to submit Credit by Examination grades

11 Last day for graduate students to apply for ADVANCEMENT TO CANDIDACY this semester in order to be eligible for graduation in May 1997

25 Last day to file edited, committee-approved MASTER'S THESIS for December 1996 graduation

NOVEMBER 1996

1 ADMISSION APPLICATION cycle for Fall 1997 begins (Nov. 1–Aug. 1)
Filing period for SCHOLARSHIPS for the 1997–98 academic year begins (Nov. 1–Feb. 3)
Admission deadline to School of Education basic credential programs (Multiple and Single Subject), advanced credential programs, and master's degrees for Spring 1997

8 Last day to:
- ▸ submit ADMISSION APPLICATION to attend the Spring 1997 semester
- ▸ DROP CLASSES for SERIOUS and COMPELLING REASONS, except by complete withdrawal from the university

11 Advising and fee payment for Spring 1997 semester begins

11 & 14 ADVISING DAY — orientation with academic advising for new undergraduates and their parents, Spring 1997 semester; classes in session

15 Last day to submit ADMISSION DOCUMENTATION to attend the Spring 1997 semester

28–29 THANKSGIVING RECESS; the library will post holiday hours

DECEMBER 1996

4 ADVISING DAY — orientation with academic advising for new undergraduates and their parents who missed earlier sessions

11 Last day of INSTRUCTION
Last day to:
- ▸ withdraw from a complete program
- ▸ submit grade substitution request form for Fall 1996 without a late fee

12–13 Final exam preparation and faculty consultation days

16–19 FINAL SEMESTER EXAMINATIONS

20 FALL SEMESTER ends
Last day to:
- ▸ submit incomplete make-up work or request extension of time for incomplete grades from Fall 1995
- ▸ submit to the Graduate Office departmental clearance paperwork on behalf of December 1996 master's degree candidates (include a copy of the completed final report on incomplete or in-progress work, if needed for graduation)

25 Campus closed (Dec. 25–Jan. 1)
WINTER RECESS (Dec. 25–Jan. 20)

AUGUST 1996

S	M	T	W	T	F	S
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	*26*	*27*	*28*	*29*	*30*	31

SEPTEMBER 1996

S	M	T	W	T	F	S
1	2	*3*	*4*	*5*	*6*	7
8	*9*	*10*	*11*	*12*	*13*	14
15	*16*	*17*	*18*	*19*	*20*	21
22	*23*	*24*	*25*	*26*	*27*	28
29	*30*					

OCTOBER 1996

S	M	T	W	T	F	S
		1	*2*	*3*	*4*	5
6	*7*	*8*	*9*	*10*	*11*	12
13	*14*	*15*	*16*	*17*	*18*	19
20	*21*	*22*	*23*	*24*	*25*	26
27	*28*	*29*	*30*	*31*		

NOVEMBER 1996

S	M	T	W	T	F	S
					1	2
3	*4*	*5*	*6*	*7*	*8*	9
10	*11*	*12*	*13*	*14*	*15*	16
17	*18*	*19*	*20*	*21*	*22*	23
24	*25*	*26*	*27*	28	29	30

DECEMBER 1996

S	M	T	W	T	F	S
1	*2*	*3*	*4*	*5*	*6*	7
8	*9*	*10*	*11*	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31				

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

JANUARY 1997

S	M	T	W	T	F	S
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	*27*	*28*	*29*	*30*	*31*	

FEBRUARY 1997

S	M	T	W	T	F	S
						1
2	*3*	*4*	*5*	*6*	*7*	8
9	*10*	*11*	*12*	*13*	*14*	15
16	17	*18*	*19*	*20*	*21*	22
23	*24*	*25*	*26*	*27*	*28*	

MARCH 1997

S	M	T	W	T	F	S
						1
2	*3*	*4*	*5*	*6*	*7*	8
9	*10*	*11*	*12*	*13*	*14*	15
16	*17*	*18*	*19*	*20*	*21*	22
23	24	25	26	27	28	29
30	*31*					

APRIL 1997

S	M	T	W	T	F	S
		1	*2*	*3*	*4*	5
6	*7*	*8*	*9*	*10*	*11*	12
13	*14*	*15*	*16*	*17*	*18*	19
20	*21*	*22*	*23*	*24*	*25*	26
27	*28*	*29*	*30*			

MAY 1997

S	M	T	W	T	F	S
				1	*2*	3
4	*5*	*6*	*7*	*8*	*9*	10
11	*12*	*13*	*14*	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31

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

JANUARY 1997

2 WINTER SESSION begins (Jan. 2–22)
FINANCIAL AID application filing period for priority consideration for the 1997–98 academic year begins (Jan. 2–Feb. 28, tentative)

9 Telephone REGISTRATION and ADD/DROP for Spring 1997 begins (except Jan. 20)

20 Martin Luther King Jr. Holiday — no classes; all offices closed

21 SEMESTER begins

27 INSTRUCTION begins
Auditors and "60+ Years" students may register
APPLICATION period for degrees to be granted in May 1997 begins (Jan. 27–Feb. 7)

31 Last day to:
- ► pay registration fees
- ► request permission for concurrent enrollment at another college

FEBRUARY 1997

1–28 Filing period for Fall 1997 Student Teaching Applications — Multiple and Single Subject

3 Last day to file applications for SCHOLARSHIPS for the 1997–98 academic year

4 Last day to DROP CLASSES without a serious and compelling reason

7 Last day to:
- ► ADD CLASSES
- ► 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 1997

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 1996 semester

17 Presidents' Day — no classes; all offices closed

24 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 1997

1 Filing deadline for FINANCIAL AID for the 1997–98 academic year (tentative)

10 Last day for faculty to submit Credit by Examination grades

14 Last day for graduate students to apply for ADVANCEMENT TO CANDIDACY this semester in order to be eligible for graduation in August 1997 or December 1997

24-28 SPRING RECESS

28 Last day to file edited, committee-approved MASTER'S THESIS for May 1997 graduation

APRIL 1997

1 Admission deadline to School of Education basic credential programs (Multiple and Single Subject), advanced credential programs, and master's degrees for Fall 1997

17–20 VINTAGE DAYS

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

MAY 1997

12 Advising and fee payment for Fall 1997 begins

14 Last day of INSTRUCTION
Last day to:
- ► withdraw from a complete program
- ► submit grade substitution request form for Spring 1997 without a late fee

15–16 Final exam preparation and faculty consultation days

19–22 FINAL SEMESTER EXAMINATIONS

23 Last day to:
- ► submit incomplete make-up work or request extension of time for incomplete grades from Spring 1996
- ► submit to the Graduate Office departmental clearance paperwork on behalf of May 1997 master's degree candidates (include a copy of the completed final report on incomplete or in-progress work, if needed for graduation)

24 SPRING SEMESTER ends
86th annual COMMENCEMENT

26 Memorial Day Holiday — no classes; all offices closed

27 SUMMER SESSION begins (May 27–Aug. 15, tentative); see *Summer Session Catalog*

JULY 1997

7 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 1997 semester

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.

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. California State University, Monterey Bay became the CSU's 21st campus in September 1994. The California Maritime Academy in Vallejo, founded in 1929, joined the CSU as its 22nd campus in July 1995.

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 1995, the system enrolled approximately 326,000 students, taught by more than 16,000 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 22 campuses since 1960.

CSU Campuses

California State University, **Bakersfield**
9001 Stockdale Highway
Bakersfield, CA 93311-1099
Dr. Tomas A. Arciniega, *President*
(805) 664-2011

California State University, **Chico**
1st and Normal Streets
Chico, CA 95929
Dr. Manuel A. Esteban, *President*
(916) 898-6116

California State University, **Dominguez Hills**
1000 East Victoria Street
Carson, CA 90747
Dr. Robert C. Detweiler, *President*
(310) 516-3300

California State University, **Fresno**
5241 North Maple Avenue
Fresno, CA 93740
Dr. John D. Welty, *President*
(209) 278-4240

California State University, **Fullerton**
800 North State College Boulevard
Fullerton, CA 92634-9480
Dr. Milton A. Gordon, *President*
(714) 773-2011

California State University, **Hayward**
Hayward, CA 94542
Dr. Norma S. Rees, *President*
(510) 881-3000

Humboldt State University
Arcata, CA 95521
Dr. Alistair W. McCrone, *President*
(707) 826-3011

Imperial Valley Campus
720 Heber Avenue
Calexico, CA 92231
(619) 357-3721

California State University, **Long Beach**
1250 Bellflower Boulevard
Long Beach, CA 90840
Dr. Robert C. Maxson, *President*
(310*) 985-4111
*Area code becomes 562 on January 25, 1997

California State University, **Los Angeles**
5151 State University Drive
Los Angeles, CA 90032
Dr. James M. Rosser, *President*
(213) 343-3000

California Maritime Academy
200 Maritime Academy Drive
Vallejo, CA 94590
Dr. Mary E. Lyons, *President*
(707) 648-4200

California State University,
Monterey Bay
100 Campus Center
Seaside, CA 93955
Dr. Peter P. Smith, *President*
(408) 582-3330

California State University,
Northridge
18111 Nordhoff Street
Northridge, CA 91330
Dr. Blenda J. Wilson, *President*
(818) 885-1200

California State Polytechnic
University, **Pomona**
3801 West Temple Avenue
Pomona, CA 91768
Dr. Bob Suzuki, *President*
(909) 869-7659

California State University,
Sacramento
6000 J Street
Sacramento, CA 95819
Dr. Donald R. Gerth, *President*
(916) 278-6011

California State University,
San Bernardino
5500 University Parkway
San Bernardino, CA 92407
Dr. Anthony H. Evans, *President*
(909) 880-5000

San Diego State University
5300 Campanile Drive
San Diego, CA 92182
Dr. Stephen L. Weber, *President*
(619) 594-5000

San Francisco State University
1600 Holloway Avenue
San Francisco, CA 94132
Dr. Robert A. Corrigan, *President*
(415) 338-1111

San Jose State University
One Washington Square
San Jose, CA 95192
Dr. Robert L. Caret, *President*
(408) 924-1000

California Polytechnic State
University, **San Luis Obispo**
San Luis Obispo, CA 93407
Dr. Warren J. Baker, *President*
(805) 756-1111

California State University,
San Marcos
San Marcos, CA 92096-0001
Dr. Bill W. Stacy, *President*
(619) 750-4000

Sonoma State University
1801 East Cotati Avenue
Rohnert Park, CA 94928
Dr. Ruben Armiñana, *President*
(707) 664-2880

California State University, **Stanislaus**
801 West Monte Vista Avenue
Turlock, CA 95380
Dr. Marvalene Hughes, *President*
(209) 667-3122

Office of the Chancellor

The California State University
400 Golden Shore
Long Beach, CA 90802-4275
(310*) 985-2500
*Area code becomes 562
on January 25, 1997

Trustees and Officers

Ex Officio Trustees

The Honorable Pete Wilson
Governor of California
State Capitol, Sacramento 95814

The Honorable Gray Davis
Lieutenant Governor of California
State Capitol, Sacramento 95814

The Honorable Curt Pringle
Speaker of the Assembly
State Capitol, Sacramento 95814

The Honorable Delaine Eastin
State Superintendent
of Public Instruction
721 Capitol Mall, Sacramento 95814

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

Officers of the Trustees

Governor Pete Wilson
President

Jim Considine
Chair

Martha C. Fallgatter
Vice Chair

Barry Munitz
Secretary-Treasurer

Correspondence with Trustees should be sent:

c/o Trustees Secretariat
The California State University
400 Golden Shore, Suite 134
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.

Roland E. Arnall
1998

Marian Bagdasarian
1996

Martha C. Fallgatter
2003

William D. Campbell
2003

Ralph R. Pesqueira
1996

Ted J. Saenger
1997

Anthony M. Vitti
1997

James H. Gray
1998

Ronald L. Cedillos
1999

Bernard Goldstein, Ph.D.
1997

William Hauck
2001

Joan Otomo-Corgel, D.D.S.
2001

Michael D. Stennis
2000

Stanley T. Wang
2002

Frank Y. Wada
1997

Office of the Chancellor

The California State University
400 Golden Shore
Long Beach, CA 90802-4275
(310*) 985-2500
*Area code becomes 562
on January 25, 1997

Barry Munitz
Chancellor

Molly Corbett Broad
Executive Vice Chancellor

Peter S. Hoff
Senior Vice Chancellor,
Academic Affairs

June M. Cooper
Vice Chancellor,
Human Resources and Operations

Richard West
Vice Chancellor,
Business and Finance

Douglas X. Patiño
Vice Chancellor,
University Advancement

Christine Helwick
Interim General Counsel

Beth B. Buehlman
Director,
Federal Relations

Scott P. Plotkin
Director,
Governmental Affairs

William J. Dermody
Executive Assistant to the Chancellor

President's Message

Today, California State University, Fresno is a stimulating center of intellectual, artistic, and cultural activity, dedicated to academic excellence, integrity, and freedom. The administrators, faculty, and staff recognize their commitment to develop qualified professionals who will become tomorrow's leaders in every walk of life.

The university offers high-quality educational opportunities to qualified students at the bachelor's and master's levels, as well as a joint doctoral program in educational leadership. Faculty are dedicated to teaching and conducting scholarly activities.

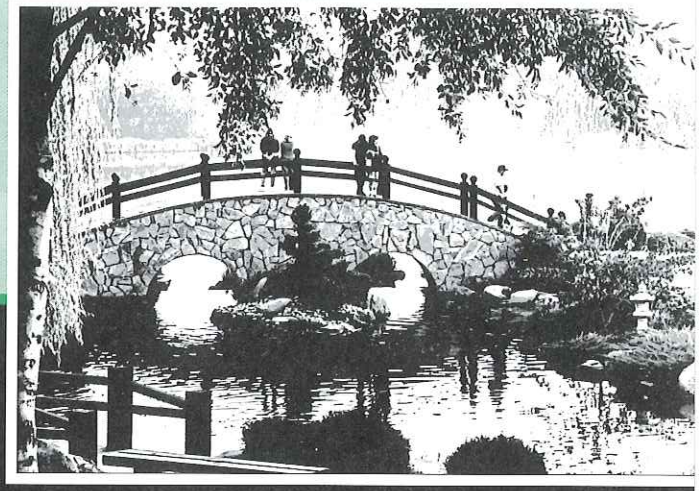
With the 21st century drawing near, we are reaching out to a broader community. The university fosters an environment in which students learn to live in a culturally diverse and changing society. Through our doors come increasing numbers of Hispanic, African-American, Native American, Hmong, Laotian and Cambodian students who make the San Joaquin Valley their home — as well as those who call other continents their home.

I hope this *1996-97 General Catalog* helps you catch a sense of California State University, Fresno's dynamic, expanding world.

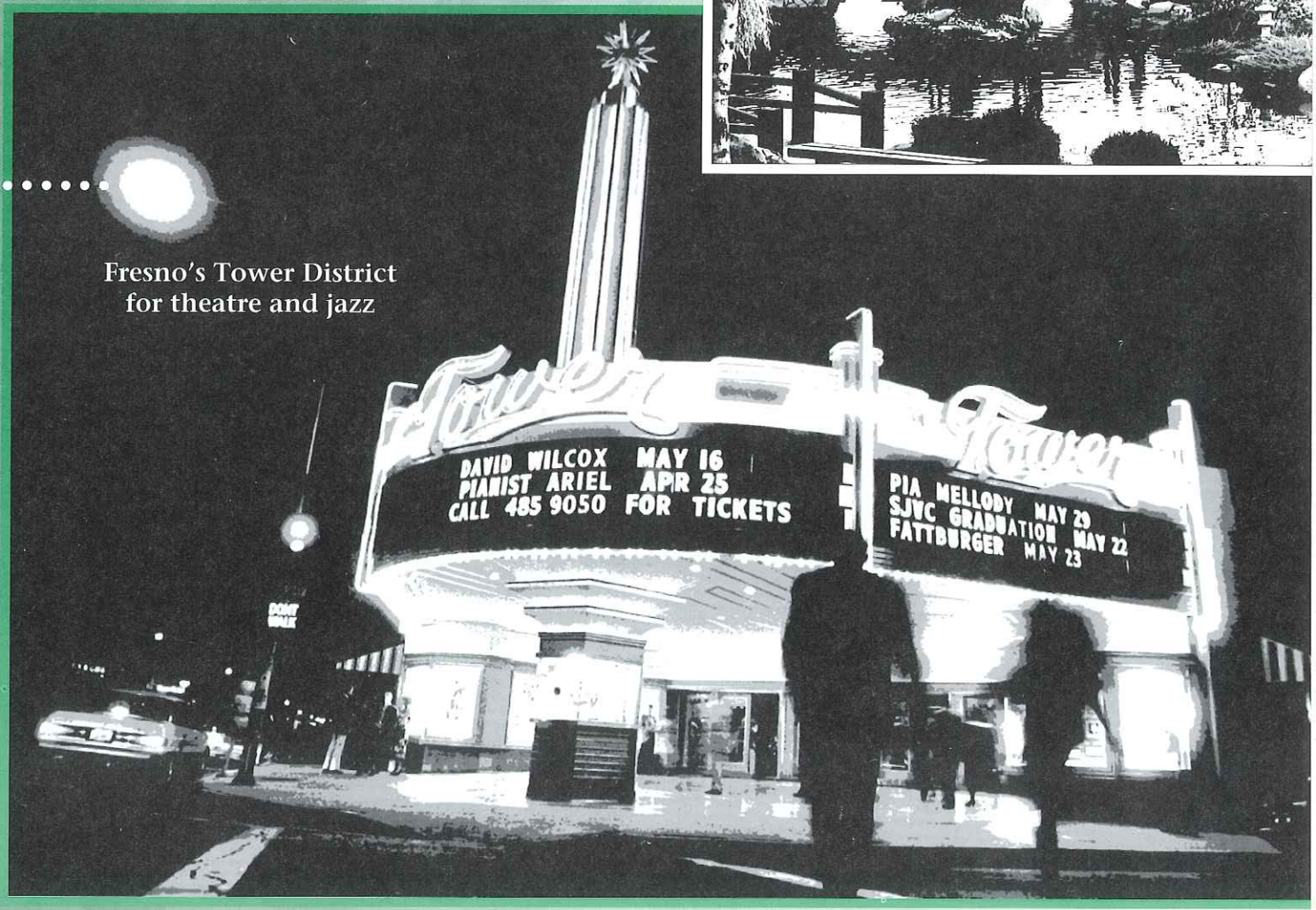
Preview

The Fresno Philharmonic

Japanese Gardens in Woodward Park



Fresno's Tower District
for theatre and jazz



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

Today, this university is a stimulating center of intellectual and cultural activity, dedicated to academic excellence, integrity, and freedom. With more than 17,400 students registered, the university recognizes its commitment to develop qualified professionals who will become tomorrow's leaders in every walk of life.

California State University, 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 exciting opportunities for a proficient and enriching university experience.

The excellence of our faculty is documented in a variety of ways, including recognition from national and international associations. Ninety percent of the full-time tenured track faculty hold doctoral degrees in their areas of study.

However, the most important characteristic of our 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 3,800 trees, the campus sits at the northeast edge of Fresno, against a backdrop of the beautiful Sierra Nevada. The campus was officially designated as an arboretum in 1978. 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 — 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 make use of many individual and team sport facilities, a baseball stadium at Beiden Field that seats 4,575 spectators, a 41,000-seat football/soccer stadium, and a new 2,700-seat softball stadium.

The campus is fully accessible and students with mobility impairments will find the naturally flat terrain easy to navigate.

University

The Community. Fresno's metropolitan area has a population of more than 405,000, and yet it maintains a friendly "big town" feeling. Cultural events are numerous and feature such groups and facilities as the Fresno Arts Center, the Fresno Metropolitan Museum, the Fresno Philharmonic orchestra, and several live theater organizations.

Winning critical praise for the Fresno Philharmonic are world-renowned guest artists and the talented Maestro Raymond Harvey. Take a powerful music journey with season tickets to this cultural jewel. (Student discounts are available.)

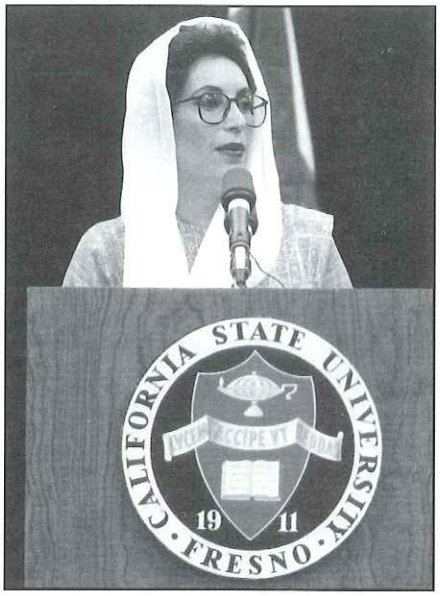
The community is proud of California State University, Fresno and enthusiastically supports many of the university's programs, including sports, the arts, academic competitions, and other special events.

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 the university'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.

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.



Benazir Bhutto
Prime Minister of the Islamic Republic of Pakistan, Benazir Bhutto became the first woman leader in the Islamic world. She has received numerous awards as an advocate of the rights of women and children in developing countries.

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."

Lecture Series

The University Lecture Series is an educational forum featuring distinguished speakers, performers, and public figures. The Series seeks to provide quality lecture programming which will stimulate and enhance the intellectual climate of our university and surrounding communities.

Featured speakers and performers have included Presidents Jimmy Carter and Gerald Ford, Israeli U.N. Ambassador Abba Eban, reporter Charlayne Hunter-Gault, journalists Carole Simpson and Fred Barnes, Senator Edmund Muskie, politician Henry Cisneros, Drs. Bernie Siegel and Elizabeth Kubler Ross, activists Maki Mandela and Ralph Nader, historian Martin Marty, attorneys Sarah Weddington and Alan Dershowitz, dancer Mikhail Baryshnikov, singers Sweet Honey in the Rock, authors Amy Tan and Ray Bradbury, playwright Luis Valdez, Nobel Laureate Elie Wiesel, and children's rights activist Marian Wright Edelman.

The University 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.

For more information, call the University Lecture Series Office at 278-2431.

Amy Tan

Amy Tan is the author of the bestselling novel and critically acclaimed movie, "The Joy Luck Club." "The Joy Luck Club" became the longest running book on the **New York Times** hard cover best seller list in 1989. Amy Tan is also known for her 1991 best seller, "The Kitchen God's Wife." Her most recent work is a children's book, "The Chinese Siamese Cat."

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.

Edward James Olmos

With a history of Tony and Academy Award nominations, Edward James Olmos acted and made his directorial debut in the highly acclaimed movie, "American Me." While on campus, Olmos visited with Provost Alexander Gonzalez (right).

California State University, Fresno

Accreditation

California State University, Fresno is fully accredited by the California Board of Education and the Western Association of Schools and Colleges. California State University, 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 Communication
- American Assembly of Collegiate Schools of Business
- American Chemical Society
- American Council for Construction Education
- American Dietetic Association
- American Physical Therapy Association
- American Speech-Language-Hearing Association
- California Board of Registered Nursing
- Commission on Teacher Credentialing
- Council for Accreditation of Counseling and Related Educational Programs
- 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 underrepresented 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

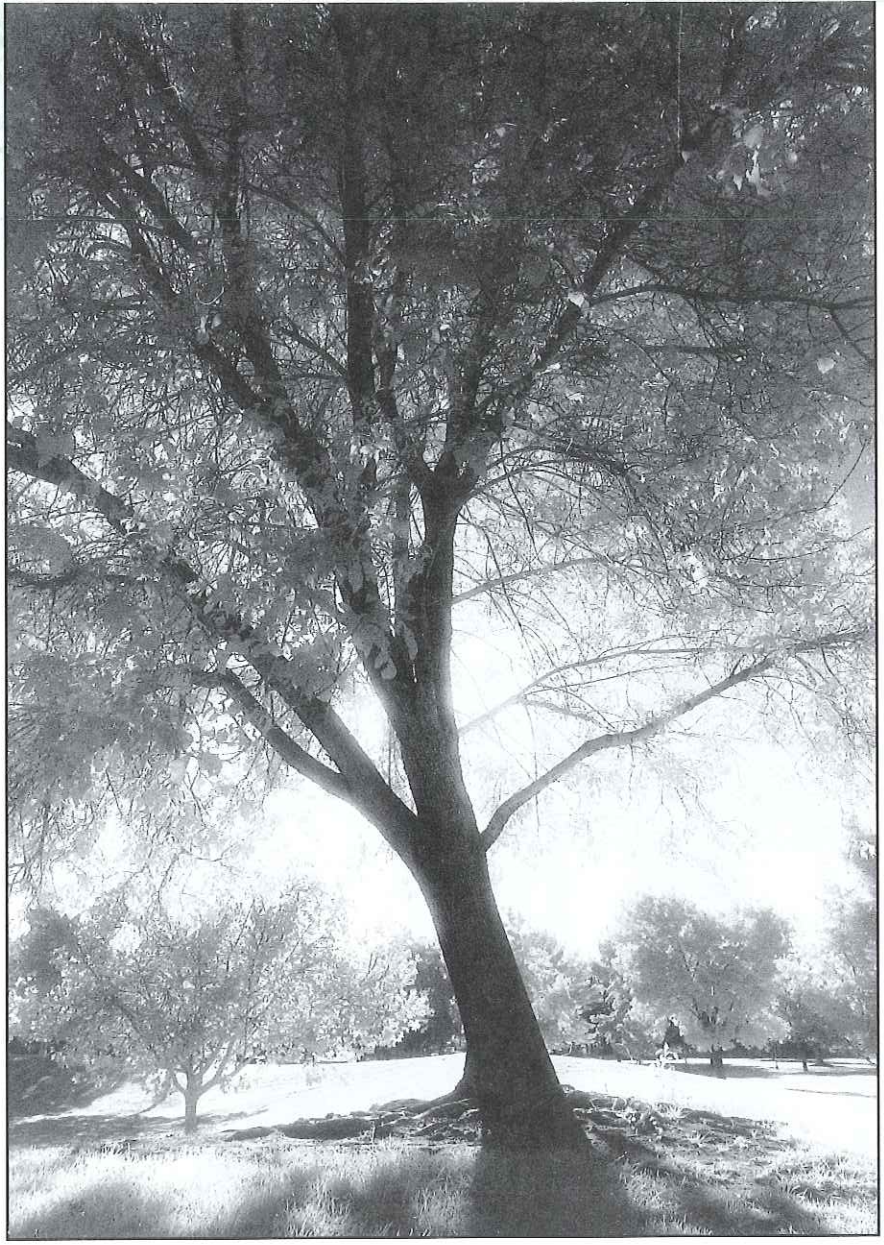
California State University, Fresno is the sixth oldest in The California State University system. It began with the establishment of the first junior college in California in 1910 and a state normal school in 1911 which, under a single administration, offered two-year programs in general and vocational 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, the university offered its first master's degree; today, it offers this degree in 39 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 university began offering an interdisciplinary doctoral degree (Ed.D.) in educational leadership, offered in partnership with the University of California.



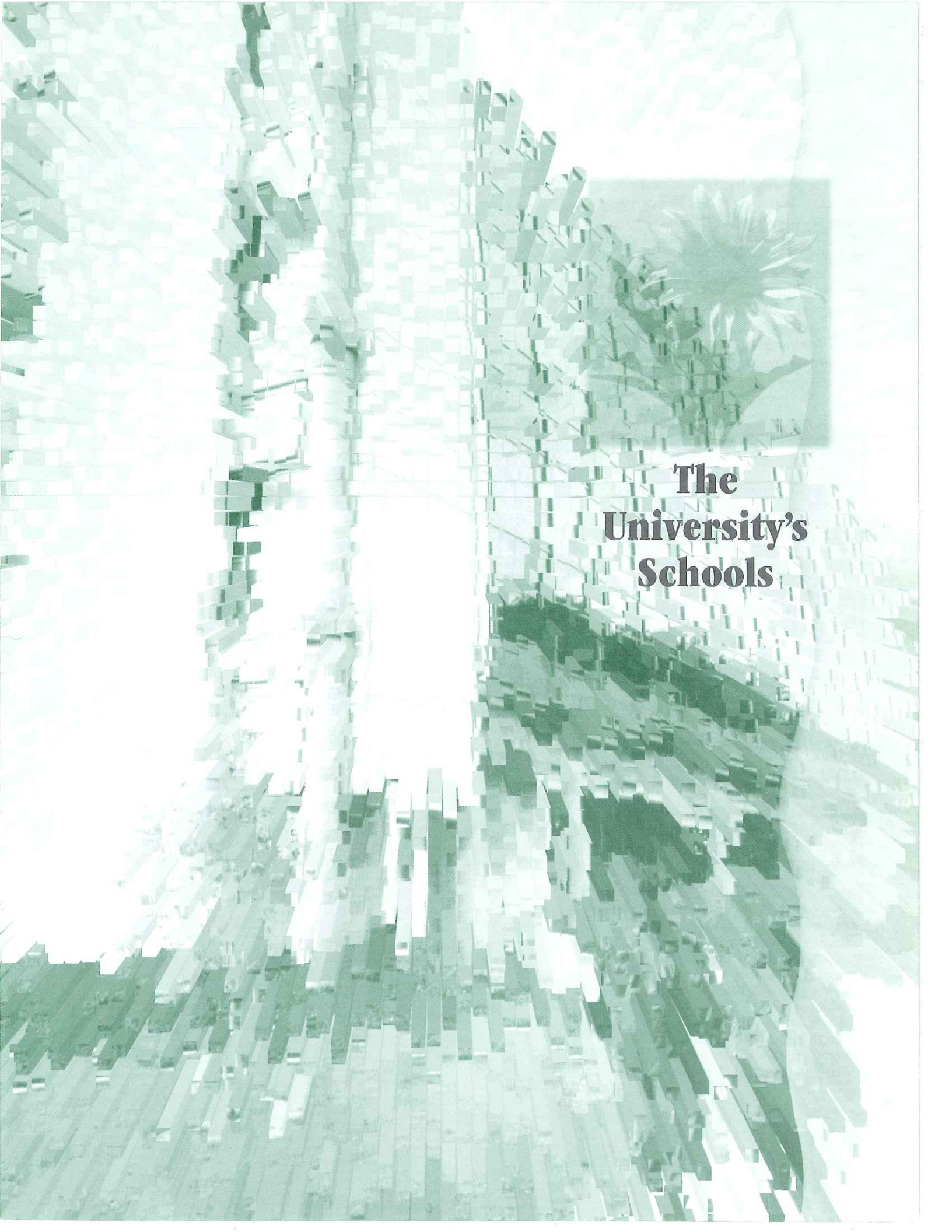
The present official seal of the university was designed by artist and California State University, Fresno Professor Emeritus Darwin Musselman, who also created the new seal used by The California State University system. It includes the "lamp of learning" and the "book of knowledge." The Latin inscription "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, 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, and in 1968 enrollment surpassed 10,000. In the fall of 1995, more than 17,400 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-)



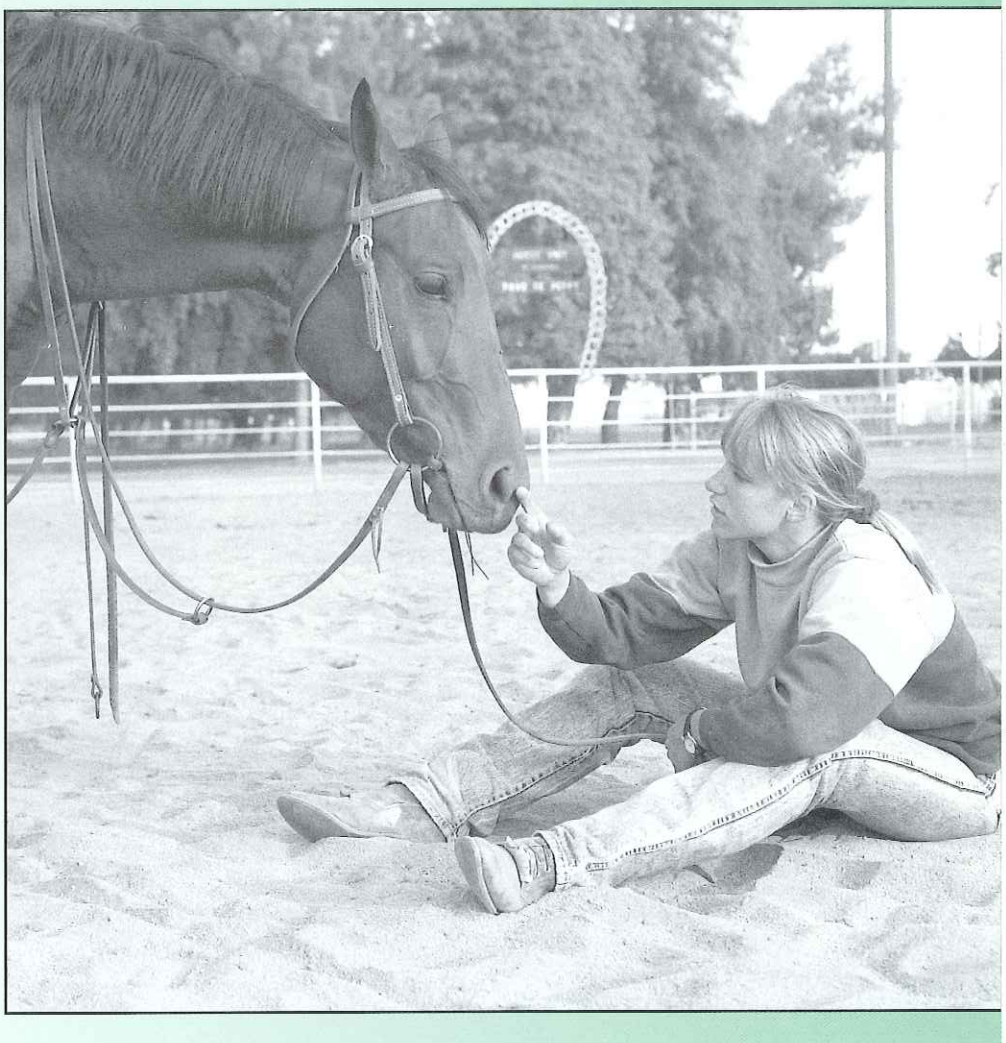
The University's Schools

The Mission of the School

The School of Agricultural Sciences and Technology is dedicated to improving the environment and quality of life through education, research, and public service in the areas of agriculture, food, technology, and the family. 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 and industrial technology. 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, excellent facilities and equipment, and tremendous industry support make California State University, Fresno the ideal place to invest in 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. You will be recognized for your solid basic science foundation, your experience in applied research, your hands-on problem-solving skills, and your global view of the world.



The School of Agricultural Sciences and Technology

Agricultural Sciences 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. 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

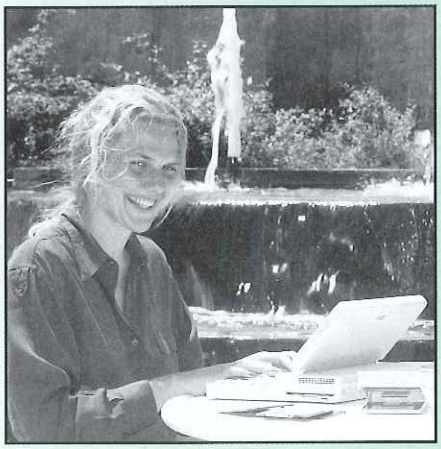
Music Building, Room 186
(209) 278-3056
Dean: **Luis F. Costa**

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

The Sid Craig School of Business

Peters Building, Room 282
(209) 278-2482
Dean: **Fred J. Evans**

The Sid Craig School of Business includes the departments of Accountancy, Finance and Business Law, Information Systems and Decision Sciences, Management, Marketing and Logistics, Aerospace Studies, and Military Science. Integral parts of the school include the Undergraduate Student Services Office, the Graduate Business Program, and the University Business Center, where executive education programs are offered.



The Mission of the School

The mission of the Craig School of Business is to prepare students for meaningful careers in the regional, national, and global business environments, and to serve the Central California business community as a resource center. The school's mission implies the following:

- Undergraduate and graduate programs of high quality will be offered to qualified students. Programs will emphasize critical thinking, quantitative reasoning, interpersonal and communication skills, life-long learning, and ethical behavior. They will also provide a strong business foundation leading to an integrated understanding of the functional areas of business.
- The diversity of faculty and programs will serve students with diverse heritage and of varied backgrounds and interests.
- Teaching excellence will be founded on a broad range of intellectual contributions that advance and disseminate knowledge. Especially appropriate are applied business research, instructional development activities, and basic research projects.
- Service will be given to the business community — ranging from professional development, continuing education, and consulting activities to participation in decision-making of businesses, not-for-profit organizations, and government agencies.

Generally recognized as one of the premier business programs in California, the CSB's vision for the next millennium is: To achieve national prominence as an applied business program by providing high quality education with a global perspective that contributes to regional economic development.

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.

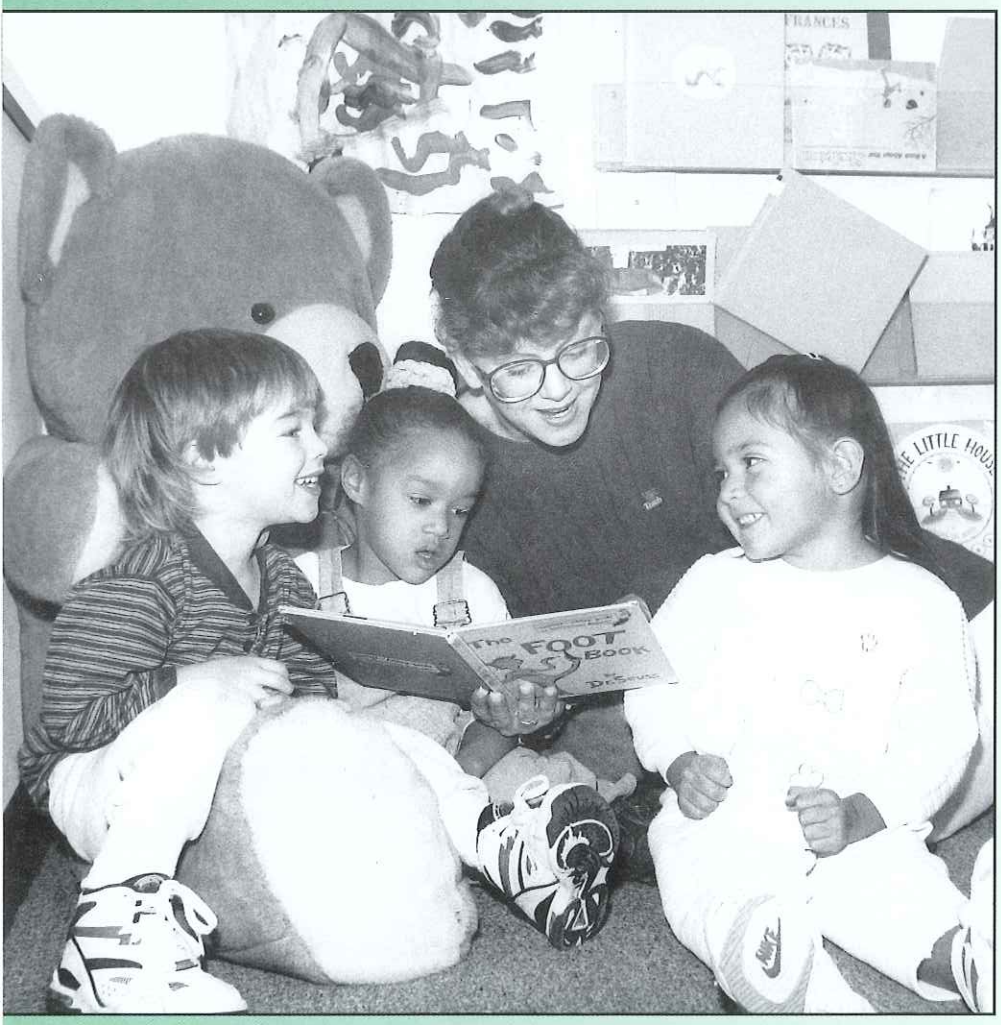
Emphasis is directed toward preparing highly competent educators and human development specialists, providing professional support and leadership to the area community, promoting applied research, and providing experiences and opportunities that will enable employed professionals to remain current in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

The 1996-97 academic year will find students attending classes, studying, and working in a state-of-the-art Education Building. This new five-story facility offers clinical areas and computer and microteaching laboratories. One of the special features is a Human Development Center 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 those who work in the field of education and human development function more effectively and productively in an ever-changing and increasingly diverse society.

The SOEHD theme *Making a Difference in a Diverse Society* places considerable emphasis on an educator who can function effectively as both a practitioner and leader in a highly complex culturally and linguistically diverse society.

The theme is operationalized through two instructional models. The basic preparation programs model is *The Reflective Collaborative Practitioner,* a highly effective teacher who continues to remain on the "cutting edge" of professional practice. The advanced programs model is *The Reflective Collaborative Leader* who effectively serves in leadership roles as a teaching specialist or provider of specialized services in support of instruction.



The School of Education and Human Development

Education Building, Room 210
(209) 278-0210
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 Liberal Studies Program, the Center for Educational Research and Service, and the Instructional Technology and Resource Center are also 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 of Engineering provides excellent scholarship support for students and maintains a computer system with 150 student workstations.

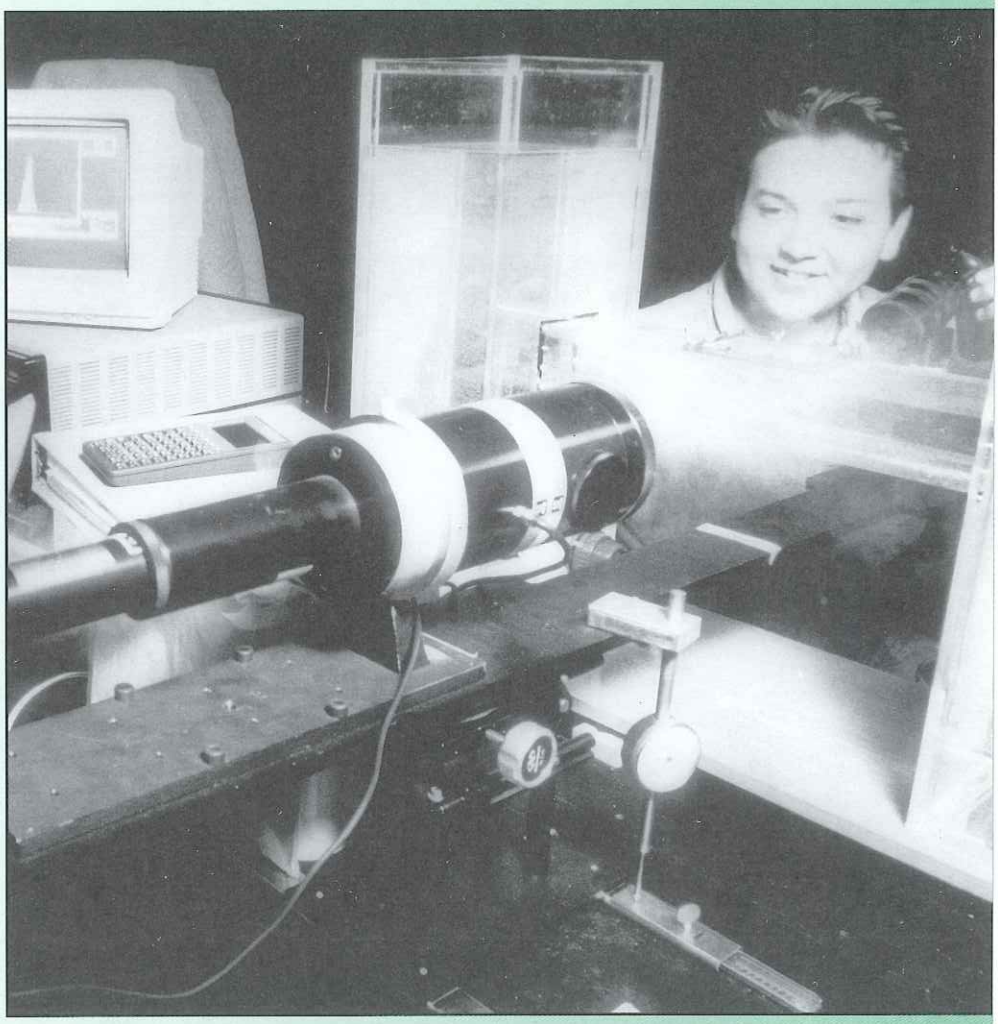
The Civil, Electrical, Industrial, Mechanical, and Surveying Engineering programs are accredited by the Accreditation Board for Engineering and Technology (ABET). The Construction Management Program is accredited by the American Council for Construction Education (ACCE).

The School of Engineering 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.

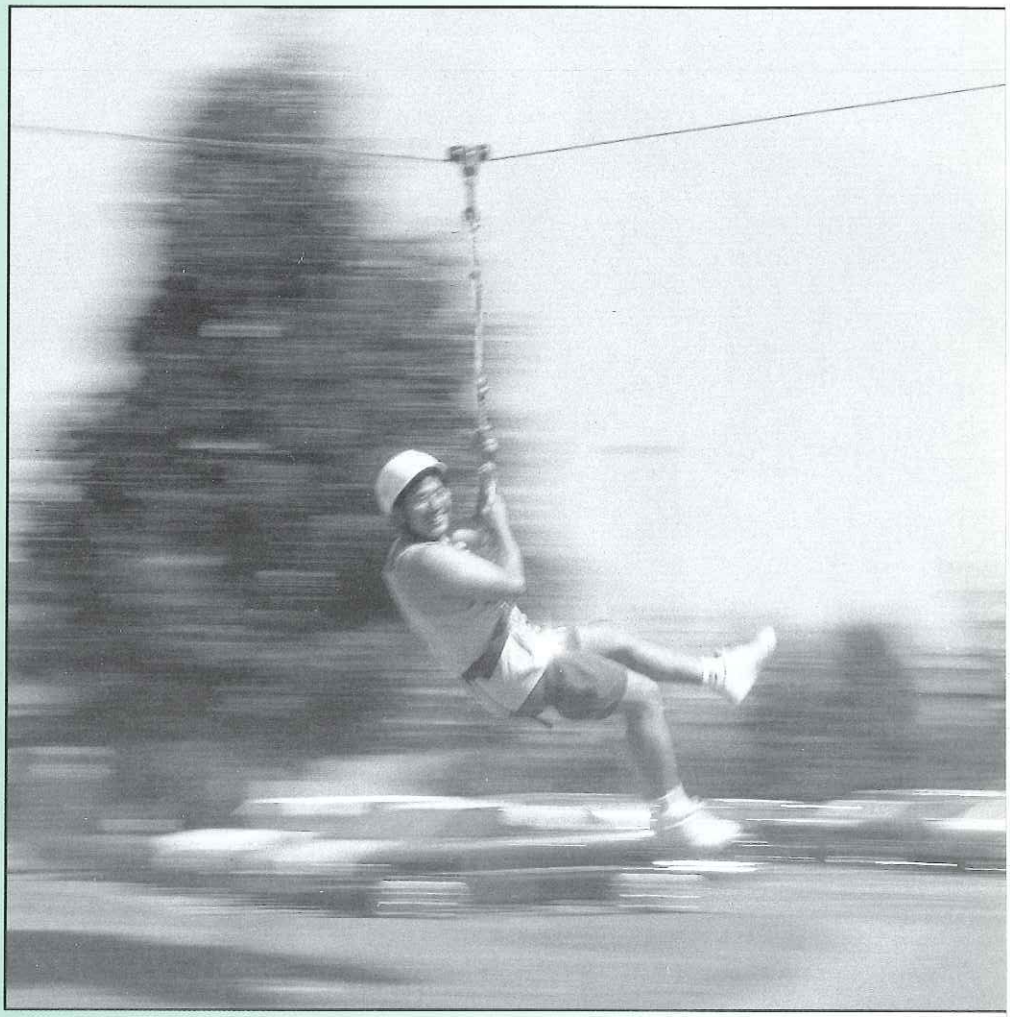


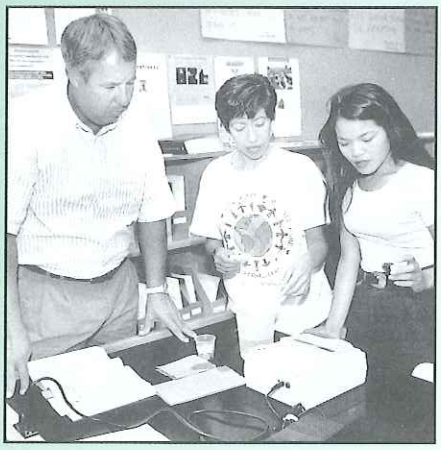
The Mission of the School

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 sciences and 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

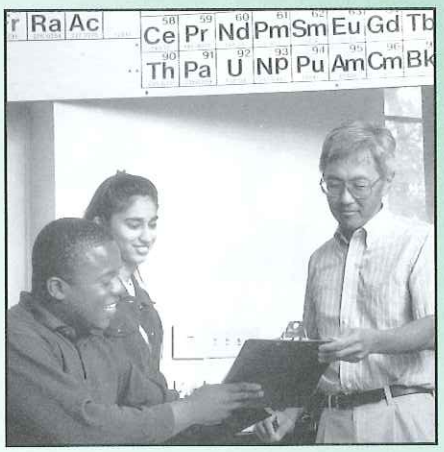
McLane Hall, Room 191
(209) 278-4004
Acting Dean: **Benjamin Cuellar**

The School of Health and Social Work includes the departments of Communicative Sciences and 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, Psychology, and Marine Science at Moss Landing Marine Laboratories. 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 preprofessional 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. These research activities are carried out among campus scientists along with investigators at other research centers.

The School of Natural Sciences 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.

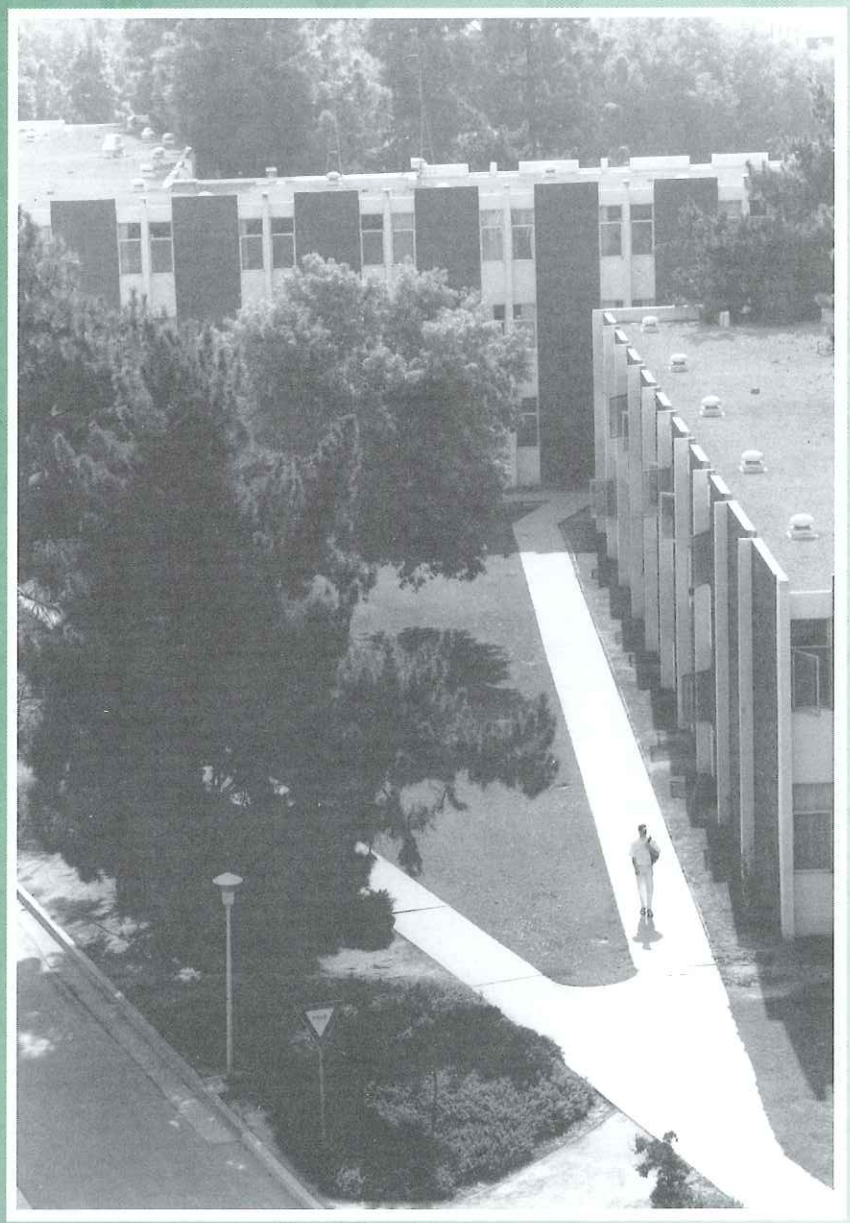
The school is sensitive to the view that studies in the liberal arts provide the best preparation for careers of leadership in the public and private sectors. The school stresses the broad character of its curriculum, assuring today's graduate a place in a society where the narrow specialist is often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

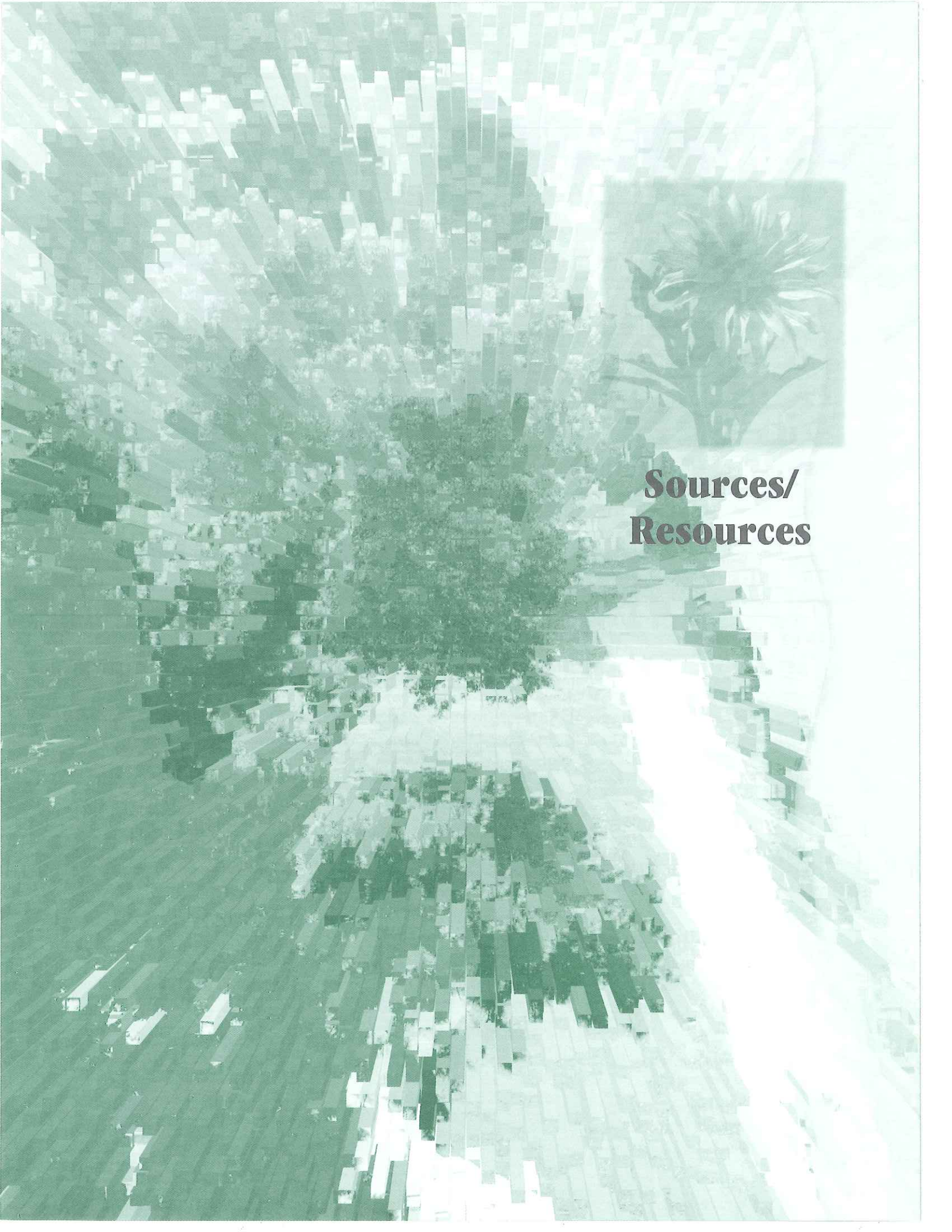
The school is thus committed to providing its majors with a concern for human values and with the ability to think clearly, critically, and analytically. Our graduates understand the value of practical and professional skills, and realize that no career can be successfully pursued without the benefit 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. Asian American Studies, Ethnic Studies, and Women's Studies are integral programs of the school.



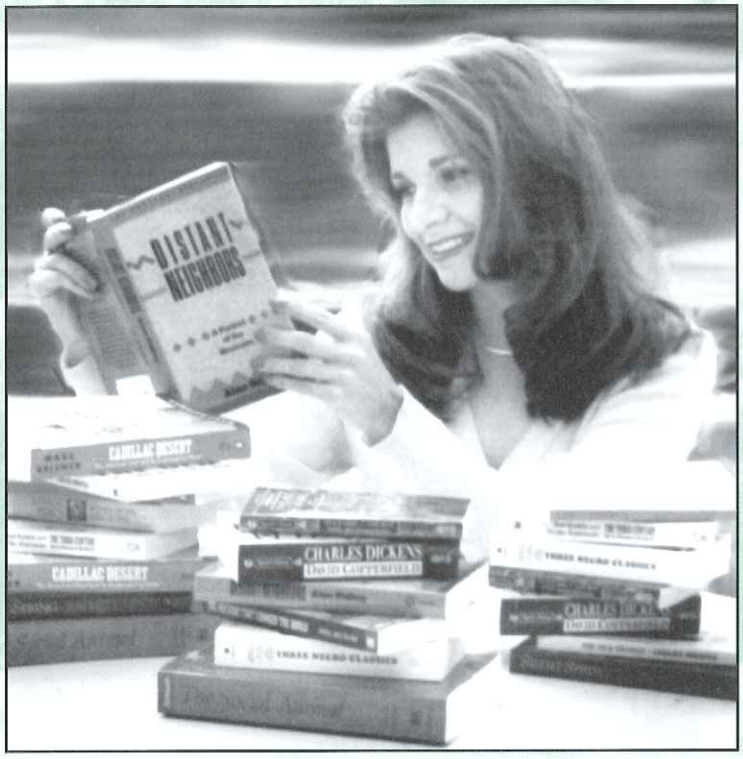


Sources/ Resources

Read

A G O O D B O O K

Our campus is committed to advancing excellence in liberal education and fostering the individual's bond to lifelong learning.



Good books make significant experiences. Page by page, they take us into their worlds and deliver to us experiences that we might not otherwise live, thoughts that we might not otherwise realize, environments that we might not otherwise visit. They are, as Jonathan Swift called them, the "children of the brain." Reading is the vehicle that empowers the images of others' thoughts in our own. It is the wise person who learns from the experiences of others; even wiser is the person who does so by the magic of a good book.

We encourage students and prospective students to read the books listed below. We encourage faculty to reference these books in courses taught on campus. We encourage members of the university community to read these books and to watch for and attend events sponsored in support of this program.

Reading List

Compiled by Faculty and Staff

1. Aronson, Elliot. *The Social Animal*
2. Carson, Rachel. *Silent Spring*
3. Dickens, Charles. *David Copperfield*
4. Franklin, John Hope. *Three Negro Classics*
5. Fuentes, Carlos. *The Old Gringo*
6. Krotkin, Joel and Yoriko Kishimoto. *America's Resurgence in the Asian Era*
7. Piercy, Marge. *Woman at the Edge of Time*
8. Reisner, Marc. *Cadillac Desert: The American West and Its Disappearing Water*
9. Riding, Alan. *Distant Neighbors*
10. Thomas, Lewis. *The Lives of a Cell*
11. Voltaire. *Candide*
12. Womack, Jones and Roos. *The Machine That Changed the World*

Academic Innovation Center
West Annex: Library North, First Floor and Basement
East Annex: Speech Arts, Rooms 156-89
(209) 278-2674

Academic Innovation Center

The Academic Innovation Center (AIC) provides complete graphic, photographic, and imaging services for the enhancement of the university's academic program.

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 AIC'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.

Photography. In the photography studio and darkrooms, the photographer produces black-and-white and color slides and prints, studio portraits, still-life photos, and digital images. In addition, the photographer duplicates slides, makes black-and-white halftones, presentation slides, line-copy duplications, and copystand photos.

Graphics. Whether a project requires a simple single-color layout or a complex multi-color design to communicate a message, the AIC graphic artists are capable of producing them. The graphic arts facility includes computers and the latest graphics and word processing software. The staff provides design, illustration, production of camera-ready materials for forms, brochures, journals, newsletters, business cards, graphs, displays, signs, and artwork for slides, plus a variety of other pre-press production services.

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 VCRs, 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. AIC 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.

Advising Services

Office of Advising Services
Academic Affairs
Joyal Administration, Room 121
(209) 278-2924

Director, J. Richard Arndt

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; max total 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 121. Graduate (including all postbaccalaureate students) and international students **should** process major changes in their respective offices.

The Advising Services staff assist students in undergraduate academic advising, academic petitions procedures, change of major, and general academic problem solving.

Alumni Association

California State University, Fresno
Alumni Association Inc.
Joyal Administration, Room 148
(209) 278-ALUM

Executive Director, Linda Van Kirk

Anna Templer keeps busy selling alumni souvenirs at the annual tailgate party.

The California State University, 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, the association hosts a Golden Grad Reception each year to honor graduates of 50 or more years. Alumni and friends also enjoy special receptions and celebrate at an annual reunion tailgate party.

The Alumni Association network links together more than 2,700 members. Fresno State alumni represent more than 55 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, PriceCostco 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 Fresno State 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 university 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 San Diego, Sacramento, and the Washington D.C. area. 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. Membership is open to all students; annual dues are $15.

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

Scholarships. Fresno State students 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.

Associated Students

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

Associated Students Inc. of California State University, 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 15 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. Your ASI fees of $16 per semester support 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.

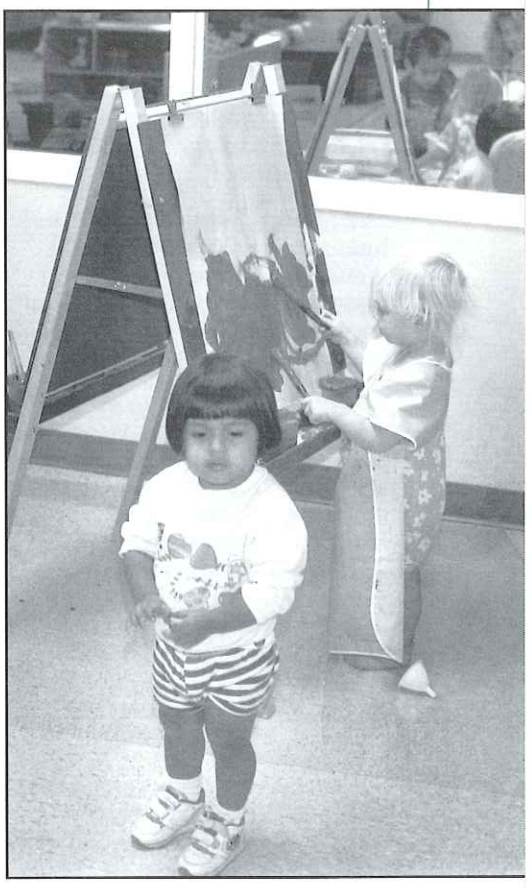
The Campus Children's Center. The center's philosophy is to serve those students with the greatest need, i.e., students who must have this service to continue their education. Consequently, enrollments are established on the basis of priorities. The center accepts children from ages six months to six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

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 $500,000 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, as well as 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.



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.

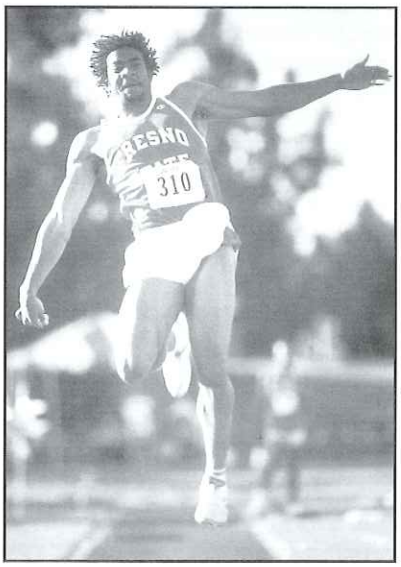
Athletics

Athletic Department
Office of the President
North Gym, Room 146
(209) 278-2643
Director, Allen R. Bohl

Academic excellence and athletic accomplishment go hand in hand at Fresno State — 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, California State University, 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.

Facilities. 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, and Bulldog softball will play this season in a new 2,700-seat stadium. Fresno State has track and field facilities, two gymnasiums, an indoor/outdoor swimming complex, two weight training rooms, 12 newly surfaced tennis courts, six indoor handball/racquetball courts, and putting greens and driving areas complete with sand traps for golf. Fresno State has a new women's locker room, and plans call for the construction of a new weight room.



Derrick Mitchell

Men's Intercollegiate Athletics

Baseball. With 24 NCAA playoff appearances and three College World Series showings, Fresno State has earned a national reputation for having one of the finest baseball programs in the country.

Basketball. The Bulldogs basketball program has enjoyed an infusion of enthusiasm and support, with Selland Arena nearly sold-out on a season ticket basis.

Cross Country/Track and Field. Fresno State'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. The Bulldogs tied for the WAC title and advanced to bowl games in 1992 and 1993.

Golf. The Bulldogs finished fifth at the 1990 NCAA Championships and have earned a Top 20 finish at the national tournament 10 of the past 16 years.

Soccer. Highlights since 1982 include 11 NCAA tournament appearances, a 1986 Final Four showing, and a No. 1 ranking in 1987.

Tennis. The Bulldogs have advanced to the NCAA tournament the past two years. They had their first-ever singles All-American in 1995.

Wrestling. The Bulldogs have had 15 wrestlers achieve All-America status the past 14 seasons, and the 1993 team finished 13th in the NCAA Championships while winning the WAC title.

Women's Intercollegiate Athletics

Basketball. Fresno State'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, winning consecutive conference track crowns in 1991 and 1992.

Soccer. Fresno State women's soccer made its debut as a varsity sport in 1995.

Softball. The Bulldogs have made 18 straight playoff appearances from 1978-95, with nine women's College Word Series appearances.

Swimming. The swimming team finished third in the WAC the past three years.

Tennis. After years of success in the Big West Conference, the women's tennis team finished fourth in its inaugural WAC tournament in 1993 and third in 1994 and 1995.

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

Robyn Yorke

Auxiliaries
2771 East Shaw
(209) 278-0800
Interim Executive Director, Lynn D. Hemink

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 Fresno State 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 California State University, 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 California State University, 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 administers the men's and women's intercollegiate athletic programs of this university. This nonprofit corporation is governed by a board of directors.

The California State University, Fresno Foundation is responsible for the financial management and administration of grants and contracts, oversight of Foundation investments, and operation and management of trust accounts in support of university operations. It is responsible for acceptance and management of all gifts and charitable donations — matching gifts, wills, bequests, trusts, endowments, academic and athletic scholarships, and short-term student loans — made to the university and other auxiliary corporations.

The Foundation provides the campus community with high-quality financial services while generating funds to support university programs and activities.

California State University, Fresno/COS Center

California State University, Fresno/COS Center
915 South Mooney Blvd.
Visalia, CA 93277
(209) 625-3950
(209) 278-4621
Director, Susan Vasquez

The center's office is located on the College of the Sequoias campus in Visalia.

A student can attend classes leading to an undergraduate or graduate degree and can earn a credential or certificate at the California State University, Fresno/COS Center in Visalia. The center offers courses at times that are convenient to reentry as well as community college transfer students.

The center's students are registered as regular California State University, Fresno students, earning resident credit for completed courses, with the majority of courses being delivered via instructional television.

Coursework and degrees offered at the center are fully accredited by the Western Association of Schools and Colleges.

The center is located on the College of the Sequoias campus and has been established as a cooperative arrangement between California State University, Fresno and the College of the Sequoias. The purpose of the center is to provide higher educational opportunities to the communities of Tulare and Kings counties.

Academic Programs

Undergraduate
- Bachelor of Arts in Liberal Studies

Graduate
- Master of Arts in Education with an option in Administration and Supervision

Credential
- Multiple Subject/CLAD
- Administration and Supervision

Student Services

A variety of information and assistance in filing applications is available through the California State University, Fresno/COS Center in the following areas:
- Admissions
- Registration
  STAR registration, Open University, add/drop of courses
- Credential program admission
- Financial Aid
- University Outreach Services
- Testing
- Educational Opportunity Program (EOP)

For more information, stop by the California State University, Fresno/COS Center Office and ask Nita Bilvado, secretary, about the center and what it has to offer you.

Career Development and Employment Services

Career Development and Employment Services
Student Affairs
Joyal Administration, Room 256
(209) 278-2381
Director, Arlene L. Bireline

The Career Development and Employment Services (CDES) office 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.

CDES provides services that help you develop and implement your career plan. Services include career counseling, part-time employment, cooperative education, job search workshops, full-time job interviews (held on campus), and career information. 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 a counselor for consultation on a walk-in basis.

Undergraduate and Continuing Student Career Services. Ideally, the career decision-making process should begin as soon as you enter the university. Consider talking with a counselor who will assist you in making your career decision by directing you to the appropriate service: career testing, workshops, computerized guidance systems, and/or career information. Other resources available include Career Day, the Career Information Network, and the Resource Center. These services and resources will help you select a major and career goal compatible with your career interest.

Undergraduate Employment. Whether you're looking for a part-time or summer job to help you with expenses or a work experience that will help you prepare for your career, the CDES offers a number of undergraduate employment and work-related learning opportunities. To discover what opportunities await you, visit the Campus Facility in Joyal, Room 256.

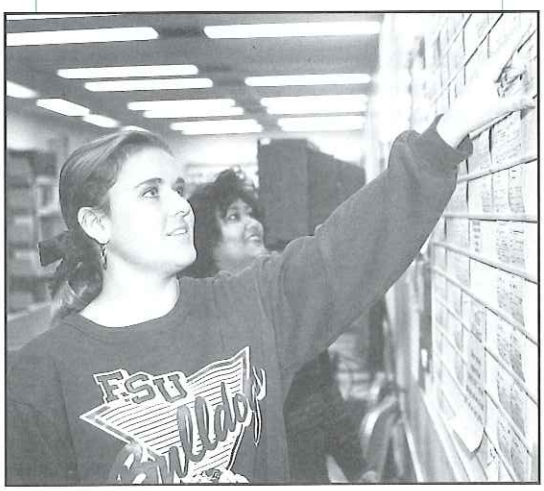
In addition to gaining valuable experience through working or volunteering, you will have a realistic means to test your career decision, and in some cases, to earn academic credits (see *Students for Community Service,* page 53.)

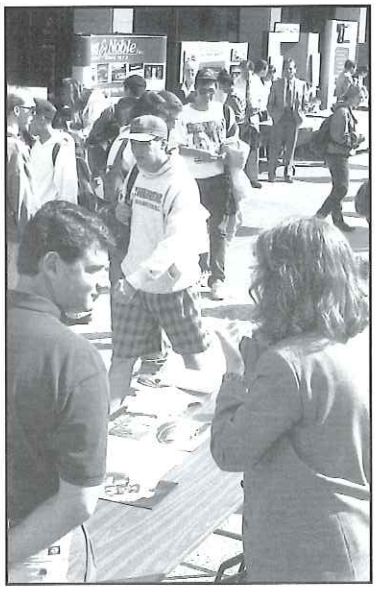
Depending on your interests, goals and financial needs, you might be interested in accessing services through any one of our undergraduate programs, including student employment, cooperative education, and community service.

The Career Resource Center provides current information about majors, careers, trends, course requirements, salaries, and the future outlook. The Resource Center contains numerous periodicals, books, videos, and publications with information that will help you select a career. Two computer-assisted guidance systems are located in the center.

Graduate and Alumni Career Services. The CDES maintains a comprehensive, full-time Employment Facility located at 1700 E. Bullard, Suite 103, approximately one mile north of campus.

The Employment Facility offers a wide variety of employment-related services for graduates and alumni of the CSU system. Career employment can be obtained from current employment listings, from national, regional, and local organizations that actively recruit through campus interviews, from job fairs, and job search on the Internet. The facility also maintains an active program designed to effectively assist teachers and other education professionals in obtaining positions at all levels of education.

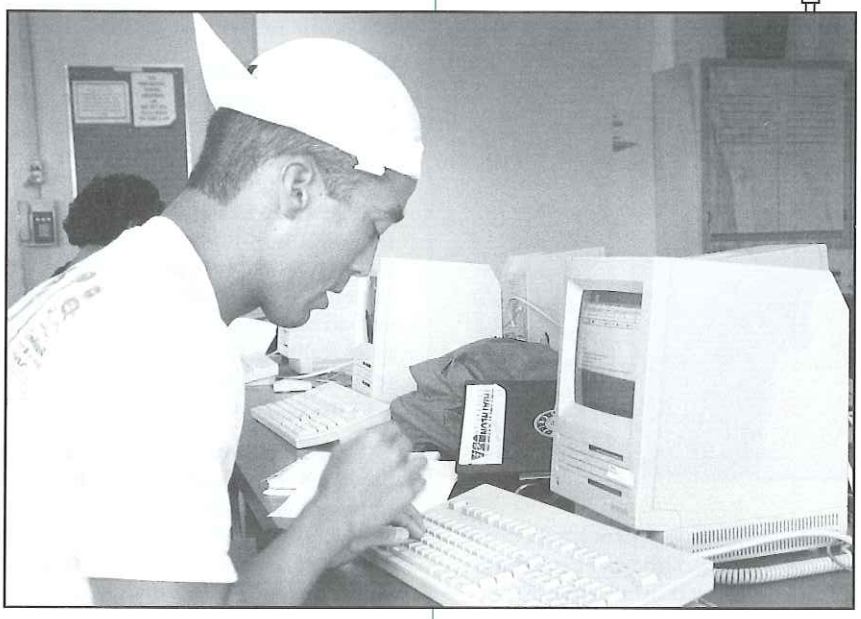


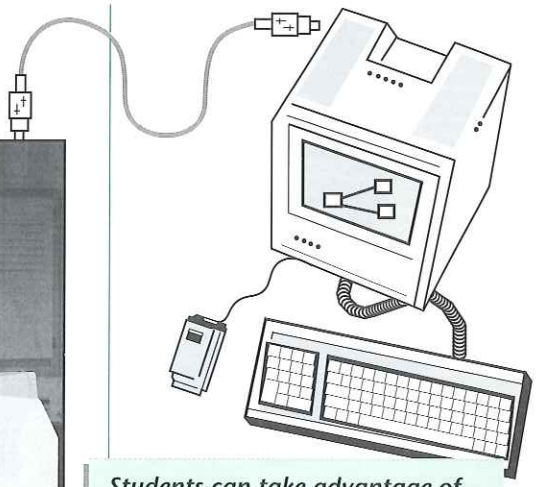


At left, students view job boards daily for part-time employment. In the fall, "Career Day" provides an opportunity for students to discuss employment with various employers. And always, the Employment Facility provides full-time job services to graduating students and alumni.

Computer Services

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





Students can take advantage of many CCMS-managed computing laboratories. Most of the IBM PC compatibles and Macintosh microcomputers are networked to file servers and also provide access to the student UNIX host.

Computing, Communications, and Media Services provides computing and communications support for the instructional, administrative, office, and data communications needs of California State University, 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.

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.

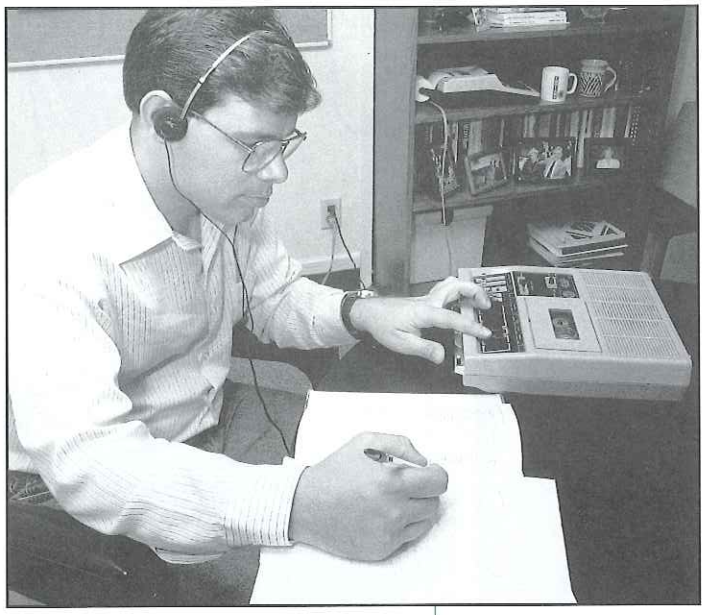
Administrative Computing. The campus administrative systems — such as student records, scheduling, business, and accounting — run on an IBM mainframe located in the McKee Fisk computer room. CCMS provides programming and operating support for all administrative computing at California State University,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

Networking. California State University, 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.

Disabled Student Services

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

Coordinator, Robert E. Lundal



Michael Januse listens to an audio tape of his textbook.

Disabled Student Services (DSS) provides specialized resources that assist students with physical, perceptual, and learning disabilities in achieving maximum independence while pursuing educational goals. Staff specialists interact with all areas of the university to eliminate physical, academic, and attitudinal barriers.

Disabled Student Services takes a personal interest in meeting the special needs of students with disabilities. Students who have temporary or permanent disabilities that may affect academic functioning may be eligible for a variety of support 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.

Students can move freely throughout our 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 use wheelchairs.

Other services include blue curb parking, campus access maps, and wheelchair loans for those with temporary needs.

Swimming, wheelchair tennis, weight training, and other physical fitness activities are available through the Individualized Adaptive Physical Education Program.

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

The Resource Center offers academic support services to students with physical, perceptual, and learning disabilities. These support services may include readers, notetakers, scribes, audio-taped textbooks, large-print books, 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.

Learning Disabilities Support Services. Support services to assist students with documented learning disabilities include instruction in alternative learning strategies and techniques and disability management advising with an emphasis on personal growth and development, independence, and self-advocacy. In addition, services may include testing, notetaking, reading, computer instruction, and diagnostic assessment.

Deaf and Hearing Impaired Services. DSS staff act as a liaison between students and faculty. In addition, DSS provides interpreter and notetaker services for academic activities.

Registration Assistance. Students with disabilities may be eligible for priority registration to facilitate scheduling of classes.

Student Responsibility. It is the student's responsibility to request services from DSS and to provide appropriate verification of disability. The student is also responsible for personal accommodations such as attendant care, transportation to and from the campus, and other personal services not directly related to academic coursework. DSS staff will assist students who need to contact campus, state, and community agencies that provide such services.

Independence for students with disabilities has become a reality on this campus. DSS staff are convinced that the student's creativity, coupled with DSS specialized resources, will result in an extremely rewarding educational experience.

Distance Learning

Distance Learning
Academic Innovation Center
McKee-Fisk, Room 110
(209) 278-2058

Administrative Coordinator, Ray Freeman

Distance Learning provides a convenient way for students living in remote areas to attend university classes from various off-campus locations. Through the medium of closed-circuit television, live, interactive classes are broadcast from teleclassrooms on the main campus to designated classrooms throughout the Valley. Two-way telephone talk-back allows direct and immediate communication with the instructor, while overhead microphones allow questions and comments from both groups of students to be heard.

Some sites are equipped with two-way video interaction as well, thus enhancing the potential for student presentations and visual stimuli. Students at all off-campus locations see and hear everything that happens in the on-campus teleclassroom and are, in fact, a vital part of the class. Live two-way interaction creates a sense of "family" and ensures the appropriate questioning and feedback that marks a true learning experience.

Distance Learning courses count toward degree requirements in the same way as their on-campus equivalents and are transferable to any CSU or UC campus. The program offers courses at times that are convenient to reentry and nontraditional students who work during the day, have family commitments, or have difficulty traveling to Fresno. This means that degree requirements can be earned without the time and expense of commuting, thus speeding the progress and reducing the cost.

In addition, Distance Learning allows an opportunity for high school students to participate in university courses. The Scholastic Enhancement Program allows qualified high school students to take Fresno State classes from their home campus and earn university credit before high school graduation.

Courses Offered. Distance Learning offers a variety of courses:

- Undergraduate — Upper-division
- Graduate — Education
- Credential — Education
- Scholastic Enhancement — Lower division

Distance Learning Sites. More than 15 distance learning sites are located throughout the Valley:

- California State University, Fresno/COS Center, Visalia
- Kings River Community College, Madera
- Kings River Community College, Reedley
- West Hills Community College, Coalinga
- West Hills Community College, Lemoore
- Corcoran High
- Dos Palos High
- Hanford Union High
- Laton High
- Lemoore High
- Lindsay High
- Madera High
- Selma High
- Tulare Union High
- Woodlake High
- Yosemite High

Special schedule numbers are assigned for remote sites. Check the university's *Schedule of Courses* or contact the Distance Learning Office.

Distance Learning operator Kirk Fornataro transmits a lesson via ITFS and compressed video to classrooms at other schools, including the California State University, Fresno/COS Center, area community colleges, and high schools.

Educational Opportunity Program

Educational Opportunity Program
Student Affairs
Joyal Administration, Room 230
(209) 278-3021

Director, Robert P. Hernandez

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 limited 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.

EOP students receive a wide range of information — from assessment of class schedules to financial aid status to housing arrangements.

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 $3\frac{1}{2}$-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 system-wide application booklet and the EOP application from the Admissions or EOP offices at 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 Request form
- ACT or SAT 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.

Extended Education
Education Building, Room 130
(209) 278-0333

Dean, Audrey S. Anderson

Extended Education

Eldercisers — one of the many life enrichment courses offered through Extended Education.

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.

California State University, 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 university's 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 to university students who wish to earn residence credit toward a degree and to individuals from the community wishing to continue their education. These programs often accelerate progress toward earning a degree or credential.

For a catalog of current course offerings, call the Division of Extended Education, **278-0333.**

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.

The university underwrites a portion of the costs of operating the UHC. Students, on a cost-sharing basis, contribute to the operation of the UHC by paying at the time of registration each semester a mandatory health fee which may only be used to support the student health program. Thereafter, the student pays nothing further for most services provided within the Health Center. 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 UHC or at various locations on campus.

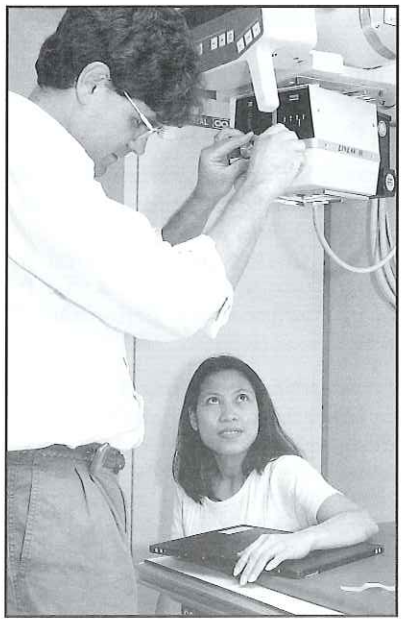
Facilities. The Health Center is uniquely designed as a medical building with well-equipped doctors' offices and examination rooms linked by a computer-based medical management system. Up-to-date laboratory, X-ray, pharmacy, and physical therapy facilities are located in the building as well.

The staff is fully qualified to meet your health care needs. The staff includes full-time physicians (including specialists in internal medicine and family practice), nurse practitioners, nurses, pharmacists, a physical therapist, a health educator, a nutritionist, clinical laboratory and X-ray technologists, and a medically knowledgeable and sensitive clerical staff. Part-time physician consultants in orthopedics, psychiatry, radiology, and dermatology are also available.

Counselors are professionals trained 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 personal 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, your parents must consent to your treatment.

Women's Health. The Health Center provides a range of services to meet a woman's unique medical needs, to include comprehensive examination, laboratory testing, Pap tests, counseling, and consultation. Availability of services may vary during the school year depending upon staffing and patient requirements. Contact the Health Center for a specific appointment and service information.



Bob Desch, staff X-Ray technologist, prepares a patient for an examination as ordered by her physician.

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

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. A charge may be necessary for high-cost vaccine. This includes administering allergy shots to students who have their own medication. 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 onetime 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 coverage for hospital benefits, medical, surgical, and related services for any illness or accident.

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 health education programs. Health education literature is available in the Health Center and in the University Student Union.

Housing

University Housing
The Lodge
(209) 278-2345
Acting Director, Jim D. Prince

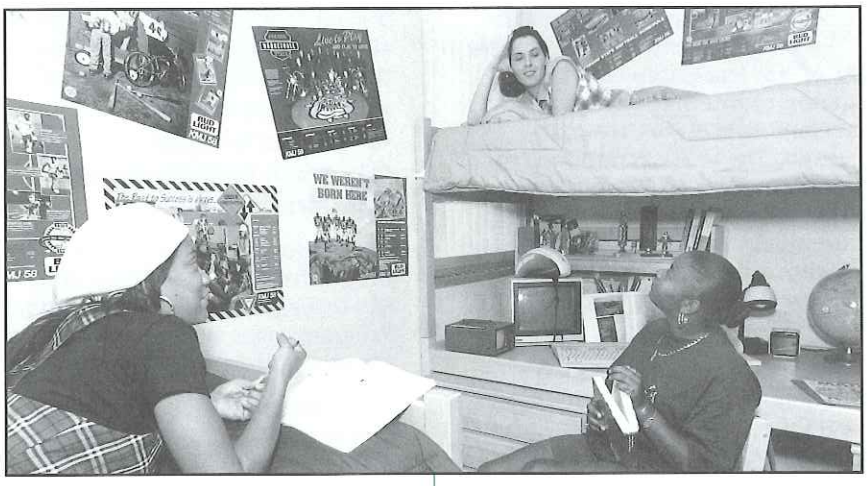
Newly remodeled facilities are available to student residents living on campus. The renovation included new furnishings, paint, carpet, window coverings, and the addition of residence suites, a fitness center, and computer laboratory.

Living on campus will be an important part of your educational experience. You will become a part of a community of students who share experiences, learn to trust one another and support each other in obtaining academic success. Your room is fully furnished and air conditioned. A meal plan, basic cable, utilities, outdoor swimming pool, laundry facility, recreation facilities, and community custodial services are included.

Residence Hall Living. The convenience of on-campus living makes it easy to go to and from class, use the campus library, and attend dances, plays, lectures, and concerts during evenings and weekends.

The halls have a variety of interesting programs designed to add an exciting dimension to on-campus living. Social activities include dances, special hall and floor dinners, barbecues, and movies. Educational programs provide information on such topics as alcohol awareness, appreciation of differences, personal safety, and resume writing.

Individual Halls. The housing complex consists of nine residence halls, housing support services building, and the residence dining facility. Baker, Graves, and Homan Halls each house 192 students in a design that encourages building unity. Aspen, Birch, Cedar, Ponderosa, Sequoia, and Sycamore provide one, two, or three bedroom residence suites with a living room and bathroom. Quiet, substance free, and international living areas are available. All halls are coed and house men on one floor, wing, or suite and women on another. A total of 1,000 students live on campus.



The majority of the rooms are shared by two students, although approximately 120 single rooms are available if you want 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.

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. Resident advisers receive training in active listening and crisis intervention and understand the workings of the university so they can assist students with academic-related issues, emergencies, and personal concerns.

How to Apply. The housing application process is separate from the university admissions process.

Applications are available in January for the fall semester and in October for the spring semester. You are urged to apply early as on-campus space is limited. Your contract is for an entire academic year unless you graduate, marry, or withdraw from the university.

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 to submit your housing application. If you are denied admission, your deposit will be refunded to you once you notify us. To request a housing application, contact the Housing Office at **(800) 555-0482 or (209) 278-2345.**

Employment Opportunities. Students living in the residence halls receive priority consideration for student positions available in housing, food services, and the bookstore. Information is included in your housing application packet.

Priority Registration. Residence hall students who sign up by April 11 to return to the halls for the following semester receive priority registration for courses.

Off-Campus Housing. Listings of houses, rooms, and students looking for roommates are available in the Student Activities Office. The university does not inspect, approve or disapprove any units offered for rent.

International Programs

International Programs Office
Academic Affairs
Family and Food Sciences, Room 111
(209) 278-6452 FAX (209) 278-4203
Director, Peter J. Klassen

The International Programs Office 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. We encourage students to spend a semester or longer studying abroad.

An advisory board works with the director to assist in this task. A resource center, maintained in the International Programs Office, provides international education materials for faculty, staff, and students, while a newsletter, *Horizons International*, reports on latest developments.

The university, in its *Plan for the '90s*, set a goal of 10 percent for students participating in study abroad.

Several "semester abroad" programs allow students to complete part of their studies in other countries:

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

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

In its determination to enhance global understanding, California State University, Fresno encourages international academic exchange and cooperation. The university also has partnerships with a number of universities around the globe.

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
- Zhambyl Technological Institute, Kazakhstan
- Belarusian 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
- University of Central Lancashire, United Kingdom
- University of Gdansk, Poland

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.

For the experience of a lifetime, contact the International Programs Office at 278-6452.

International Student Services and Programs

International Admissions/International Student Services
Student Affairs
Joyal Administration, Room 211
(209) 278-2782 FAX (209) 278-7879
http://www.csufresno.edu/issp
Director, Carol B. Munshower

California State University, Fresno welcomes you to our large international student community. Our multicultural staff is committed to international student success, as stated in our mission statement. We provide a comfortable environment that allows you to make the most of your educational experience.

We process your application for admission and send you 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 Second Language courses during your first semester or a course in American culture and society. (See *International Programs — Special Programs* section.) Some of the other opportunities available to you include the following:

Help with housing is provided. The International staff is available to assist you in obtaining housing. 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.

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

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

Take advantage of opportunities to share your country and culture with the Fresno community and the Fresno State campus by speaking to small groups through our Exploring Global Diversity — International Coffee Hour series.

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 around the United States by using our Resource Center. A computer terminal is also available for electronic mail and Internet connections.

The foreign student advisers take a personal interest in helping you adjust to the academic environment and resolve your own personal concerns, such as financial assistance, immigration matters, and personal needs. 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.

Mission Statement

Our mission is to provide the highest quality services to international students, staff, and faculty at California State University, Fresno.

We are committed to:

- providing a warm and informative welcome to international students, recognizing their importance and their contributions to the campus and the Fresno community
- providing appropriate services and assistance to international students so they do not face challenges alone
- working with international students to build a home away from home where they have opportunity and encouragement to pursue their dreams, be involved in the university community and have their efforts recognized
- encouraging international students to ask questions and offer suggestions while we do our utmost to address their concerns with respect, reassurances, and understanding
- serving as a resource to faculty and staff to facilitate international exchange, enhance cross-cultural communication and support international endeavors, and
- offering our friendship today and tomorrow as we work together to dream and build a better world.

Learning Resource Center

Learning Resource Center
Academic Affairs
Keats Campus Building
(209) 278-3052
Director, Carole A. Snee

Student tutor Satomi Fujikawa (left) discusses a math problem with Khambay Malavong in the LRC Math Lab.

The Learning Resource Center (LRC) provides services to all university students who would like to become more independent and efficient learners. The LRC houses the following programs and services:

The Intensive Learning Experience (ILE) Program provides academic assistance to freshmen who score at or below the lower quartile on the EPT (T141 and E7) and/or the ELM (370 or below). ILE features courses in English, English as a second language, basic math, and reading (see *Courses* below) with a 1-17 teacher-student ratio, counseling services, and academic advising. The program's aim is to increase the retention and graduation rates of historically underrepresented and underprepared college students.

The Services to Undergraduates for Retention, Graduation, and Excellence (SURGE) Program provides academic assessment, individualized instructional support, and personal and career development skills to low income and/or first generation college students and students with disabilities. The program's purpose is to improve the academic performance, retention, and graduation rates of SURGE students and to enable them to gain the knowledge and skills necessary for the full range of academic and career options.

University Tutorial Services are available to enrolled Fresno State students. Tutoring for small groups is primarily available in high-demand subject areas. Groups of up to four students are matched for one-hour weekly sessions with faculty-recommended student tutors. Drop-in labs in accountancy and mathematics are also available. The tutoring services of the Educational Opportunity Program (EOP), the University Migrant Services (UMS) Program, and the ILE English as a Second Language (ESL) lab are in the LRC and work collaboratively with the university's tutorial services.

The following courses are offered by various departments in cooperation with the LRC and its associated programs for institutional credit, ***CR/NC*** grading only, except for English as a Second Language and College Planning Skills:

Univ 20T. College Planning Skills (3)
A seminar course 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.

Engl A. Fundamental Writing Skills (1-3; max total 3)
This course is for students who score at or below T150 and E7 on the EPT.

Engl ARL. Fundamental Writing Skills Center (1-2; max total 2)
This course is for students enrolled in English A.

ESL 20 and 30. English as a Second Language (3 units each)
These two courses are for non-native English speakers scoring at or below T129 and E6 on the EPT.

Math ILR. ELM Basic Mathematics Skills (3-6; max total 6)
This course is for ILE eligible freshmen who score 370 or below on the ELM test.

LEE AR. Reading Skills (1-2; max total 2)
This course covers vocabulary development, comprehension, and reading rate for ILE Program students whose EPT reading score is 135 or below.

The following course is offered to SURGE Program students for institutional credit:

LEE 1R. Reading Application Skills (1-3; max total 3)
This course emphasizes identifying main points, outlining, skimming, drawing inferences and conclusions and developing vocabulary.

Library Services

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

Dean, Michael Gorman

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

Online System. ALIS includes an online catalogue enabling you to locate books, journals, and other library holdings quickly and easily. You can also gain access to a number of periodical indexes at the ALIS*plus* terminals in the library. 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 900,000 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 2,600 periodicals from all over the world. A complete and up-to-date listing indicating which issues are available may be found in ALIS.

Government Publications. The Government Documents Department is a selective depository for United States and California documents. The department contains a circulating collection of more than 220,000 documents on all topics.

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

Services

Assistance. 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. For a fee — cost-recovery only — you may work with a librarian to gain access to a wide range of databases, in addition to those available free at ALIS and ALIS*plus* terminals.

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 in the Music and Media Library (third floor).

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

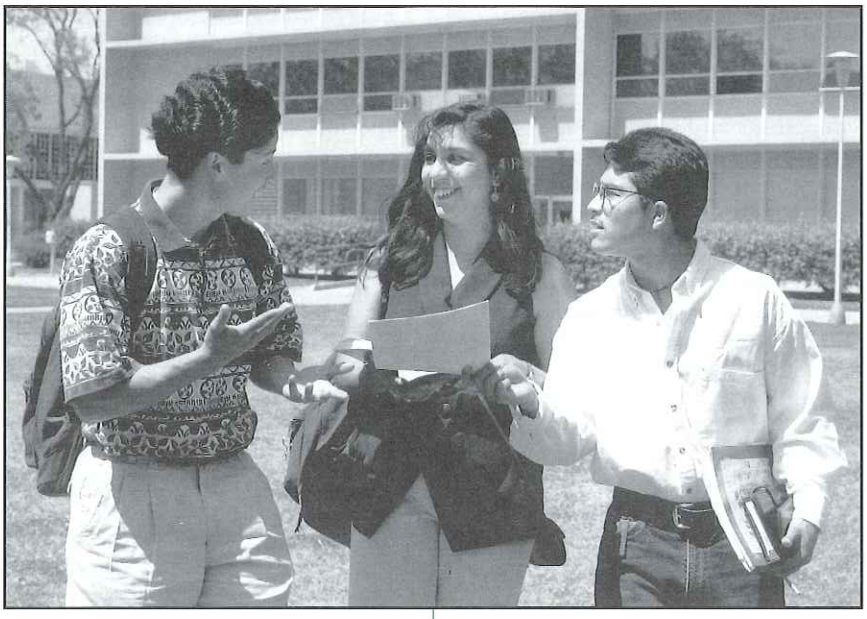
Resource Center for Students with Disabilities. The Resource Center, housed on the first floor, provides a variety of services, including listening and recording booths, braille reference books, and reading machines for the visually impaired.

ALIS terminals are found throughout the library.

Migrant Services

University Migrant Services
Student Affairs
Joyal Administration Building, Room 204
(209) 278-4768 FAX (209) 278-6654
Director, Raul Z. Moreno

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



The Office of University Migrant Services (UMS) at California State University, 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 Fresno State (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
Joyal Administration, Room 212
(209) 278-7533
Interim Coordinator, Gina Simonsgaard

Orientation at California State University, 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, Fresno State 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.

Fresno State'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.

Making an investment in your educational success at the university by attending a *Discovery* or *Advising Day* will provide you with earlier access in your telephonic registration, if eligible.

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 programs scheduled prior to 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 and Counseling Center
- information on financial aid and admission status, transfer courses, and special academic programs
- small group sessions on academic and social campus resources/services
- presentations/discussions with administrators, faculty, staff, and student leaders
- resources/services fair
- a visit to residence halls
- lunch with staff and students
- EPT/ELM questions answered, and
- social "get acquainted" activities.

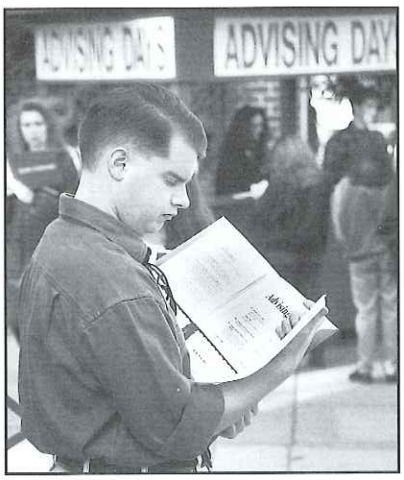
Participating in orientation will help you feel more at home at Fresno State.

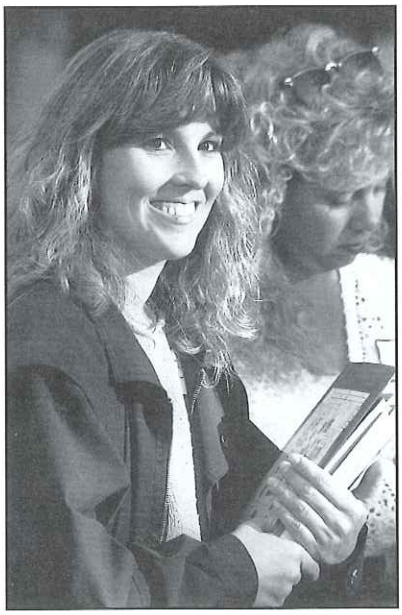
For eligible new students, special orientation sessions are offered by EOP Summer Bridge.

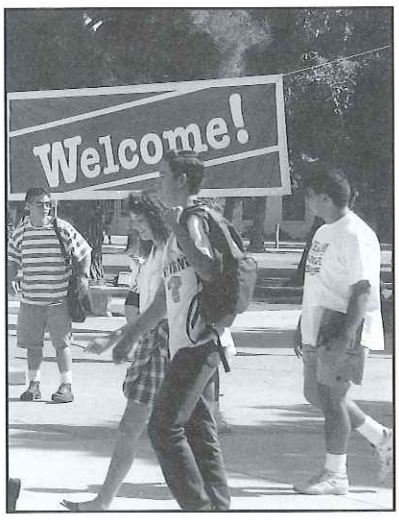
Welcome Week offers new and returning students, faculty, and staff the opportunity to get to know and enjoy their university community. Featured programs on health, safety, and academic success; open houses, tours, and receptions; and special events like the Community Services Opportunities Fair and 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, provost, 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.**







Outreach Services

Office of University Outreach Services
Student Affairs
Joyal Administration, Room 251
(209) 278-2048
Director, Frances A. Peña

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

As a regional university, Fresno State concentrates its major outreach activities in high schools and community colleges in the Central Valley which extends from Sacramento to Bakersfield.

The primary focus of UOS is to assist students with preadmission procedures necessary to attend Fresno State 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 Project sponsors several activities to promote and increase the number of transfer students.

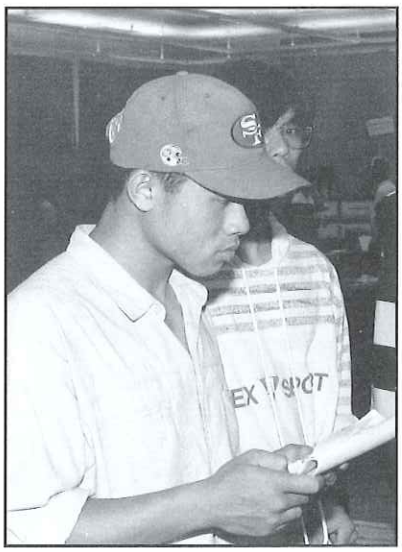
Campus tours are conducted by student tour guides for prospective students and their families. Group tours may also be accommodated with advance notice. Contact the office for the scheduled hours.

College Ambassador Program. Service area high schools 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 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.

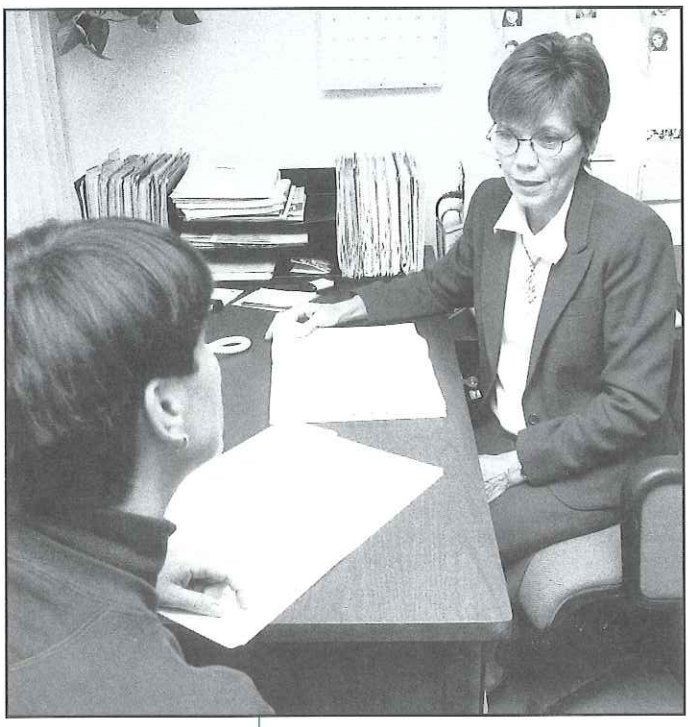
Elementary Outreach. Elementary age students are encouraged and motivated to attain academic achievement and to begin setting goals. Outreach programs are targeted at elementary schools in the Fresno Unified, Clovis Unified, and West Fresno School districts.



Students interested in attending Fresno State may obtain information from UOS through either its many site visits, classroom presentations, college fair booths, campus tours, or by calling the office.

Reentry Programs

Reentry Programs
Student Affairs
Main Cafeteria West
(209) 278-3046
Coordinator, Angela Cisneros



Phyllis Redfield, career and testing specialist, discusses major and career options with a reentry student.

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 provide emotional support and an opportunity for you to share concerns with other reentry students.

"Let's Do Lunch," 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 are available to assist you in making well-informed, appropriate decisions when change is needed.

Workshops, offered in the evenings to 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.**

Student Affairs

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

Acting Dean, Judy K. Sakaki

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

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 reentry, 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.

Dispute Resolution. A dispute could arise out of a decision or action in the course of official duty by a member of the faculty, staff, or administration of California State University, 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 dispute resolution 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.

Students for Community Service

Students for Community Service
Academic Affairs and Student Affairs
Joyal Administration, Room 256
(209) 278-7079

Director, J. Leonard Salazar
Coordinator, Chris Fiorentino

At its first statewide conference, California Campus Compact presented the Institutional Award for Leadership in Service to California State University, Fresno. California Compact recognized our campus for its success in establishing the Students for Community Service program and for the 300 percent increase in students involved in community service. More than 1,000 students are participating in volunteer activities through the program.

Give *just* a little. Give a smile to someone who does not 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 cannot read.

Before you leave this university, make a connection with Students for Community Service (SCS) and make a positive difference in someone's life.

SCS 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

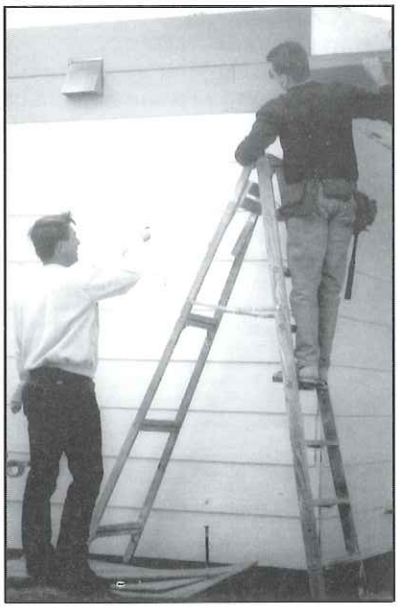
Who Volunteers? Hopefully, you will volunteer. If you enjoy the rewards of helping someone in need and are concerned with social issues, SCS can find a place for you to share your talents with others. In return, you will experience real-life situations that could help you decide what career path to pursue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

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

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.

You can receive academic credit if you successfully complete the following course:

Com S 101. Students for Community Service (1-3; max total 6 units toward degree electives)
Volunteer opportunities designed to develop skills and knowledge that promote responsible leadership and citizenship. Students obtain career-related work experience and an opportunity to supplement their academic education with a service-learning experience. Students must meet with the SCS coordinator at the beginning of the semester.



Whether they are building the spirit of a child in a hospital or building homes for people in need, SCS student volunteers are always "on the job." Valley Children's Hospital and University HOPE: Housing OPportunities through Education are just two examples of how you can participate in this community service program.

Testing Services

Office of Testing Services
Academic Affairs
Family and Food Sciences, Room 110
(209) 278-2457
Test Officer, William P. Stock

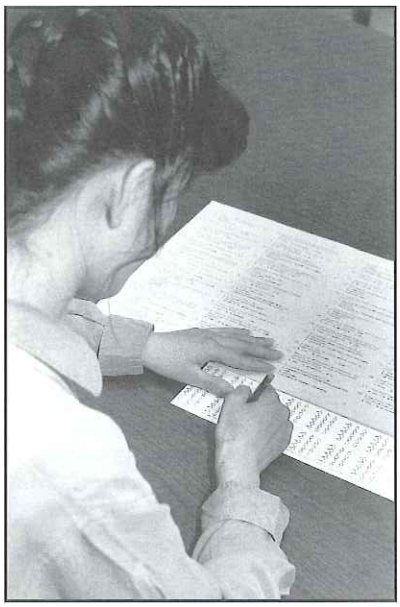
Taking a test may not be your favorite way to pass the time away, but test taking is very much a part of student life on a university campus.

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.

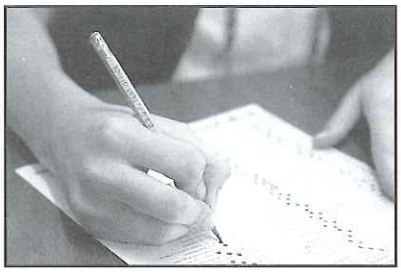
Undergraduate Entrance Examinations. Your application for admission to Fresno State may require scores from the SAT or ACT. For international students seeking university admittance, special dates for the Test of English as a Foreign Language (TOEFL) are offered.



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

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), PRAXIS (formerly National Teacher's Examination or NTE), and others. The California Basic Educational Skills Test (CBEST) and the Miller Analogies Test (MAT) are 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 Saturday testing; and Beverly Travis, secretary.

University Student Union and Student Life

Office of Student Life and Development
Student Affairs/
California State University, Fresno 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. 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 while promoting college activities to enhance intellectual growth. 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 University Student Union and the Office of Student Life and Development function as the administrative home for a variety of student program offices in the Division of Student Affairs. These programs include student leadership development, Greek affairs, student clubs and organizations, intramurals and recreation, student activities, and Southeast Asian student services.

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. 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 Fresno State students and the community. There are a variety of competitions and performances, as well as a carnival and a large crafts fair. Student Life also supports African People's History Month, AmerAsia Week, the Cinco de Mayo Celebration, 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 Food Court 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, and lecture series tickets. The Union also operates the Satellite Student Union, a major programming facility on the campus.

Inside your Student Union, you have several entertainment options, such as foosball or a friendly game of chess.

Veterans Affairs

Veterans Affairs
Academic Affairs
Joyal Administration, Room 106
(209) 278-7030

Coordinator, Claudia Morrison

The Office of Veterans Affairs (OVA) at California State University, 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 Fresno State 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 OVA include the following:

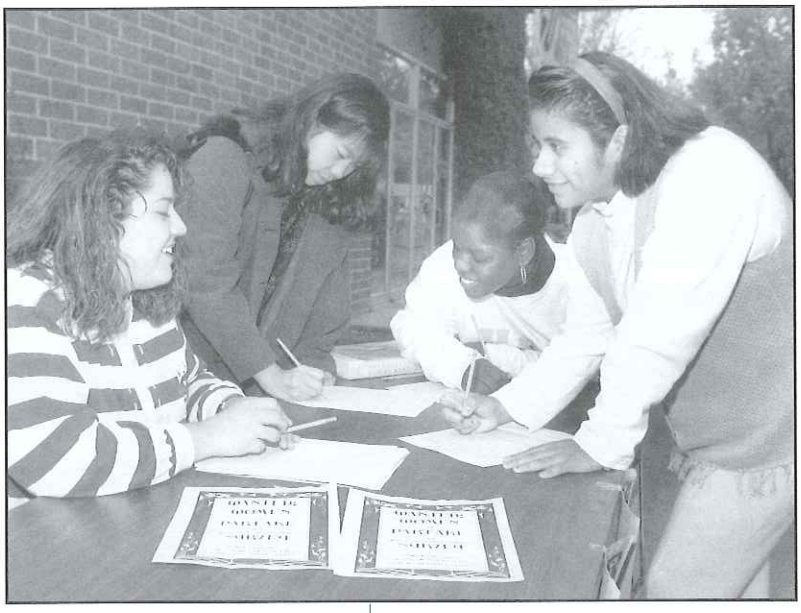
- Processing veterans application for educational benefits
- Processing and forwarding certification forms
- Processing application for advance pay
- Processing enrollment status, i.e., dropping of units, changing of majors, withdrawals, etc.
- Processing of fee waivers
- Inquiries
- Academic advising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

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

Women's Resource Center

Women's Resource Center
Student Affairs
Main Cafeteria West, Room 127
(209) 278-4435

Coordinator, Francine Oputa



In the Free Speech Area, students share information about the Women's Resource Center.

The Women's Resource Center provides services to enhance the learning and working experiences of women in the university community. The center provides a supportive environment for interaction and self-discovery through a wide range of campus activities.

The center is inclusive of the full spectrum of university women — students, staff, faculty and administrators. Men are encouraged to participate in the center's activities for purposes of supporting organizational goals and promoting among their peers recognition of sexism, racism, and other forms of discrimination against women.

The center is inclusive of all women on campus regardless of age, ethnicity, sexual preference, and/or disability. The center's staff seek to provide a haven against the intolerance and negative stereotyping that are abundant in society and also to offer a place for a diverse interchange of ideas and experiences, which is the *basis* for a positive academic setting.

Physical Space. The center provides a place where women can share among one another, learn in a collaborative rather than competitive fashion, and seek growth promoting experiences.

Internships and volunteer opportunities are available for interested students. Course credits are possible.

Support and discussion groups are offered on a variety of issues including, but not limited to, current women's issues, single parents, body image, sexual abuse, lesbian support, and women of color support.

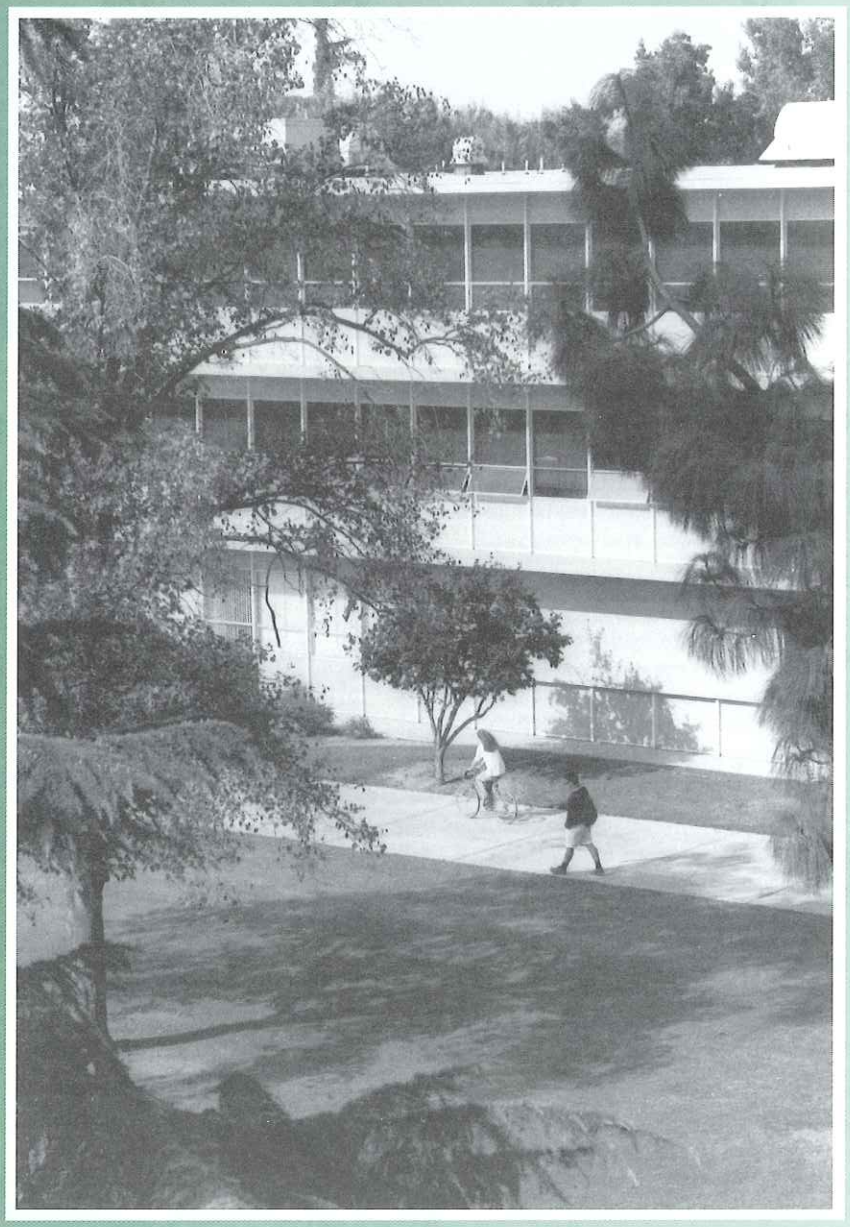
Peer counseling and referral services are available to women who are coping with personal transitions, crises, or any other life experiences for which they need nonjudgmental guidance and support.

Training is offered for individuals who are interested in leading support groups or providing peer counseling to other students. The center also offers joint training with the local rape crisis center for those interested in becoming advocates for victims of sexual assault.

Special Projects. The center welcomes input from the university community on special programs that fit the mission of the center. The center provides a variety of intellectual, cultural, social, artistic, recreational and personal growth activities for women. The activities celebrate the multicultural composition of our community and promote healthy lifestyles and nonviolent relationships. In collaboration with other campus women's groups, work is also done each year on Women's Herstory Month and End Violence Against Women Week.

If you would like more information about the many opportunities for women, visit the Women's Resource Center or call (209) 278-4435.

Until women, regardless of appearance, are valued as full and equal human beings, each of us will continue to run up against formidable hurdles to self-respect and self-acceptance.
Wendy Chapkis



Admissions, Fees, and Financial Assistance

Admission Requirements and Registration Process

Admissions Office
Joyal Administration Lobby
(209) 278-2261
Director, Minerva Escobedo

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, paper or electronic, 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 of 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 undergraduate programs of study in day or evening classes, must file a complete undergraduate application as described in the undergraduate admissions booklet or in the electronic application packet. 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 California State University, 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 California State University, Fresno.
3. Take the Scholastic Aptitude Test (SAT I) or American College Test (ACT) and request official scores

be sent to California State University, 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.

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.

Remedial course units are not accepted for admission or 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.

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 I 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 graduate-level courses for personal or professional growth) must file a complete graduate application as described in the graduate and postbaccalaureate 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 alternate 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 or any admissions office of any California State University campus or any California community college.

Postbaccalaureate students seeking a second undergraduate degree must file an undergraduate admission application.

For additional information, see the *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*.)

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 1. Student notification begins in December.
- Applications for the spring semester are accepted beginning August 1. Student notification begins in September.

ELIGIBILITY INDEX TABLE

for California High School Graduates or Residents of California

GPA	ACT Score	SAT I Score	GPA	ACT Score	SAT I Score	GPA	ACT Score	SAT I Score
3.00 and above qualifies with any score			**2.66**	17	780	**2.31**	24	1060
			2.65	17	780	**2.30**	24	1060
2.99	10	510	**2.64**	17	790	**2.29**	24	1070
2.98	10	520	**2.63**	17	800	**2.28**	24	1080
2.97	10	530	**2.62**	17	810	**2.27**	24	1090
2.96	11	540	**2.61**	18	820	**2.26**	25	1100
2.95	11	540	**2.60**	18	820	**2.25**	25	1100
2.94	11	550	**2.59**	18	830	**2.24**	25	1110
2.93	11	560	**2.58**	18	840	**2.23**	25	1120
2.92	11	570	**2.57**	18	850	**2.22**	25	1130
2.91	12	580	**2.56**	19	860	**2.21**	26	1140
2.90	12	580	**2.55**	19	860	**2.20**	26	1140
2.89	12	590	**2.54**	19	870	**2.19**	26	1150
2.88	12	600	**2.53**	19	880	**2.18**	26	1160
2.87	12	610	**2.52**	19	890	**2.17**	26	1170
2.86	13	620	**2.51**	20	900	**2.16**	27	1180
2.85	13	620	**2.50**	20	900	**2.15**	27	1180
2.84	13	630	**2.49**	20	910	**2.14**	27	1190
2.83	13	640	**2.48**	20	920	**2.13**	27	1200
2.82	13	650	**2.47**	20	930	**2.12**	27	1210
2.81	14	660	**2.46**	21	940	**2.11**	28	1220
2.80	14	660	**2.45**	21	940	**2.10**	28	1220
2.79	14	670	**2.44**	21	950	**2.09**	28	1230
2.78	14	680	**2.43**	21	960	**2.08**	28	1240
2.77	14	690	**2.42**	21	970	**2.07**	28	1250
2.76	15	700	**2.41**	22	980	**2.06**	29	1260
2.75	15	700	**2.40**	22	980	**2.05**	29	1260
2.74	15	710	**2.39**	22	990	**2.04**	29	1270
2.73	15	720	**2.38**	22	1000	**2.03**	29	1280
2.72	15	730	**2.37**	22	1010	**2.02**	29	1290
2.71	16	740	**2.36**	23	1020	**2.01**	30	1300
2.70	16	740	**2.35**	23	1020	**2.00**	30	1300
2.69	16	750	**2.34**	23	1030			
2.68	16	760	**2.33**	23	1040			
2.67	16	770	**2.32**	23	1050	Below **2.00** does not qualify for regular admission		

Applications postmarked or received during the initial filing period will be given equal consideration within established enrollment categories and quotas. There is no advantage in filing before the initial filing period. Applications received before the initial filing period may be returned, causing a delay in processing. With the exception of the impacted undergraduate program areas, applications will be accepted well into the extended filing periods until quotas are filled.

Application Acknowledgment. You may expect to receive an acknowledgment of your application from your first choice campus within two to four weeks of filing the application.

A notice that space has been reserved for you will also include a request that you submit the records necessary for the campus to evaluate your qualifications. You may be assured of admission if the evaluation of your qualifications indicates that you meet admission requirements. Such a notice is not transferable to another term or to another campus.

Hardship Petitions. The campus has established procedures for considering 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 American College Test (ACT) or the Scholastic Aptitude Test (SAT I). 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 I. 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 2900 using the SAT I or 694 using the ACT. The Eligibility Index Table illustrates several combinations of required test scores and averages.

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 3502 (SAT I) 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 I 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

Alternate Admission Criteria — UC Prepared Applicants. Beginning with the academic year 1995-96 and continuing through 1997-98, the CSU will conduct an admission experiment that will permit campuses to admit applicants who have completed all of the UC college preparatory (a-f) requirements.

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. Applicants with disabilities are encouraged to complete college preparatory course requirements if at all possible. If you are judged unable to fulfill a specific course requirement because of your disability, alternate college preparatory courses may be substituted for specific subject requirements.

Substitutions may be authorized on an individual basis after review and recommendation by your academic adviser or guidance counselor in consultation with the coordinator of a CSU disabled student services program.

You should be aware that failure to complete courses required for admission may limit your later enrollment in certain majors, particularly those involving mathematics. For further information and substitution forms, contact the coordinator 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 our 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. We monitor 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 will 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* meet the requirements listed below based on high school graduation date. 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.

Undergraduate applicants who graduated from high school in *1988 or later:*

- must have completed all subject requirements in effect when graduating from high school (can use both high school and college coursework)

or

- must have completed at least 30 semester units of college coursework with a grade of *C* or better *in each course* to be selected 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. The 30 units must include all of the General Education requirements in communication in the English language and critical thinking (at least 9 semester units) and the requirements in mathematics/quantitative reasoning (usually 3 semester units) *or* the Intersegmental General Educa-

tion Transfer Curriculum (IGETC) requirements in English communication and mathematical concepts and quantitative reasoning.

Undergraduate applicants who graduated from high school *prior to 1988:*

- must have completed four years of high school English and two years of high school math, with grades of *C* or better

or

- must have completed baccalaureate courses with grades of *C* or better that meet the General Education requirements in communication in the English language and mathematics/quantitative reasoning *or* the IGETC requirements in English composition and mathematical concepts and quantitative reasoning. The course meeting either General Education math requirement must be above the level of intermediate algebra.

Transferable courses are those designated for baccalaureate credit by the college or university offering the courses.

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 official scores — unless exempt (see *Eligibility Index* on page 62) — from either the Scholastic Aptitude Test (SAT I) of the College Board or the American College Testing Program (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, write to or call:

The College Board (SAT I)
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 exempt from one or both of the tests if you have scored well on other specified tests or completed appropriate courses.

English Placement Test (EPT). Unless exempt according to CSU policy, all students enrolling at California State University, Fresno must take the EPT by the end of their first semester of attendance. (See *Academic Placement.)*

Entry-Level Mathematics (ELM) Exam. Unless exempt according to CSU policy, all students enrolling at California State University, 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 all of 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 our 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.*

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. Verification of English proficiency (see *TOEFL Requirement* for undergraduate applicants), financial resources, and academic performance are all important considerations. Academic records from foreign institutions must be on file at least eight weeks before registration for the first term and, if not in English, must be submitted in native language and 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.

At California State University, 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 our 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 California State University, 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 Second Language (ESL) 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 California State University, Fresno a conditionally admitted student must present an acceptable score on the TOEFL.

Eligibility for admission cannot be determined until all required documents have been received.

Insurance Requirement. Effective August 1, 1995, as a condition of receiving an I-20 or IAP-66 form, all F-1 and J-1 visa applicants must agree to obtain and maintain health insurance as a condition of registration and continued enrollment in the California State University. Such insurance must be in amounts as specified by the United States Information Agency (USIA) and NAFSA: Association of International Educators. The campus president or designee shall determine which insurance policies meet these criteria. Further information may be obtained from the International Student Services and Programs Office, (209) 278-2782.

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 *California 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.

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 an unmarried minor who has a parent living cannot be changed by the minor's own act, by the appointment of a legal guardian, or by the relinquishment of a parent's right of control.

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:

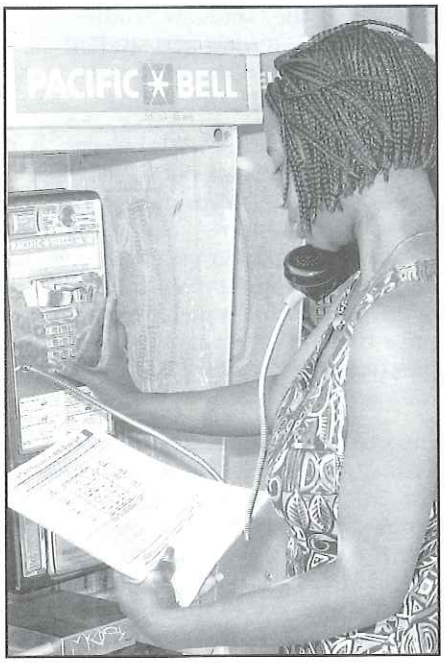
1. Persons below the age of 19 whose parents were residents of California but who left the state while the student, who remained, was still a minor. When the minor reaches age 18, the exception continues for one year to enable the student to qualify as a resident student.
2. Minors who have been present in California with the intent of acquiring residence for more than a year before the residence determination date and have been 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 or adults, 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 continues until the military personnel has resided in the state the minimum time necessary to become a resident.
6. Effective January 1, 1996, military personnel in active service in California for more than one year immediately prior to being discharged from the military. Eligibility for this exception runs from the date the student is discharged from the military until the student has resided in the state the minimum time necessary to become a resident.
7. Dependent children of a parent 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.
8. 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.
9. Certain credentialed, full-time employees of California school districts.
10. 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.
11. Certain exchange students.
12. 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.

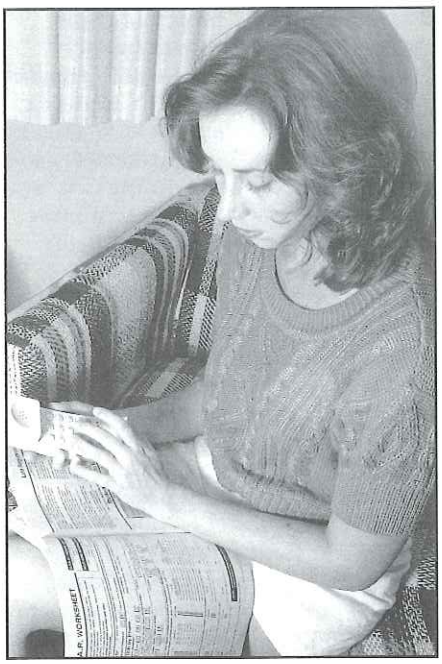
Students, following a final campus decision on their residence classification, may make written appeal only to:

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 of our majors. If you are 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 California State University, 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 California State University, Fresno should plan their programs while attending other colleges to meet our 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 (requested only from California public community/junior colleges and California State University campuses) should be sent to California State University, 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 California State University, 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 California State University, 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 California State University, 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 California State University, Fresno are required to pay the $55 application fee when applying. The *Academic Calendar* lists dates of registration. *Registration is complete only when all required forms are completed and filed and all fees are paid.* Payment of the initial registration fee is not allowed after the end of the first week of instruction. 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 Telephone Registration (STAR) letter and the Enrollment mailer. Undergraduate major changes can be made at the Office of Advising Services, Joyal Administration Building; postbaccalaureate and graduate changes at the Graduate Studies Office; 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 California State University, 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 California State University, Fresno. The completed form must be filed by the end of the first week of instruction 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 11.5
Half-time ..... 6 to 8.5

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 or has not met the stated course prerequisites. 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 our *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/non-objective 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 non-objective students.

Change of Major. Each undergraduate student who wishes to change his or her major must do so in the Office of Advising Services, Joyal Administration Building, Room 121 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. 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 seventh day of instruction, a student may drop courses without a serious and compelling reason.

After the seventh day of instruction, 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 an individual course is not permitted. Instead, 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 California State University, 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 California State University, 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 schools.

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 preprofessional advisers is available in the Office of Advising Services, Joyal Administration Building, Room 121. For more information, call Advising Services, **278-2924.**

Premedical. Students interested in preparing for medical school should declare their intent at the time they apply for admission to California State University, 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 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.

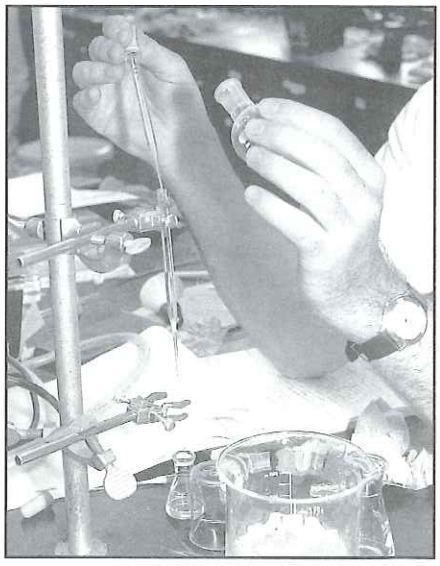
Freshmen, transfer, and all other students who are entering the program are advised to contact a premedical adviser prior to registration. (See *Advising Services*.) Each student is assigned to a member of the premedical advisory committee who assists him or her in planning a program of courses and advises him or her concerning preparatory procedures for application to medical school.

The Premedical Advisory Committee will mail to any interested student material that covers the operation of our 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. A score on the Law School Admission Test (L.S.A.T.) is required before students can be accepted into law school. It is recommended that the L.S.A.T. be taken no later than December of the student's senior year. In addition, most law schools require a personal statement and letters of recommendation that address academic skills and preparation for the study of law. 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 current list of preprofessional advisers is available in the Office of Advising Services, Joyal Administration Building, Room 121.

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 California State University, 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 California State University, Fresno. Preveterinary students should plan to complete a B.S. degree in Animal Sciences or a B.S. 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, and 165; BioSc 1A, 1B; Chemistry 1A, 1B, 8, 109, and 150; PhyAn 135 and 151; and Phys 2A. The School of Agricultural Sciences and Technology is equipped to provide valuable experience with large animals through the labs and projects at the university farm. 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
Director of Accounting Services, Robert P. Vega

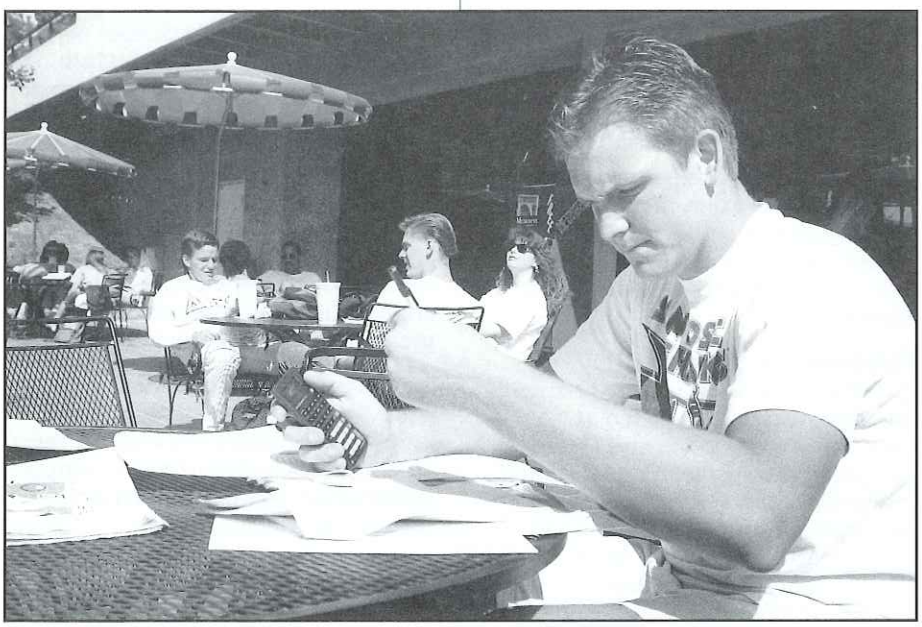
The following fees and expenses are scheduled for the 1996-97 academic year. Fees are subject to change without notice because of Trustee or legislative action. Updated fee information is provided each semester in the *Schedule of Courses.*

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

Application fee
Nonrefundable, payable by check or money order at time of applying **$55.00**
State university fee*
0 to 6.0 units **504.00**
6.1 and more units **870.00**

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, per semester **2.00**
Graduation application fee (bachelor's or master's) **35.00**
Diploma reissue fee **20.00**
Transcript of record (4.00 first copy, 2.00 each additional copy) **4.00**
Credential fee (*collected for Commission on Teacher Credentialing*)
Varies. Check with Credential Office, School of Education and Human Development **65.00**
Health Service fee,*
per semester **50.00**

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 ... **20.00**
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**
Parking fees
Decal (subject to change)
Fall and spring, per semester .. **54.00**
Summer session **36.00**
Lost or stolen decals**** .... **Full Cost**



* At the time of printing this catalog, this fee was under review and subject to an increase. Refer to the *Schedule of Courses* for the correct, current amount of this fee.

** 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 California State University, Fresno 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. (*California 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.

Duplicate Degree Tuition

Current law provides that the statutes governing duplicate degree tuition will be repealed as of August 31, 1996. Students should note that a change to this repeal date may have been made between the time that this catalog is published and August 31, 1996.

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, *California Education Code*, Section 68121. Students qualifying for these benefits are known as Alan Pattee scholars. For further information, contact the 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 complete withdrawal 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 the state university fee, student body organization fees, and student body center fees will be made if *withdrawal* occurs within the 14 days following the commencement of instruction and a request 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 within the 14 calendar days after the first day of instruction, a refund of a portion of the *state university fee* may be made. 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.

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 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 California State University, Fresno for a year (two semesters) for full-time students who live away from home are approximately $7,700. 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

SOURCE OF FUNDS AND AVERAGE COSTS FOR 1995-96 CSU BUDGET
(Projected Enrollment: 252,000 FTES)

	Amount	Average Cost Per FTE Student	Percent
Total Cost of Education	$2,303,448,000	$9,141	100.0
•State Appropriation*	1,623,478,000	6,442	70.5
•Student Fee Support	520,439,000	2,065	22.6
•Support from Other Sources	159,532	634	6.9

*Does not include $31,087,000 to fund retirement rate increases during 1995-96; does include $1,878,000 reappropriated for lease bond payments.

reduced by cooperative living arrangements or part-time work in exchange for room and board.

Room and Board $4,498-5,328
Registration Fees $1,812
Books and Supplies $612

Average Annual Cost of Education and Sources of Funds Per Full-Time Equivalent Student. The 22 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 1995-96 (including capital outlay funding in the amount of $160,722,000) is $1,784,250,000. However, the *total cost of education* for CSU is $2,303,448,000, which must provide support for a projected 252,000 full-time equivalent students (FTES). The number of full-time equivalent students is determined by dividing the total academic student load by 15 units per term (the figure used here to define a full-time student's academic load).

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 and lottery funds. The *average cost of education* is determined by dividing the total cost by the total FTES. The average cost of education 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 $9,141. Of this amount, the average student fee support per FTE is $2,065. The State University Fee, application fee, and nonresident tuition are included in the average costs paid by the students; individual students may pay less or more than $2,065, 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 Sections 42380 and 42381 of Title 5, *California Code of Regulations*.) 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 our 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. Renewals, i.e., students who had a valid Student Aid Report on file for the previous academic year, will receive Renewal Applications directly from the Central Processor. If you have not received your Renewal Application by January 15, complete a FAFSA.

The official priority filing date is March 2 for the next academic year.

* Federal Pell Grant
Federal Perkins Loan
Federal Supplemental Educational Opportunity Grant
* Federal Stafford Student Loan
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
Cal Grants A and B
State Graduate Fellowship

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 76-78 under the heading **Program Specifications.**

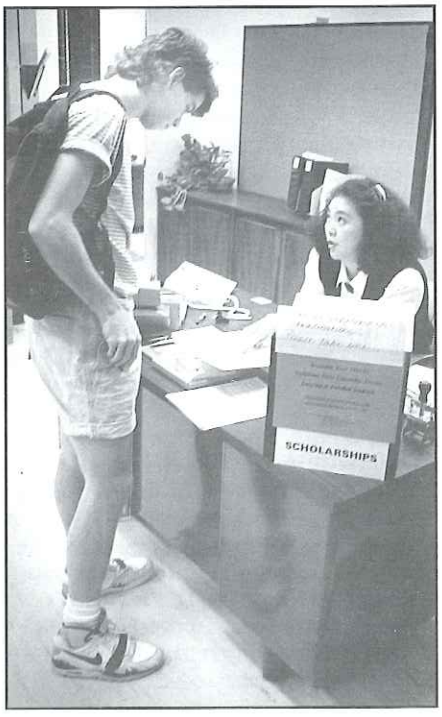
* Even though the March 2 deadline does not apply to the Pell or Stafford Student Loan Programs, you should be aware that Pell and Stafford applications submitted after May 30 cannot be assured of receiving funds at the beginning of the fall semester.

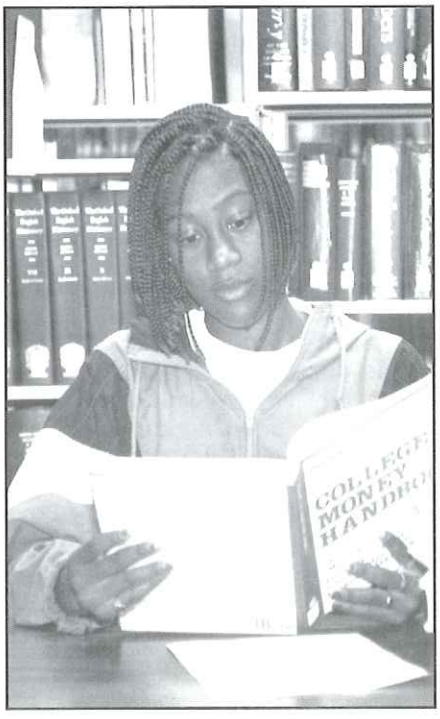
** Graduate Equity Fellowship application deadlines may vary.

Financial Aid Office
Joyal Administration, Room 296
General Information (209) 294-2200
(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 Adminis-





tration Building. The non-need-based programs include:

1. California State University, Fresno Institutional Scholarships
   - Applications are available **November 1.** All candidates must submit their applications before **February 1** for the next academic year.
2. Federal Parent Loans for Undergraduate Students (PLUS)/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 78.

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, *California Education Code*, Section 68121. Students qualifying for these benefits are known as Alan Pattee scholars. For further information, contact the Registrar's Office, which determines eligibility.

Air Force Reserve Officer Training Corps Scholarships. Air Force ROTC scholarships are available in many technical and nontechnical majors to cover the costs of fees and tuition, books, lab fees, and a monthly stipend of $150. Besides the three- and four-year scholarships, all juniors and seniors regardless of academic major, who have at least a 2.35 semester GPA and will graduate before turning age 25, qualify for up to $1,000 in scholarships each semester plus a monthly stipend of $150. 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 $150. All students formally enrolled in the ROTC Program receive at least $1,500 a year and can earn as much as $20,000 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*.

Non-Resident Tuition Waivers. A select number of non-resident tuition waivers are available for outstanding graduate students who demonstrate the potential to make significant academic and professional contributions in their disciplines and the graduate program. Recipients are expected to work with the K-12 system in giving lectures/presentations. For additional information, contact the department.

Resident Advisers. The university employs up to 20 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 $600 for *educationally related emergency expenses only*. These loans have to be repaid within 90 days or before the end of the semester, as designated by the Student Aid Accounting Office. Loans are granted on the basis of the students' need, educational program, and ability to repay. 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).*

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. 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 Student Aid Accounting Office, Joyal Administration Building, Room 275.

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 and who are also Federal Pell Grant recipients. Funding for the program is limited to the allocation received from the federal government.

Federal Work-Study (FWS). FWS is a federally funded, campus-based employment program. Both undergraduate and graduate students are eligible to participate. At California State University, 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 one of the 21 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.

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

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 and GPA Verification Form. The deadline for new applicants is March 2 for the next academic year. Renewal applicants may continue to apply after March 2. 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.

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 master's and doctoral students. To apply, complete the FAFSA, checking the appropriate box. The deadline for new applicants is March 2. You must also complete and mail the Student Aid Commission GPA Verification Form to the Commission by March 2 if you are a new fellowship applicant. Renewal applicants may continue to apply after March 2. Forms are available in the Financial Aid Office.

Federal Subsidized 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 $8,500 per year 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 our 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 California State University, Fresno Scholarship Application is available in the Joyal Administration Building, Rooms 219 and 296.

Federal Parent Loans for Undergraduate Students (PLUS). The PLUS Program was initiated to provide assistance to parents who do not demonstrate financial need as determined by the government formula. Parents may borrow up to the cost of attendance minus other aid for each dependent child enrolled at least half-time. 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 Subsidized 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. The largest program of its kind in the nation, the CSU Forgivable Loan/Doctoral Incentive Program is designed to increase the diversity of the pool of qualified faculty candidates for the California State University. Although all academic fields are given consideration, high priority is given to areas such as mathematics, computer science, engineering, and the physical/life sciences. The program provides up to a maximum of $30,000 to be distributed over a one-to five-year period. Upon completion of the program, the loan principal and interest will be forgiven at the rate of 20 percent per year for each full-time teaching appointment (10 percent per year for halftime) at any of the 22 CSU campuses. Information and applications are available in the Division of Human Resources, Joyal Administration Building, Room 262.

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 California State University, Fresno
2. the methods by which such assistance is distributed among recipients who enroll at California State University, 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 California State University, 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 California State University, Fresno is available from Robert P. Vega, director of accounting services, 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 undergraduate academic programs of California State University, 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:

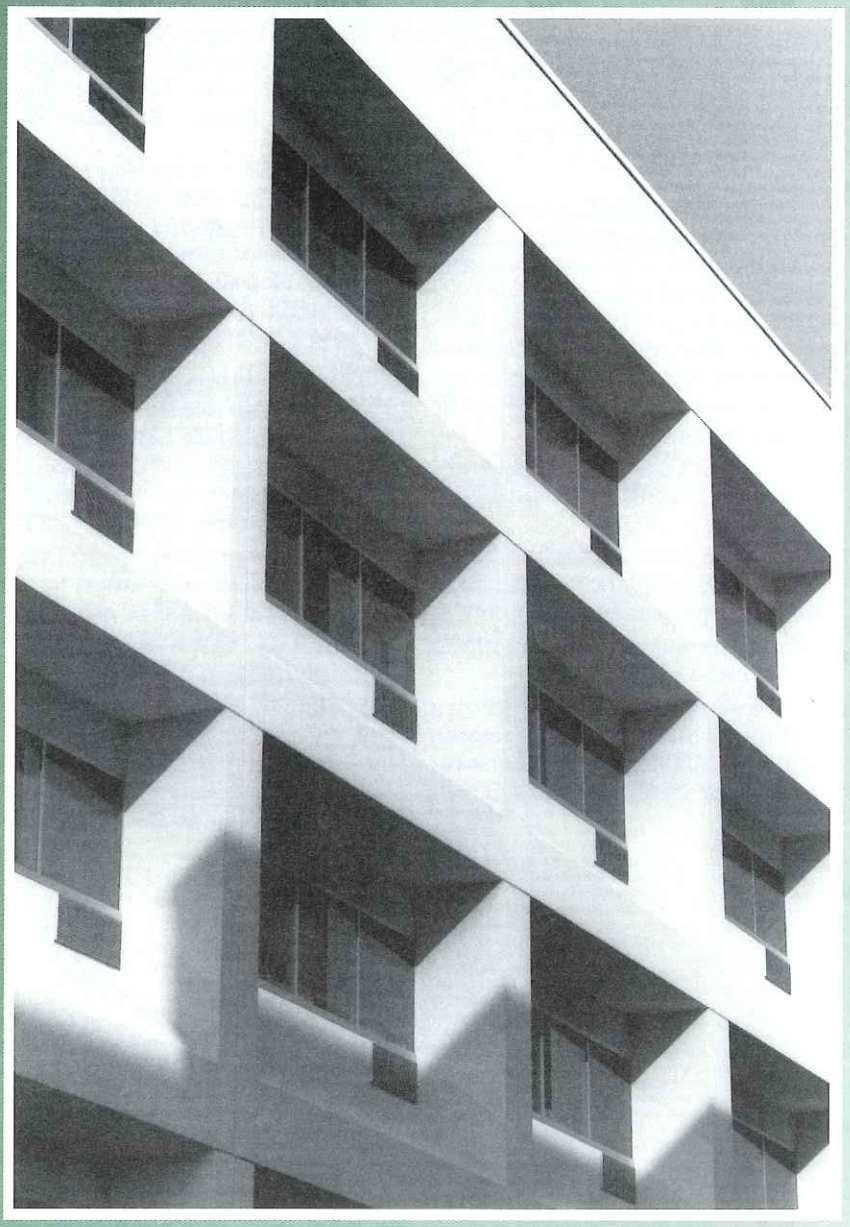
1. the current degree programs and other educational and training programs
2. the instructional, laboratory, and other physical plant facilities that relate to the academic program
3. the faculty and other instructional personnel
4. data regarding student retention at California State University, Fresno 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.

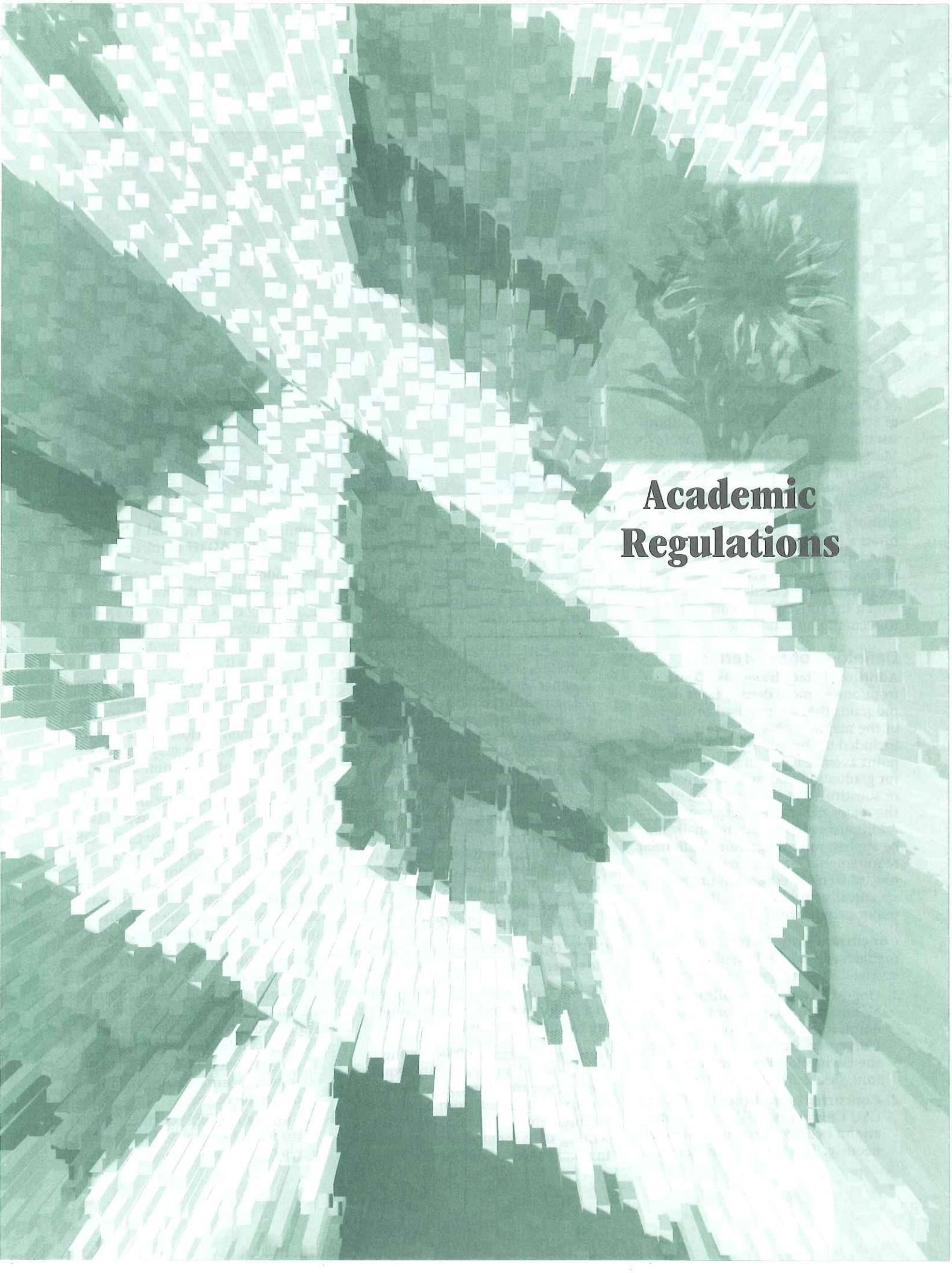
Information concerning the graduate degree programs of California State University, Fresno may be obtained from the Office of Graduate Studies, Thomas Administration Building, Room 132, (209) 278-2448.

Information regarding special facilities and services available to handicapped students may be obtained from Robert Lundal, coordinator of disabled student services, Main Cafeteria West, Room 125, (209) 278-2811.

The following information concerning the public safety policies of California State University, Fresno is available from Willie Shell, director of public safety/police chief, Public Safety Building, (209) 278-2243:

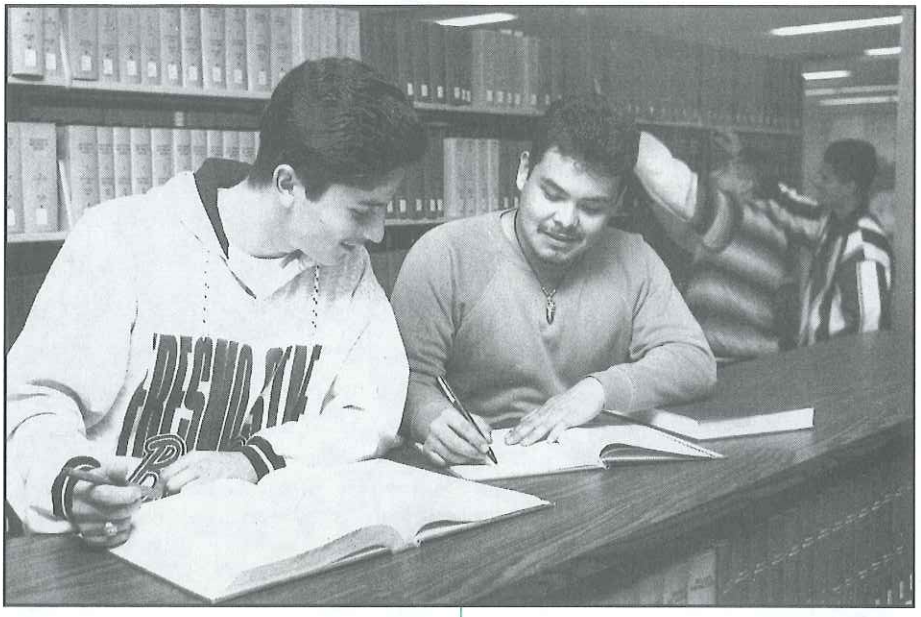
1. policies, procedures, and facilities for students and others to report criminal actions or other emergencies occurring on campus
2. information concerning the annual campus security report, and
3. information concerning the prevention of drug and alcohol abuse.





Academic Regulations

Academic Regulations



California State University, Fresno is authorized to grant the Bachelor of Arts, Bachelor of Science, 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. California State University, Fresno, in partnership with the University of California, also offers a Doctoral Degree (Ed.D.) in Educational Leadership. 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.

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 California State University, 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 California State University, 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 California State University, 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 California State University, Fresno. The completed form must be filed by the end of the first week of instruction at the public contact windows, North Lobby, Joyal Administration Building.

CORE. One of the three main parts of the current General Education Program.

Core. A common set of courses within a major or minor that all students are required to complete.

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:

1. Cumulative GPA for all baccalaureate or postbaccalaureate units by degree objective.
2. Cumulative GPA for total California State University, Fresno units.
3. GPA for that semester only.

A minimum of a *C* average (2.0 GPA) for units in the major, all California State University, 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. Some majors are subject to more stringent grading requirements. (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 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 California State University, Fresno.
3. The catalog in effect at the time the student graduates from California State University, 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 California State University, Fresno. Transfer students with a declared major entering with 40 or more semester units should 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.

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

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 from the California community college and/or California State University campus that they attended prior to enrolling at California State University, 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 California State University, Fresno is designed to encourage academic exploration outside the major field of study. The policy also recognizes that in certain types of courses, student performance is best evaluated in terms of credit/no credit grading rather than through the traditional letter grades.

Neither the *CR* nor *NC* grade is included in the calculation of the grade point average. The grade of *CR* 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.

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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 California State University, 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*.)

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 Admissions and 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 California State University, 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 California State University, Fresno. 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* symbol 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 California State University, Fresno 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 taken as a postbaccalaureate student 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 attempted at another institution may be repeated by enrolling in a regular California State University, Fresno 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 California State University, Fresno. 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, our 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. *Exception:* This paragraph does not apply to those pursuing a graduate (master's or doctorate) degree. (See *Graduate Studies* section under "Repetition of Courses.")

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 California State University, 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 California State University, 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 California State University, 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 California State University, 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 California State University, 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 California State University, 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 California State University, 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 California State University, Fresno. Any academic credit earned while on a planned educational leave is accredited by California State University, 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 California State University, 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 unfairly or incorrectly 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 unfairly or incorrectly 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 coordinator 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 Advising Services.

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.) Only the most recent probation or disqualification action appears on the student's 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 California State University, Fresno is below a 2.0 average.

Students remain on academic probation until both overall and California State University, 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 California State University, 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*. If readmitted, 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 California State University, 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 California State University, 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 must be readmitted to attend the subsequent semester.

An information letter advising disqualified students of their options is mailed when semester grades are available.

The assigned date and time to call, indicated in Telephone Registration materials, will be invalidated when students are academically disqualified. If students are readmitted, they will be reassigned a later date and time to call.

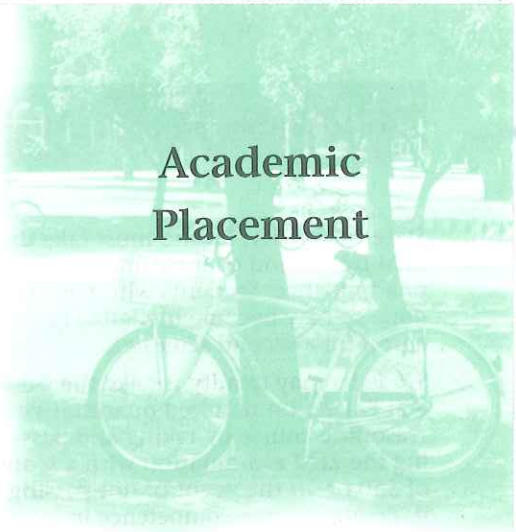
Undergraduate. Disqualified California State University, Fresno students who have been away one semester or longer must submit an application for readmission in addition to the appropriate petition approved by an academic adviser. Students readmitted under a special disqualification "probation" contract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

Postbaccalaureate/Graduate. Disqualified postbaccalaureate students who have been away one semester or longer 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 California State University, 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. California State University, Fresno 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 California State University, Fresno are not returned to students.

Reports to Students. An Enrollment mailer will be sent to students before instruction begins 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

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. This university 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 3 to 6 semester units of college credit for each examination. In order to receive credit for these examinations from this university, 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.

International Baccalaureate. Credit is granted for International Baccalaureate Higher Level examination passed with a score of 4 or higher. Contact the Evaluations Office, Joyal Administration Building, Room 115, for further information.

English Placement Test. Unless exempt according to CSU policy, all students enrolling at California State University, Fresno must take the EPT by the end of their first semester of attendance. Students who have not done so may become ineligible to enroll for a second semester. *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 "Pass for Credit" or "Exemption" prior to July 1993
- a score of 470 or above on the verbal section of the College Board Scholastic Aptitude Test (SAT) taken prior to March 1994
- a score of 470 or above on the verbal section of the College Board SAT I* Reasoning Test taken between March 1994 and March 1995. If taken after March 1995, see footnote.
- a score of 22 or above on the American College Testing (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 taken prior to January 1994
- a score of 600 or above on the College Board SAT II* Writing Test taken between January 1994 and March 1995. If taken after March 1995, see footnote.
- a score of 550 or above on the verbal section of the College Board SAT I* Reasoning Test taken on or after April 1, 1995, ***or***
- a score of 660 or above on the College Board SAT II* Writing Test taken on or after April 1, 1995.
- For transfer students, completion and transfer to the CSU of a college course that satisfies the General Education BREADTH requirement or the Intersegmental General Education Transfer Curriculum requirement in English composition, provided such a course was completed with a grade of *C* or better.

Students who cannot demonstrate basic competence on the EPT exam are required to enroll in English A or, if they are nonnative speakers of English, in the ESL 20-30 series.

Entry-level Mathematics 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 California

*The College Board SAT and Achievement Tests were replaced by SAT I and SAT II, respectively, beginning March 1994. Beginning April 1, 1995, the SAT I and SAT II exams are scored on a new scale.

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
U.S. Gov't & Politics	3,4,5	3	Pol Sci Elective

* 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.

State University, 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 with a score of 550 or, 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 California State University, Fresno 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 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.

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 College Board SAT taken prior to March 1994
- a score of 560 or above on the mathematics section of the College Board SAT I* Reasoning Test ***or*** on the College Board SAT II* Mathematics Tests Level I, II, or IIC (calculator) taken on or after March 1, 1994
- 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 I or Level II taken prior to March 1994, ***or***
- a score of 560 or above on the College Board SAT II* Mathematics Tests Level I, Level II, or IIC (calculator) taken between March 1994 and March 1995. If taken after March 1995, see footnote.
- For transfer students, completion and transfer to the CSU of a college course that satisfies the General Education BREADTH requirement or the Intersegmental General Education Transfer Curriculum requirement in Quantitative Reasoning, provided such a 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 Learning Resource Center in the Keats Building for information regarding ELM workshops.

Information bulletins and registration materials for the EPT and ELM may be obtained from the Office of Admissions/Records or the Testing Office.

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

Students may challenge our 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 our current *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 89.

Graduate Students. Credit by examination for coursework may be

*The College Board SAT and Achievement Tests were replaced by SAT I and SAT II, respectively, beginning March 1994. Beginning April 1, 1995, the SAT I and SAT II exams are scored on a new scale; however, the SAT scores qualifying for exemption from the ELM remain the same.

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). In addition, some departments have a lower-division course (90) and/or a graduate-level course (290).

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. This university 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 *A 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 our 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, this university 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 our 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 California State University, Fresno examination. For information on our 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 our examination earn 3 units in English 1.

Upper-Division Writing Examination. The 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 (Engl 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 post-baccalaureate 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. These requirements are fulfilled when a student successfully completes:

1. a minimum of 124 semester units (most B.S. degree programs require 128 or more units)
2. an academic major
3. General Education requirements
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, and
7. a minimum of a *C* average for units in the major, all California State University, Fresno units, and total units.

To receive the degree, a student files an application for graduation obtained from the Office of Evaluations and pays the graduation fee at the cashier's window in the Joyal Administration Building by one of the published deadlines.

Dual (Concurrent) Major Requirements

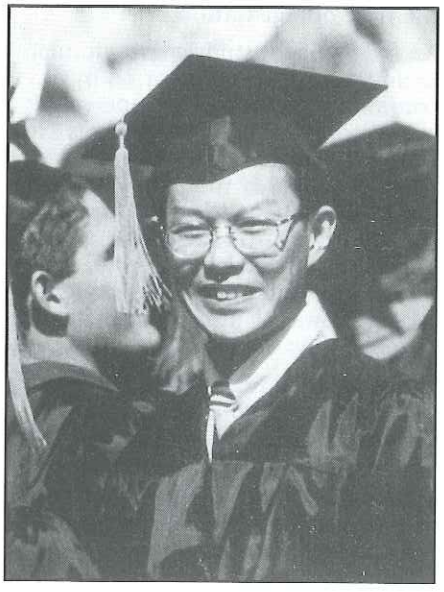
Undergraduate students may desire to complete the requirements for more than one major at the time of completion of the baccalaureate degree (i.e., graduate with a dual major). When students apply for graduation, they must designate which is the primary degree major. Minimum requirements and exceptions for dual majors are as follows:

- Dual B.A. majors must include a minimum of 24 units, 12 of which must be upper-division and exclusive of the other major.
- Dual B.S. majors must include a minimum of 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
- Students may not earn a special major as a dual major.

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, and
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.

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* or *CR* 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, 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 one of two ways no sooner than the term in which 60 units are completed:

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 before the beginning 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 Testing Services, (209) 278-2457.
2. Obtaining a *C*, *CR*, or higher grade in an approved upper-division course at this university. 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 no sooner than the term in which 60 units of coursework are completed. The UDWS requirement cannot be fulfilled by a class or test taken outside of The California State University system and cannot be satisfied at a CSU campus at which the student has not matriculated.

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 *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 California State University, 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 California State University, Fresno since completion of the most recent degree, including 24 upper-division units
   b. At least 12 units in the major in residence at this university 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 Fresno State 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:

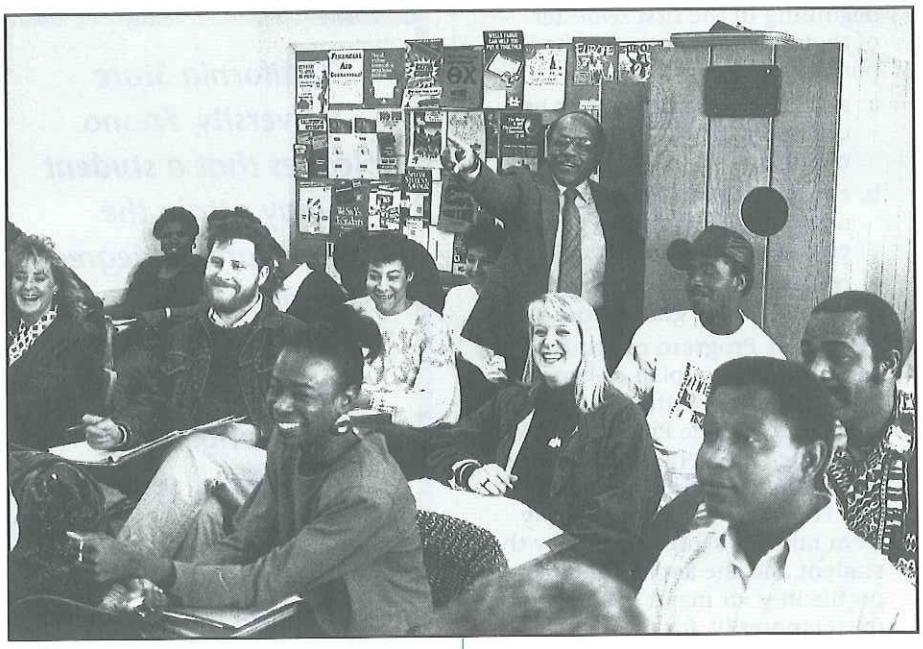
1. Provided the courses are not needed for the bachelor's degree
2. Provided the student is neither on academic probation nor academic disqualification at the beginning of the final term
3. Provided the units are not in excess of stated maximum limitations (e.g., 6 units of independent study)

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 California State University, 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 obtain and file a completed application for a degree (with appropriate fees) with the Evaluations Office at the beginning of that term. See *Academic Calendar* for filing dates and deadlines. Failure to apply before the final deadline will delay the granting of the degree.

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 the university 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 the university.
3. Students must have completed 45 units in residence at California State University, Fresno.

The grade point average earned at California State University, 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.

A Four-Year Graduation Plan

California State University, Fresno pledges that a student may attain the baccalaureate degree in four years when a student follows the provisions and regulations outlined below.

To facilitate students' graduation goals, California State University, Fresno extends to qualified students the opportunity to engage in a formal partnership that assures timely completion of a degree. Students enrolling in the university's Degree Guarantee Program are pledged certain advantages that will facilitate progress toward the degree. Among these advantages are:

1. **Guaranteed Course Availability.** Students enrolled in the Degree Guarantee Program will be provided all courses specifically required for completion of their degree and major as described in the *General Catalog* and as articulated in the "Four-Year Program of Study" developed with their Degree Guarantee Program advisers.
2. **Specialized Advising.** Students will be eligible for advising every semester from specially designated Degree Guarantee Program advisers in their respective major departments (or, for undeclared majors, in the Office of Advising Services).
3. **Highest Level Priority Registration.** Students will not have their academic progress or graduation impaired by a lack of space in essential courses.
4. **Early Evaluation.** Degree Guarantee Program students will receive an automatic degree status evaluation at the end of their sophomore year. This evaluation will provide them with early indication of their progress in meeting all degree requirements.

The Degree Guarantee Program is a partnership. Students share in the responsibility for timely graduation. To obtain a degree in four years, students must fulfill the following conditions:

1. **Advisers.** Students must meet with their designated Degree Guarantee Program adviser every semester

beginning in the first semester of their freshman year for the purpose of:

a. reaching agreement on/or updating their Four-Year Program of Study,
b. considering available course offerings in relation to pertinent graduation requirements, and
c. confirming academic progress toward timely graduation.

2. **Four-Year Program of Study.** The program is a plan designed in consultation with a designated Degree Guarantee Program adviser to ensure completion of all degree requirements within four years. The Four-Year Program of Study form must be signed jointly by the student and the adviser and placed on file in your major department (or temporarily, for undeclared majors, in the Office of Advising Services).
3. **Entry Level Math (ELM) and English Placement (EPT) Tests.** Unless exempted, students must have taken these exams during the senior year of high school or the summer prior to enrollment as a freshman. Scores must be at a level that allows the student to enroll in college level coursework. Students who require remedial and/or developmental courses prior to enrollment in college level courses will require independent assessment as to eligibility for Degree Guarantee Program enrollment. Consult the current *Schedule of Courses*, i.e., the section on "Special Requirements and Tests" for guidance and dates.
4. **General Education and University Requirements.** Students must fulfill in a timely manner all General Education and university requirements articulated in the *General Catalog* for their year of entry. Students not able to obtain their preferred course and/or their preferred section (days and hours) must be flexible in selecting available alternatives to maintain degree progress.
5. **Major.** Students should select a major during the freshman year (unless advised otherwise) and must seek advising from the designated California State University, Fresno Degree Guarantee Program adviser in their major department so that degree obligations can be met. In many instances, changes of major will delay the completion of a degree. Students entering with an undeclared major should seek advising from the Office of Advising Services. Students must be sure all prerequisite courses, including "Additional Requirements to the Major" are accounted for in the student's academic plan for graduation (see *Four-Year Program of Study*, number 2 above).

California State University, Fresno pledges that a student may attain the baccalaureate degree in four years when a student follows the provisions and regulations outlined in this section.

6. **Minor.** Minors can be highly desirable and must be carefully planned in close cooperation with a Degree Guarantee Program adviser. Pursuit of a minor may require an increased total unit load.
7. **Unit Load.** Students must take a minimum of 12 units per semester (the minimum required to be a full time student) and complete an annual average of units appropriate for their degree program.
   a. 124 Unit Programs. Students must complete an average of 31 units per year (which could include Winter and Summer sessions) to finish in four years.
   b. 128-132 Unit Programs. Students must complete an average of 33 units per year (which could include Winter and Summer sessions) to finish in four years.
   c. Programs Exceeding 132 units. In addition to an annual average of 33 units, students in these majors will be required to complete 3 to 7 additional units sometime during their four years of study.
8. **Grade Point Average (GPA).** The cumulative GPA, the cumulative California State University, Fresno GPA, and the GPA in a student's major all must be at or above 2.0. Students electing to repeat courses for purposes of grade substitution to improve their GPA must do so over and above the minimum articulated annual unit requirements if they expect to complete their Degree Guarantee Program within the originally planned time. *Academically disqualified students may not be able to complete their Degree Guarantee Program in four years.*
9. **Registration and Fees.** Students will use STAR (telephone registration) at the appropriate time window and will pay fees by the required deadlines.
10. **Course Enrollment.** Students will enroll and attend California State University, Fresno at those times (including evenings and weekends) when courses are offered and available. Prior approval by the student's designated Degree Guarantee Program adviser is required before registering at another institution for courses intended for transfer to California State University, Fresno.
11. **Financial Aid.** If eligible for assistance, students must meet the appropriate deadlines each year and meet all academic progress requirements.
12. **Senior Evaluation.** Students must request a "Senior Evaluation" from the Office of Evaluations upon completion of 90 or more units to ensure readiness for graduation as planned.
13. **Degree Filing.** Students must file their application for graduation and pay the related fees by the university deadline.
14. **Accountability.** Students must comply with all administrative, judicial, and academic policies and procedures as well as all aforementioned conditions of the Degree Guarantee Program.

Noncompliance with any of the above conditions 1 through 14 may result in voiding the student's enrollment in the Degree Guarantee Program and the university's pledge to award the student a degree within four years. Nonetheless, it is understood that all degree requirements still must be met before the university is able to award a degree.

Enrollment in the California State University, Fresno Degree Guarantee Program is initiated by a student filing an application. Signing of this application by a student, his or her designated Degree Guarantee Program adviser, major department chair, and school dean confirms their mutual understanding of the respective obligations of the student/university partnership required for the achievement of a degree in four years.

Additional information about the Degree Guarantee Program may be obtained by contacting the Dean of Undergraduate Studies at (209) 278-4775.

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

California State University, 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 the appropriate academic department.

Basic Teaching Credentials, Elementary

Multiple Subject:

- Multiple Subject, CLAD/BCLAD
- Multiple Subject, with emphasis in Early Childhood Education
- Multiple Subject — Internship CLAD/BCLAD

Basic Teaching Credentials, Secondary

Single Subject:

- Agriculture
- Art
- Business
- English; English-Drama; English-ESL; English-Speech
- Foreign Languages
- Home Economics
- Industrial Technology
- Mathematics
- Music
- Physical Education
- Science
- Social Science

Single Subject, CLAD
Single Subject — Internship CLAD

Specialist Teaching Credentials

Agricultural
Early Childhood
Reading/Language Arts
Special Education in:
- Communication Handicapped
- Learning Handicapped
- Severely Handicapped

Special Education Internship

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 in 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		•					
Agriculture						•	
Animal Sciences							
(B.S.) Basic Animal Science, Dairy Science, Meat Technology, Preveterinary Medicine, Production Management		•		•			
Anthropology	•			•			
Armenian Studies				•			
Art							
(B.A.) Graphic Design	•			•	•		
Asian American Studies				•			
Asian Studies				•			
Biology							
(B.S.) Ecology; Molecular and Cellular Biology; Organismic and General Biology; Physiology		•		•	•		
Business (General)				•			
Business Administration							
(B.S.) Accountancy, Finance, Human Resource Management, Information Systems, International Business, Legal Environment of Business, Management, Marketing, Real Estate and Urban Land Economics		•					M.B.A.
Chemistry	•	•		•		•	
Chicano/Latino Studies				•			
Chicano Studies	•						
Child Development		•					
Classical Studies				•			
Coaching				•			
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				•			
Family and Consumer Sciences	•			•		•	
Food and Nutritional Sciences							
(B.S.) Dietetics and Food Administration, Enology, Food Science		•		•			

	Baccalaureate Degrees				Graduate Degrees		
	B.A.	*B.S.*	*Other*	*Minor*	*M.A.*	*M.S.*	*Other*
French	•			•			
Geography	•			•	•		
Geology		•		•		•	
German	•			•			
Gerontology				•			
Health Science							
(B.S.) Community Health, Environmental Health Science/ Industrial Hygiene, Health Services, Occupational Safety and Health		•		•			M.P.H.
History	•			•	•		
Humanities Interdisciplinary Minor				•			
Industrial Technology		•		•		•	
Interior Design	•						
International Political Economy				•			
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	•			•			
Mathematics	•			•	•		
Military Science				•			
Music	•			•	•		
(B.A.) Options I, II							
Natural Sciences	•						
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.) Agronomy, Horticulture, Plant Health							
Political Science	•			•			
Psychology	•			•	•	•	
Public Administration	•			•			M.P.A.
Recreation Administration		•		•			
Rehabilitation Counseling						•	
Russian	•			•			
Russian Area Studies				•			
Social Work	•						M.S.W.
Sociology	•			•			
Spanish	•			•	•		
Special Education					•		
Special Major	•				•		
Speech					•		
Speech Communication	•			•			
Theatre Arts	•			•			
(B.A.) Dance							
Urban Studies				•			
Women's Studies				•			

General Education

Developed by both faculty and students, the university'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.

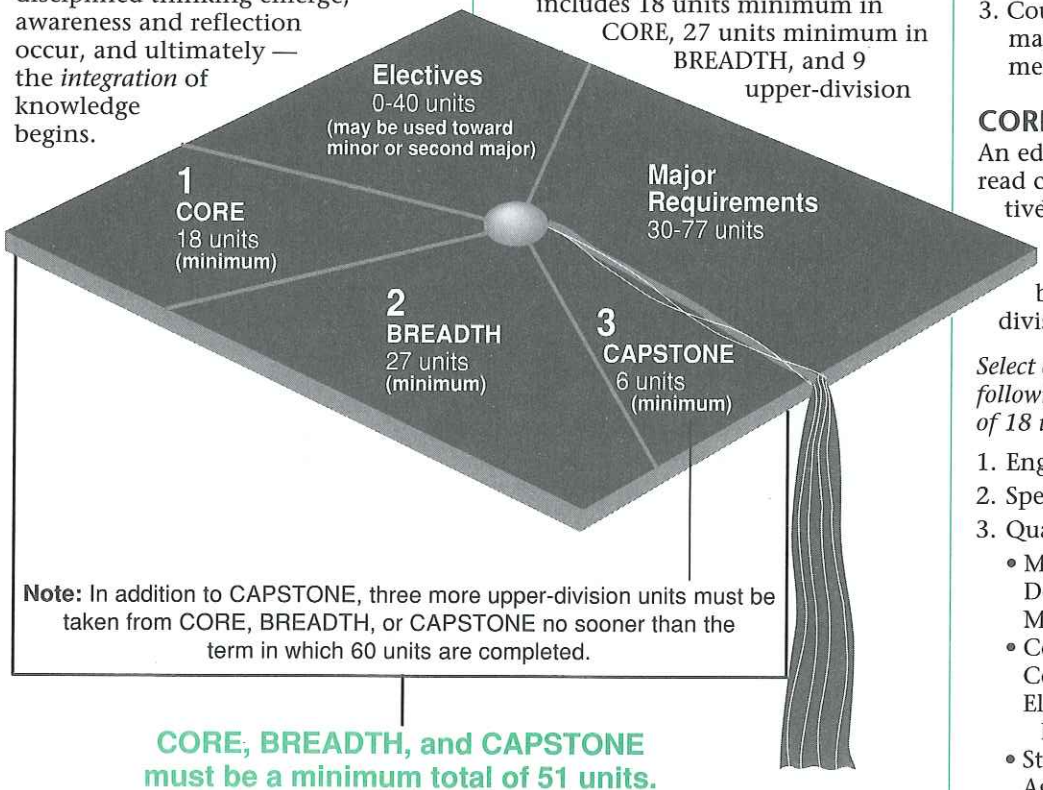
CAPSTONE concludes the General Education Program by providing an interdisciplinary experience at the upper-division level in which the skills and knowledge developed in CORE and BREADTH are integrated, bringing their interrelationships into focus.

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 no sooner than the term in which 60 units of coursework are completed. Also, 9 units must be taken in residence at California State University, 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. The CORE course requirements must be completed before students will be allowed to enroll in upper-division CAPSTONE courses.

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

   Note: *Students must complete the Critical Thinking requirement prior to the completion of 60 units.*
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. Students must have a laboratory component in either Division 1 and 2.

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, 4AL, 4B, 4BL, 4C, 10

Note: *Math 4R or second-year high school algebra is a prerequisite for all courses in Division 1.*

Division 2 — Biological Processes
Purpose: To understand basic concepts of living things, the nature of scientific knowledge, and the relevance of biological knowledge to human affairs.

Biology 10, 15 (MNE only)*
Biological Science Core 1A
Botany 10
Zoology 10

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 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
Gerontology 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 48, 109
German 48
Greek 48
History 1, 2
Humanities 10, 11, 12, 14
Italian 48
Philosophy 1, 10, 120, 131
Russian 148
Spanish 48, 140, 142

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 Sciences and 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

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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*.

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

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.

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 manifest in fifth century Athens.

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, to be taken no sooner than the term in which 60 units are 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.

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.

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.

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.

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.

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.

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.

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.

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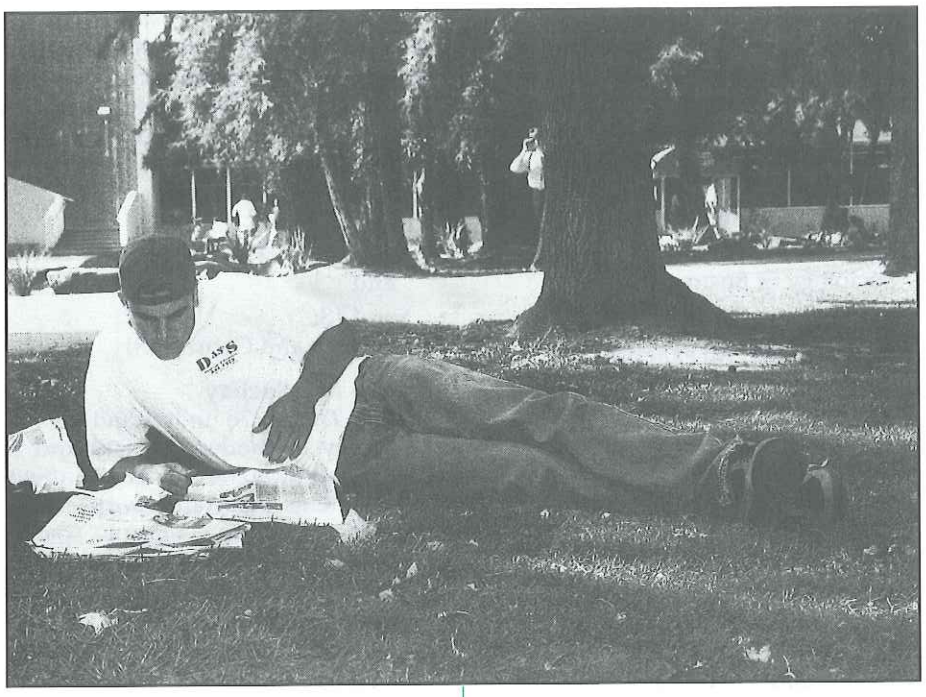

168. Cinema and the Humanities (3)
Explores the relationships between the art and technology of the cinema and current humanist ideology. Topics include how film interacts with other arts and with cultural, aesthetic, and moral assumptions; whether cinema is a viable intellectual discipline; and where art, entertainment, and values meet. Weekly films, assigned reading, written reports.

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 and both A and B must be completed to receive CAPSTONE credit. (2 lecture, 2 lab hours)

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.

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
Soc 143:
Deviance and Control (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.

C R P 135:
Environmental Law (3)
Geog 128:
Environmental Pollution (3)

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 135:
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 135 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)
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 143:
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 California State University, 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 Fresno State. 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 California State University, 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 California State University, 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 university's 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

Note: *Students must complete the Critical Thinking requirement prior to the completion of 60 units.*

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. Students must have a laboratory component in either Division 1 and 2.

Division 1 — Physical Processes
Chemistry 1, 1A, 1B, 3A, 3B
Geology 1, 2, 15 (MNE only)*
Physical Science 21
Physics 2A, 2B, 4A, 4AL, 4B, 4BL, 4C, 10

***Note:** Math 4R or second-year high school algebra is a prerequisite for all courses in Division 1.*

Division 2 — Biological Processes
Biology 10, 15 (MNE only)*
Biological Science Core 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 48, 109
German 48
Greek 48
History 1, 2
Humanities 10, 11, 12, 14
Italian 48
Philosophy 1, 10, 120, 131
Russian 148
Spanish 48, 140, 142

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 7 — Languages
Armenian 1A, 1B, 2A, 2B
Chinese 1A, 1B, 2A, 2B
Communicative Sciences and 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
Gerontology 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 no sooner than the term in which 60 units of coursework are completed.

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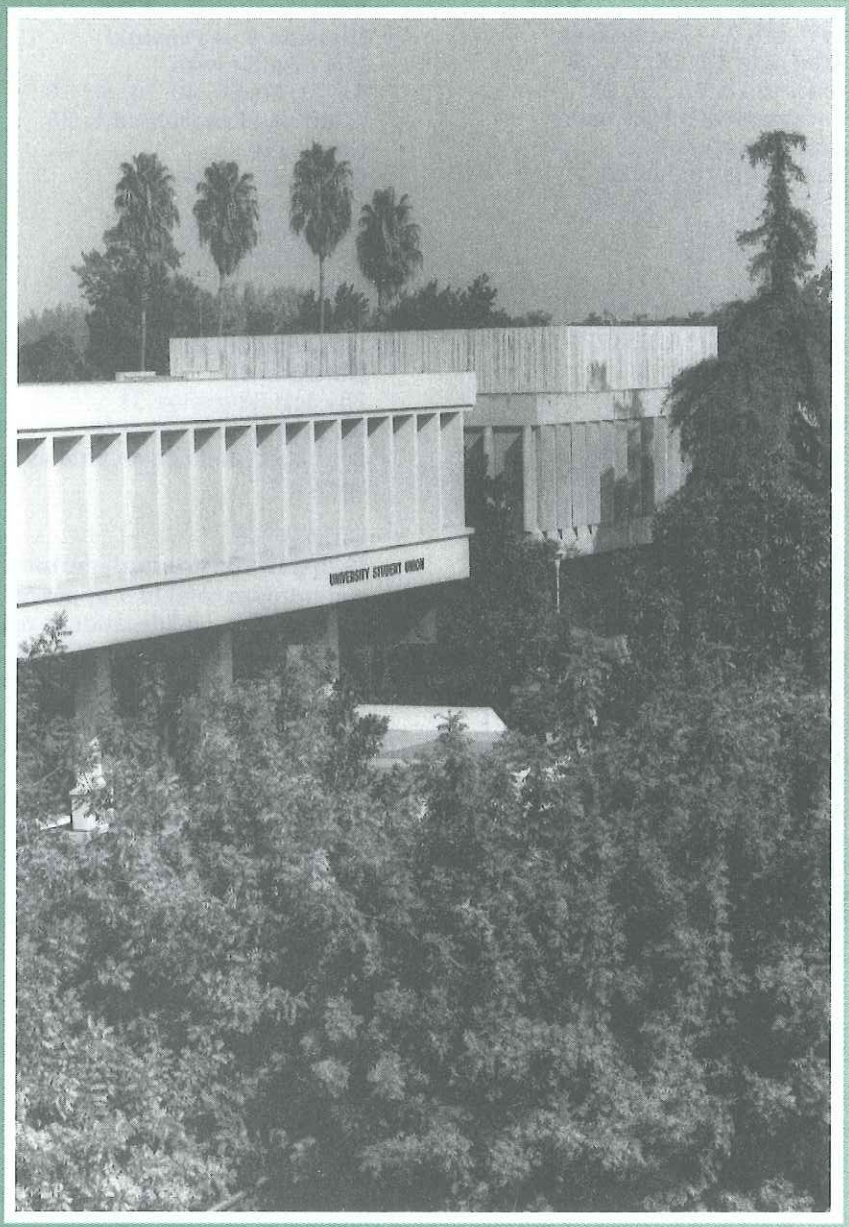
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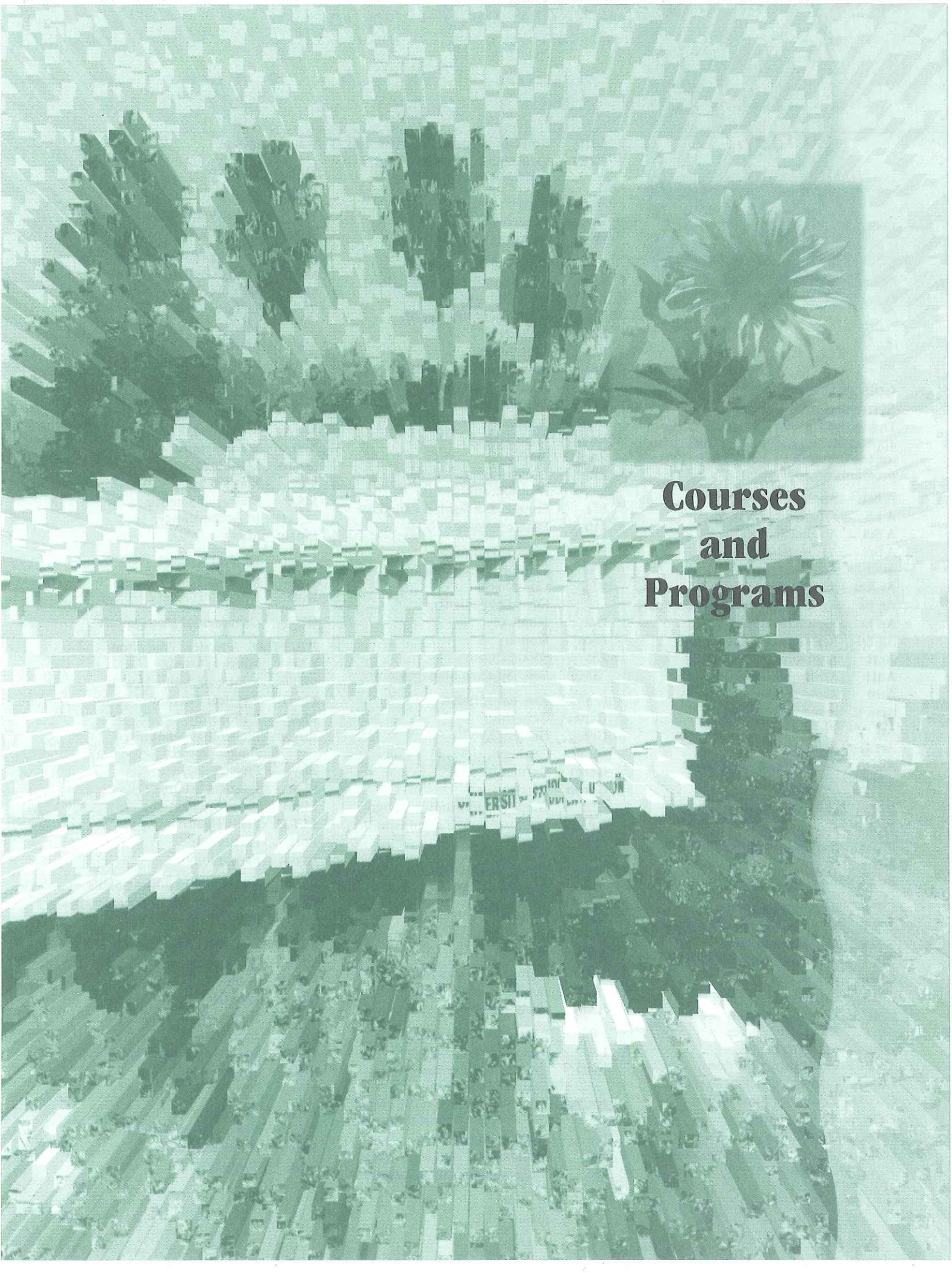
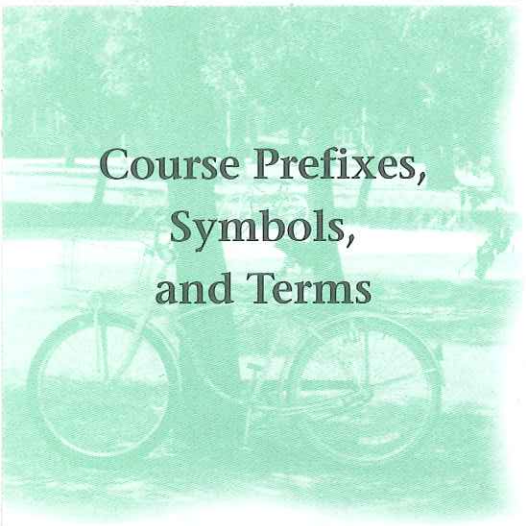


Courses and Programs



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
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
C E	Civil Engineering
C R P	City and Regional Planning
C Sci	Computer Science
CFS	Child and Family Sciences
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
CSD	Communicative Sciences and Disorders
CSH	Consumer Science and Housing
CTET	Curriculum, Teaching, and Educational Technology
Dance	Theatre Arts
Drama	Theatre Arts
DS	Decision Sciences
E E	Electrical Engineering
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
ESL	English as a Second Language
Eth S	Ethnic Studies
F L	Foreign Language
F M	Fashion Merchandising
FCS	Family and Consumer Sciences
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
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 T	Industrial Technology
IntD	CAPSTONE Interdisciplinary General Education
IntD (number) Nex	CAPSTONE Nexus General Education
IS	Information Systems
ISA	International Studies — Abroad
ISC	International Studies Course
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
Me Ag	Mechanized Agriculture
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	Master of Public Health
Ph Th	Physical Therapy
Phil	Philosophy
PhyAn	Physiology/Anatomy/ Development
Phys	Physics
Pl Si	Political Science
Plant	Plant Science
PLT H	Plant Health
Port	Portuguese
Psych	Psychology
RES	Revising and Editing Skills
RLS	Recreation and Leisure Studies
Russ	Russian
S E	Surveying Engineering
S Sci	Social Science
S Wrk	Social Work Education
Skt	Sanskrit
Soc	Sociology
Span	Spanish
Spch	Speech Communication
SPED	Special Education
SW	Soil and Water
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, certificate of advanced study, and doctorate curricula. Access to these courses is limited to those who have been officially admitted to a graduate degree, advanced certificate, 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 graduate 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 473. 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 (not available through Extension or Open University Enrollment). For complete eligibility requirements, see *Criteria for Thesis and Project* under Graduate Studies, page 473. 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
Department of Aerospace Studies
LT COLONEL ARTURO M. CORONA, *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. Under this program the Air Force pays the full tuition for scholarship winners and provides a monthly stipend of $150. Other incentive programs are available to pay $150 per month and up to $1,000 per semester toward tuition.

The primary goal of AFROTC is to provide students with the opportunity for well-paying, challenging and rewarding positions as commissioned Air Force officers and leaders 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 $150 subsistence each month during the school year. All two-year program cadets regardless of scholarship status also receive this monthly allowance.

Other scholarship programs are available to fill critical Air Force requirements. Additional money through express and incentive programs is available as well as the one-year commissioning program. Contact the unit admissions officer for the latest information.

Aerospace Studies Minor

A Minor in Aerospace Studies consists of satisfactory completion of the AFROTC program (16 upper-division units).

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 Arturo M. Corona, *Chair*
Major Stephen W. Doak
Major Samuel E. Phillips III

Advisers:
TSgt Richard J. Wasrud
TSgt Kevin L. Clutter

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. These officers attend the Air University's Academic Instructor School, the "teacher's college of the Air Force," and all have at least a master's degree.

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, and
4. meet the academic standards for admission to California State University, 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 and pass the Air Force Qualifying Test
5. (a) For pilot and navigator: be not more than 26½ years of age at date of commissioning

   (b) For all other categories: be not more than 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 California State University, Fresno, and
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. Focuses on the organizational structure and missions of Air Force organizations; officership and professionalism; and includes an introduction to communication skills.

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. Focuses on factors contributing to the development of air power from its earliest beginnings through two world wars; the evolution of air power concepts and doctrine; and an assessment of communication skills.

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). A study of Air Force customs and courtesies, issuing military commands, instructing, directing and evaluating the preceding skills, studying the environment of an Air Force officer and learning about areas of opportunity available to commissioned officers. *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; encompasses both rehearsal and public performance.

25. Air Force ROTC Field Training (3)
Taken during summer preceding entry into POC. Six-week field training provides leadership and officership training in a military environment which demands conformity to high physical and moral standards. Within this structured environment cadets are screened for officer potential as measured against field training standards. Motivation and professional development is achieved through various programs such as flight orientation, marksmanship and survival training. The Air Force provides meals, housing, pay, and travel to and from base.

103C. Air Force ROTC Field Training (3)
For those completed GMC and prior-service cadets. Four weeks of training taken during the summer preceding entry into POC. Field training provides leadership and officership training in a military environment which demands conformity to high physical and moral standards. Within this structured environment cadets are screened for officer potential as measured against field training standards. Motivation and professional development is achieved through various programs such as flight orientation, marksmanship and survival training. 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. A study of leadership and management fundamentals, leadership responsibilities, ethics, and communicative skills required of an Air Force junior officer. Case studies are used to examine Air Force leadership and management situations as a means of demonstrating and exercising practical application of the concepts being studied.

105A-B. American Defense Policy (3-3; max total 6)
A Sp 105B is not open to students with credit in A Sp 105BW. Corequisite: A Sp 113 (one unit) if student desires an Air Force ROTC Commission. An examination of the needs for national security; an analysis of the evolution of the American defense strategy and policy; aerospace doctrine; overview of alliances and regional security, arms control, and terrorism. Special topics of interest focus on the military as a profession, officership, and the military justice system, and current issues affecting military professionalism. Within this structure, continued emphasis is given to developing communication skills.

105BW. American Defense Policy (3)
Not open to students with credit in A Sp 105B. Prerequisite: satisfactory completion (*C* or better) of the Engl 1 graduation requirement. Corequisite: A Sp 113 (one unit) if student desires an Air Force ROTC Commission. An examination of the needs for national security; an analysis of the evolution of the American defense strategy and policy; aerospace doctrine; overview of alliances and regional security, arms control, and terrorism. Special topics of interest focus on the military as a profession, officership, and the military justice system, and current issues affecting military professionalism. Within this structure, continued emphasis is given to developing communication skills. Meets the upper-division writing skills requirement for graduation.

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). Activities classified as advanced leadership experiences. They involve the planning and controlling of the military activities of the cadet corps, the preparation and presentation of briefings and other oral and written communications, and the providing of interviews, guidance, and information which will increase the understanding, motivation, and performance of other cadets. *CR/NC* grading only.

AGRICULTURE Agricultural Economics

School of Agricultural Sciences and Technology
Department of Agricultural Economics
DAVID K. SMITH, *Chair*
Leon S. Peters Building, Room 302
(209) 278-2949 FAX: (209) 278-6536

B.S. in Agricultural Business
Minor in Agricultural Business

Join the leader in science, technology, and management. The award-winning Agricultural Business Program at California State University, 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 B.S. 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 agribusiness management, agricultural finance, agricultural marketing, farm management, and food industry management.

Certified Minor Programs. A Minor in Agricultural Business is available for students majoring in agricultural sciences, business, and other fields.

Agricultural business students wishing to complement their major with an emphasis in business may obtain a Minor in General Business by following that program of study in the Sid Craig School of Business. Contact the Undergraduate Advising Office in Peters Building 181.

Ag One Grants for academic fees and books are available. Call (209) 278-2061 for information.

Under the Master of Business Administration, an elective area in agricultural business combines core graduate courses in agricultural business (Ag Bs) with core courses from business. This program is administered by the Sid Craig School of Business. It is designed for individuals seeking to advance their career by enhancing their business management and economic analysis skills with an emphasis on agricultural sector applications. Contact the graduate business adviser at (209) 278-2107.

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

David K. Smith, *Chair*

Graduate Coordinator, Dwight D. Minami
Director, Center for Agricultural Business, Herbert O. Mason

Juan C. Batista
James H. Cothern
John W. Hagen
Dennis L. Nef
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, to be taken no sooner than the term in which 60 units of coursework are completed)
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
Me Ag: Me Ag 1 or 20
Plant Sci: Cr Sc 1, VTF 1, OH 1, or PLT H 1
SW: SW 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 76 or IS 50
Ag Ec 78 or DS 71
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 0-4
Upper-division writing skills by exam or writing course (Plant 110W, IS 105W recommended)

Electives 12-16
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 California State University, 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 California State University, 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 are to be taken no sooner than the term in which 60 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 this university 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 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 (Plant 105 recommended)	
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 California State University, Fresno.

Notice of Discontinuance

The Master of Science degree program in Agricultural Business has been discontinued. Students interested in the agricultural business elective area under the Master of Business Administration program should contact the Graduate Business Office at (209) 278-2107.

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, commodity processors, food marketers; government fiscal, monetary, trade policies interaction with agricultural credit, price support, food subsidy programs; impact on agribusiness asset values, debt accumulation, income levels.

100. Intermediate Agricultural Economics (3)
Prerequisites: 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) (Computer lab fee, $15)

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) (Computer 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.

Graduates of the Agricultural Business Program can choose from more than 120 professional occupations in California's agricultural industry.

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.

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.

130. Agricultural Finance (3)
Prerequisites: 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)
Prerequisites: 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 economics of U.S. and California agriculture; government programs influencing agricultural production, commodity distribution, market prices, farm income; environmental and natural resource issues; nutrition, food safety and biotechnology concerns; food industry 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)
Prerequisites: 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) (Computer 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. (Formerly Ag Ec 174)

170. Agribusiness Research Methods (3)
Prerequisites: 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.

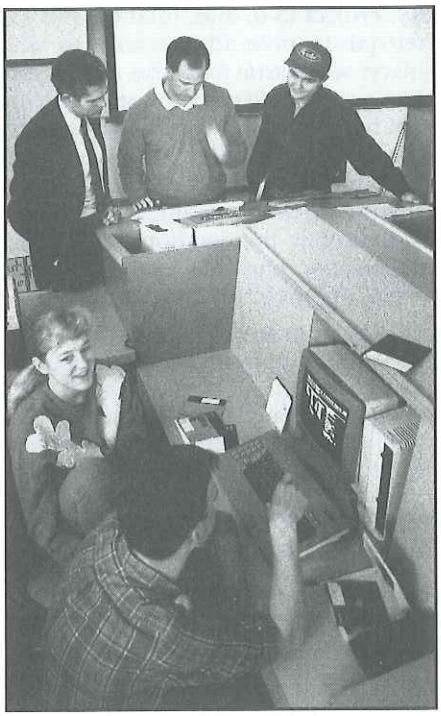
Special Topics (Ag Ec)

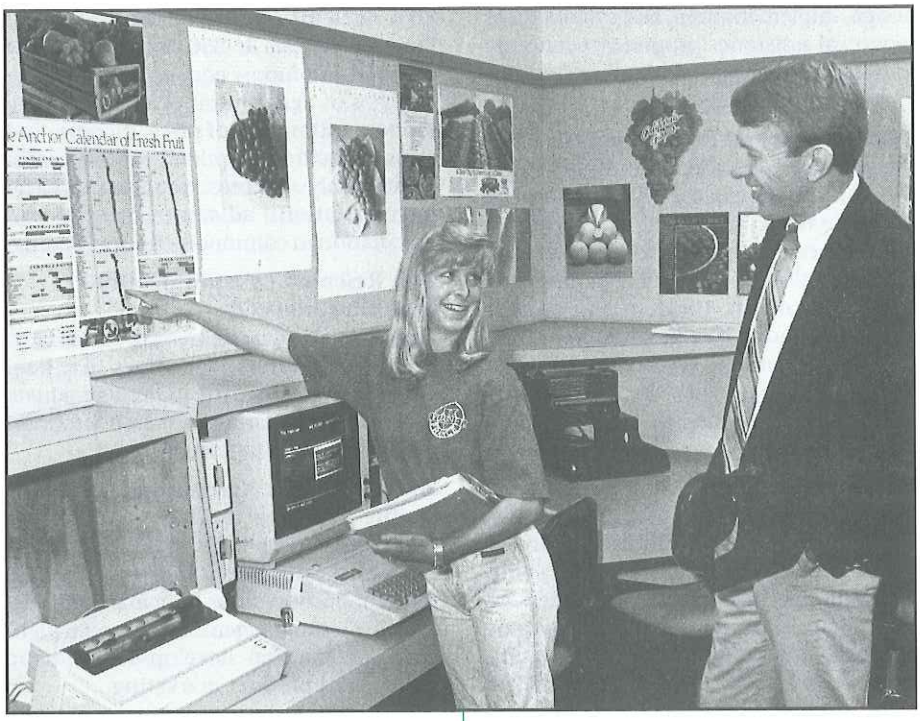
80. Undergraduate Research (1-4; max total 4)
Prerequisites: Ag Ec 1 and permission of instructor. Directed study or research on particular problems in the field of agricultural economics and business. Consult department policies and procedures governing undergraduate research. Approved for ***SP*** 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)
Prerequisites: 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)
Prerequisites: 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: classified standing or permission of instructor. 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: classified standing 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: classified standing or permission of instructor. 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: classified standing or permission of instructor. 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 total 6)
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; max total 6)
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.

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.*)

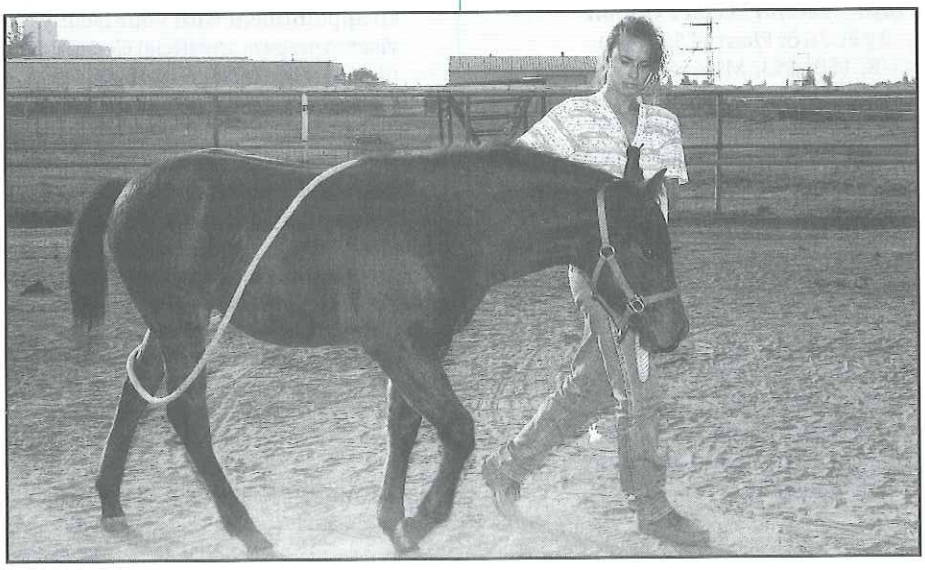
School of Agricultural Sciences and Technology
Department of Animal Sciences and Agricultural Education
ANNE V. RODIEK, *Chair*
Agriculture Building, Room 230
(209) 278-2971

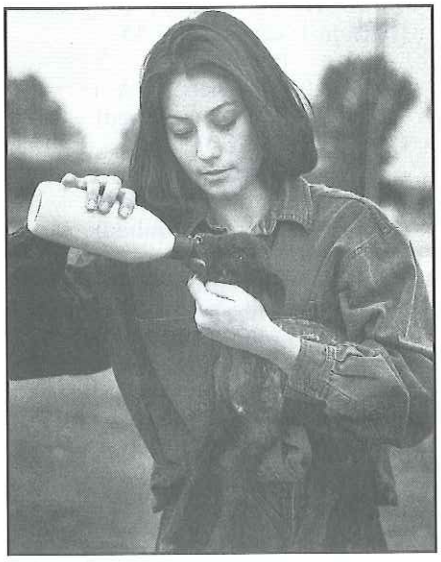
B.S. in Animal Sciences
Options:
Basic Animal Science
Dairy Science
Meat Technology
Preveterinary Medicine
Production Management

B.S. in Agricultural Education
Options:
Agricultural Communications
Teacher Preparation

M.S. in Agriculture
Option: Animal Science

Minor in Animal Sciences





Faculty

Anne V. Rodiek, *Chair*

Graduate Coordinator, Randy C. Perry
Agricultural Education Credentialing Coordinator, Richard A. Rogers

John A. Jacobs
Arthur A. Parham
Michael W. Thomas
Scott A. Williamson

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, to be taken no sooner than the term in which 60 units of coursework are completed)
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, 91
Select one course from the following: A Sci 146, 165, 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, 61, 91
Preveterinary Medicine
A Sci 165
Select two courses from the following: A Sci 21, 31, 41, 51, 61, 91
Select at least 2 units from the following: A Sci 121A, 131A, 151, 161, 180, 185T, 190, or 194
Production Management
A Sci 181, 194 or 196
Select two courses from the following: A Sci 21, 31, 41, 51, 61, 91
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 115; Chem 8, 150, 153; Micro 20
Dairy Science Option
A Sci 146, 165, 194; Ag Ec 76 or Plant 115; Ag Ec 110N or 117 or 120; FSc 3 or 123
Meat Technology Option
Ag Ec 76 or Plant 115; Chem 3B; FSc 1, 110, 125, 141, 178; Micro 20
Preveterinary Medicine Option
BioSc 1B; Chem 1B, 8 or 128A, 109 or 129A; Phys 2A
Select two courses from the following: Chem 150; Micro 20 or 140; PhyAn 135; Phys 2B; Zool 108
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, to be taken no sooner than the term in which 60 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, to be taken no sooner than the term in which 60 units of coursework are completed)
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 **54-59**
(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, 91
Plant Science ..... (12)
Cr Sc 1; OH 1; SW 100; VTF 110
Mechanized Agriculture .... (9)
Me Ag 1, 50, 114

Teacher Preparation Career Specialty ..... (18)
Select one: Animal Science, Mechanized Agriculture, or Plant Science (see *Teacher Preparation Option check sheet*)

Agricultural Communications Core ..... (47)
Agricultural Economics .... (6)
Ag Ec 153, 166
Agricultural Education .... (3)
Ag Ed 150
Mass Communication and Journalism ..... (11)
MCJ 1, 10, 104
Plant Science ..... (12)
Cr Sc 1; OH 1; SW 100; VTF 110
Mechanized Agriculture .... (3)
Me Ag 20
Enology, Food Science, and Nutrition ..... (3)
FSc 3
Animal Science ..... (9)
A Sci 1, 11, 21 or 31 or 41 or 51 or 61 or 91

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 **3-19**

Teacher Preparation ..... (19)
Upper-division writing skills
Teacher Education requirements: Ag Ed 135, 150, 187, 189; EHD 50; H S 121

Agricultural Communications ..... (3)
Upper-division writing skills (MCJ 102W required)

Electives **4-15**
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 California State University, 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, 8, 150; Micro 20; 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.

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, 220, 229 (1+1+1)	
Required courses	9
Agri 201 and select 6 units from the following: Agri 240T, 241, 242, 244, 246, 247, 248	
Electives	8
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 graduate writing skills 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 124 or higher in the Upper-Division Writing Exam (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.

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.

Students utilize veterinary and physiology labs to complement on-campus education. They also have access to livestock and range management facilities in the Sierra foothills.

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)
Prerequisites: 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.

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, $150) (Formerly 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, $150) (Formerly 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, $150) (Formerly 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, $150) (Formerly 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)

91. Poultry Production (3)
Prerequisite: A Sci 1 or concurrently. Management principles and practices of commercial poultry production. Nutrition, reproduction, environmental management, health, and processing of broilers and layers. (2 lecture, 3 lab hours) (Formerly A Sci 185T section)

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)

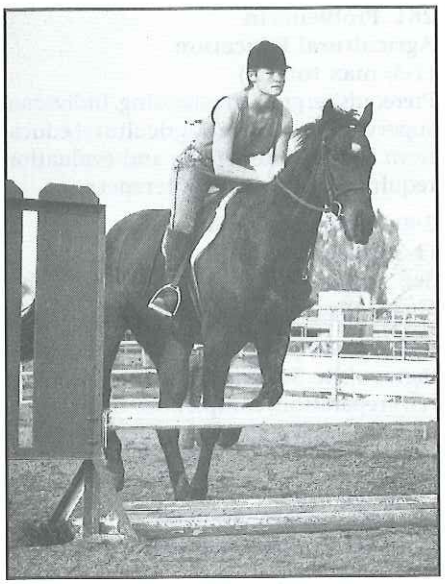
185T. Topics in Animal Science (1-4; max total 4 per discipline if no topic repeated)
Prerequisites: junior standing and permission of instructor. Anatomy, physiology, pathology, nutrition, genetics, livestock management. Topics may require labs.

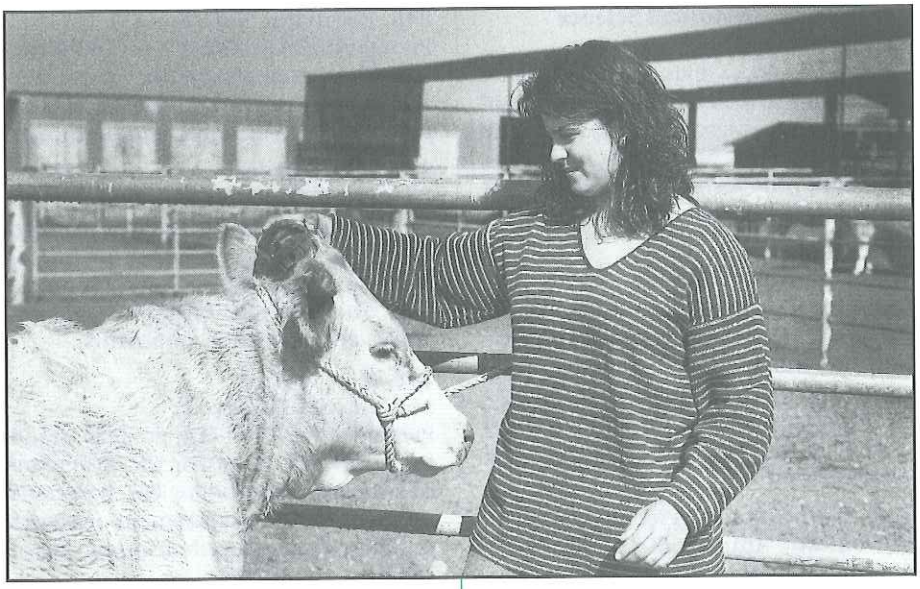
186. Animal Science Seminar (1)
Prerequisite: senior standing or permission of instructor; 12 upper-division units in the major. Latest developments in research; assigned papers in animal science to be presented in both oral and written form.

190. Independent Study (1-3; max total 6)
See *Academic Placement — Independent Study*. Approved for ***SP*** grading.

194. Agricultural Internship (1-8; max total 8)
Prerequisites: 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)
Prerequisites: A Sci 21, 31, or 41; Me Ag 3; 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.

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) (Computer lab fee, $15)

160T. Topics in Agriculture (1-4; max total 6 per discipline if no topic repeated)
Prerequisites: junior standing and 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)
Prerequisites: Me Ag 1; junior standing. Strategies for organizing, teaching, and administering educational programs in agricultural mechanics for youth and adults.

190. Independent Study (1-3; max total 6)
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; 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 Methodology and Communications (3)
Prerequisite: completion of university graduate writing skills requirement. Critical literature review, quantitative and qualitative research design, scientific writing, questionnaire design and use, and presentation of research results. Ethical research issues examined. Approved for ***SP*** grading.

229. Seminar (1; required total 3)
Prerequisite: permission of instructor. Students investigate and present current research problems. Observation and evaluation of additional assigned seminars. Oral and written reports required. (Formerly Agri 260)

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.

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 total 6)
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.

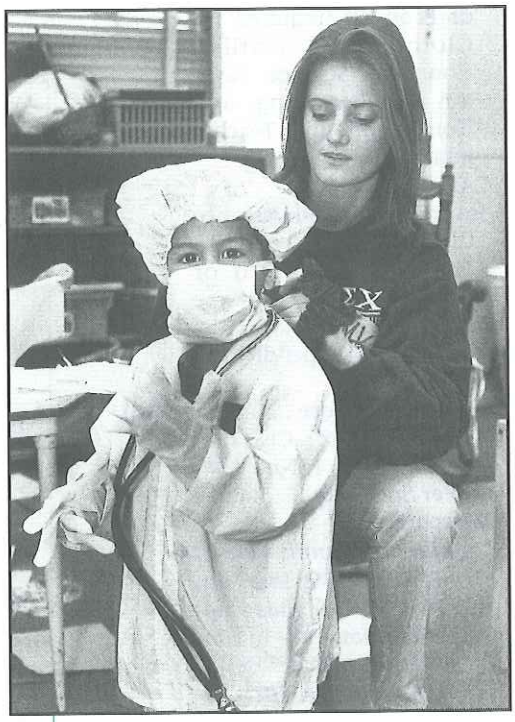
IN-SERVICE COURSE

(See *Course Numbering System*.)

Agriculture (Agri)

300. Topics in Agriculture (1-3; max total 6)
Topics may require lab hours. In-service professional training in selected areas of agriculture.

AGRICULTURE Child, Family, and Consumer Sciences



Dramatic play is one of the experiences essential to the child development laboratory curriculum.

School of Agricultural Sciences and Technology
Department of Child, Family, and Consumer Sciences
NINA J. DILBECK, *Chair*
Family and Food Sciences Building, Room 204
(209) 278-2283

B.A. in Family and Consumer Sciences
Programs of study:
Child and Family Sciences
Clothing and Textiles
Consumer Science
Fashion Merchandising
General Family and Consumer Sciences
Home Economics Teacher Education

B.S. in Child Development

M.S. in Family and Consumer Sciences

Minor in Family and Consumer Sciences

The Department of Child, Family and Consumer Sciences is dedicated to improving the environment and quality of life through education, research, and public service in the areas of family and consumer sciences. The department is housed in the Family and Food Sciences 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.

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.

Career Opportunities

Career opportunities for family and consumer sciences professionals are available in the concentrations of child and family sciences, clothing and textiles, consumer science, fashion merchandising, general family and consumer sciences, and home economics teacher education. Students may qualify for these career opportunities by selecting appropriate electives in their special areas 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 in family and consumer sciences.

Child and Family Sciences. 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, counseling, 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, textile sales representative, and cooperative extension agent.

Consumer Science. 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 service agents or specialists, 4-H youth agents, 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.

General Family and Consumer Sciences. 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.

Faculty

Nina J. Dilbeck, *Chair*

Richard D. Berrett
Dianne K. Dickerson
William R. Fasse
Carolyn B. Jackson
Michele M. Kilner
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 conducting research. 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

Family and Consumer Sciences Major — ***Units***

General Education **51-52**
(including 9 upper-division units, to be taken no sooner than the term in which 60 units of coursework are completed)

CORE
Category 2: Spch 3 (recommended)

BREADTH
Division 1: Chem 3A (required for Clothing and Textiles, and Home Economics Teacher Education)
Division 2: Biol 10 (required for Child and Family Sciences, Clothing and Textiles, and Home Economics Teacher Education)
Division 3: Psych 10 (required for Clothing and Textiles, and Home Economics Teacher Education)
Division 4: CFS 38 (recommended for Clothing and Textiles, Consumer Science, Fashion Merchandising, General Family and Consumer Sciences, and Home Economics Teacher Education); H S 124 or Psych 132 or Psych 171 (recommended for Child and Family Sciences)
Division 8: Soc 2 (recommended for Child and Family Sciences); Ag Ec 1 or Econ 40 (required for Clothing and Textiles, Consumer Science, Fashion Merchandising, and Home Economics Teacher Education)

CAPSTONE
Juveniles and Adolescence Cluster: Crim 120 and CFS 136 (recommended) or Psych 102

Major **48**
(including 24 upper-division units)

Department Core ..... (18)
CSH 113, 116*; CFS 131; F M 120*; FCS 1; Nutr 53*

Career Specialty ..... (30)
Select one:

Child and Family Sciences
CFS 32, 37, 39, 133, 134, 135; CSH 115; plus 9 upper-division units in consultation with adviser

Clothing and Textiles
F M 20, 22, 24, 26, 121, 123, 124, 126; GID 70; plus 5 upper-division units in consultation with adviser

Consumer Science
CSH 114, 115, 117, 118, 171; plus 15 upper-division units in consultation with adviser

Fashion Merchandising
F M 20, 22, 24 or 26, 124, 126, 127, 128, 129; GID 107; plus 2 upper-division units in consultation with adviser

General Family and Consumer Sciences
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*)

Additional requirements **1-21**
Upper-division writing skills (by examination or course)

Child and Family Sciences
No additional requirements

Clothing and Textiles
Chem 3B

Consumer Science
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

General Family and Consumer Sciences
No additional requirements

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 Child, Family, and Consumer Sciences Single Subject Credential Waiver Program in home economics consists of **Core:** CFS 131, 136; CSH 113 or 115, 114; F M 24 or 26, 121; FCS 1; FSc 50; GID 70, 107; Nutr 54; **Breadth:** CFS 135, 139; CSH 116 or 171; Nutr 166. Additional requirements by the Commission on Teacher Credentialing include: CTET 101, 159, 161; EHD 50, 155A, 155B; ERF 151, 152; H Ec 148; H S 121; LEE 156S; and SPED 160.

Undergraduate 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.

* Home Economics Teacher Education students are subject to waiver requirements for these courses. (See *Single Subject Credential Waiver Program.*)

5. The upper-division writing skills requirement can be met by passing the university examination or by taking an approved upper-division writing skills course, to be taken no sooner than the term in which 60 units are completed. 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.
6. General Education courses designated as required by the department are prerequisites to many courses in the program of study.
7. 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 Bachelor of Science degree in Child Development is an interdisciplinary major appropriate for students interested in vocational opportunities based on children. It may lead to employment in the areas of preschool, child care, 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, family and consumer sciences, and courses in communicative disorders and speech communications.

The major consists of a core of 11 courses, 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)
CSD 80	(3)
Psych 101, 136	(6)
Spch 162	(3)
Approved electives (See adviser to obtain an approved list of elective courses)	(15)
General Education	51
Electives and remaining degree requirements (see *Degree Requirements*); may be used toward a minor	25
Total	124

Child Development 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.

Family and Consumer Sciences Minor

A Minor in Family and Consumer Sciences 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 school dean. The certified minor program is filed with the university's Office of Evaluations.

Master of Science Degree Program

The Master of Science in Family and Consumer Sciences with an option in education is a 30-unit program designed to increase the competencies of family and consumer science professionals and to provide the foundation that will qualify some to pursue the doctoral degree. Through appropriate choices of courses, students may concentrate their programs of study in any one of the areas of family and consumer sciences: child development, family sciences, 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 Family and Consumer Sciences assumes preparation equivalent to a bachelor's degree in family and consumer sciences; 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 a bachelor's degree in a related field (e.g., child development, nutrition, etc.) may need to meet prerequisite requirements if they have not already been completed. Prerequisite requirements may be met by taking the following courses or their equivalents prior to enrollment in courses to be applied to the master's program: CFS 131, CSH 113, and FM 120 or Nutr 53. See the department's graduate coordinator.

Students who have not completed a bachelor's degree in family and consumer sciences or a related field (e.g., child development, nutrition, etc.) are required to take the following undergraduate prerequisite courses or their equivalents prior to enrollment in courses to be applied to the master's program: CFS 131, CSH 113, 116, FM 120 and Nutr 53. Make an appointment with the department's graduate coordinator.

Admission by the university does not imply acceptance in the Master of Science in Family and Consumer Sciences 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
FCS 201, 241 and 243	
Electives	15
(in consultation with an adviser) FCS 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: FCS 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 graduate writing skills 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 124 or higher in the Upper-Division Writing Exam (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.
7. See *Division of Graduate Studies* in this catalog for university requirements.

COURSES

Family and Consumer Sciences (FCS)

1. Contemporary Family and Consumer Sciences (3)
Family and Consumer Sciences 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. (Formerly H Ec 1)

190. Independent Study (1-3; max total 6)
See *Academic Placement — Independent Study*. Approved for ***SP*** grading. (Formerly H Ec 190)

192. Readings and Conference (1-3; max total 6)
Prerequisite: permission of instructor. Individually directed readings; reports and evaluation. (Hours arranged) Approved for ***SP*** grading. (Formerly H Ec 192)

193. Cooperative Education (1-6; max total 6)
Prerequisites: 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. (Formerly H Ec 193)

Consumer Science and Housing (CSH)

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)
Prerequisites: 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.

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)
Prerequisites: 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)
Prerequisites: 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)
Prerequisites: 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)
Prerequisites: 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.

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. (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)
Prerequisites: 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 Sciences (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)
Prerequisites: 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)
Prerequisites: CFS 39 and 131 or CFS 39 and Soc 165. Cultural and subcultural aspects of child rearing; survey of research studies and findings on cultural child-rearing attitudes and practices.

135. Contemporary Parenting (3)
Prerequisite: CFS 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, sexual 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)
Prerequisites: 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)

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.

Family and Consumer Sciences (FCS)

201. Survey of Family and Consumer Sciences Research (3)
Examination of current research in each area of family and consumer sciences. Abstract writing, formulation of annotated bibliographies and research presentations. (Formerly H Ec 201)

210T. Seminar in Consumer Sciences 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 may include aspects of aging, cultural aspects of management, home and community relationships, and ergonomics — aspects of work simplification. (Formerly H Ec 210T)

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. (Formerly H Ec 220T)

230T. Seminar in Child and Family Sciences (3; max total 12 if no topic repeated)
Prerequisite: permission of instructor. Research, methodology, and issues in family relationships and child development. Topics may include parenting, families in transition, relationship patterns, infancy, early childhood, and family diversity. (Formerly H Ec 230T)

240T. Seminar in Family and Consumer Sciences Education (3; max total 6 if no topic repeated)
Prerequisite: permission of instructor. Applied research; current and future trends of the multilevel areas of family and consumer sciences education. Topics may include curriculum development, administration, evaluation, supervision, and incorporation of business and industry. (Formerly H Ec 240T)

241. Seminar in Trends and Issues in Family and Consumer Sciences (3)
Prerequisite: permission of instructor. A study of the history and current status of family and consumer sciences. An examination of trends and issues pertaining to child and family sciences, clothing and textiles/fashion merchandising, consumer science and housing, food and nutrition, and interior design. (Formerly H Ec 241)

243. Research Methods in Family and Consumer Sciences (3)
Prerequisites: FCS 201 or equivalent; a statistics course, Math 11 or Soc 25 or equivalent; completion of the university writing skills requirement. Methods and techniques of research, such as research design, review of professional literature, preparation of research proposal, collection and interpretation of data, scientific writing and presentation of research results. (Formerly H Ec 243)

290. Independent Study (1-3; max total 6)
See *Academic Placement — Independent Study*. Approved for ***SP*** grading. (Formerly H Ec 290)

292. Readings in Family and Consumer Sciences (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. (Formerly H Ec 292)

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 or similar professional endeavors with written documentation. Abstract required. Approved for ***SP*** grading. (Formerly H Ec 298)

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. (Formerly H Ec 299)

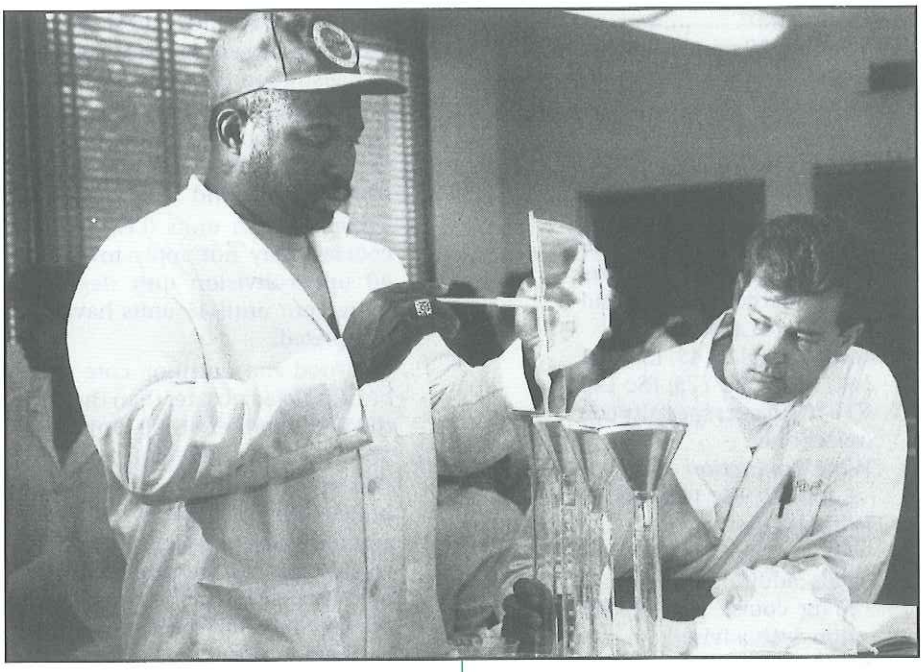
IN-SERVICE COURSE

(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



School of Agricultural Sciences and Technology
Department of Enology, Food Science, and Nutrition
N. JOANNE CAID, Chair
Family and Food Sciences Building, Room 103
(209) 278-2164

B.S. in Food and Nutritional Sciences
Options:
Dietetics and Food Administration
Enology
Food Science

M.S. in Agriculture
Options:
Food Science and Nutrition
Agricultural Chemistry

Minor in Food and Nutritional Sciences

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. California State University, 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 the university 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.

Faculty

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 California State University, Fresno. The faculty are noted for cooperation and activity within each industry to prepare and place graduates in their chosen career.

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. California State University, 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.

Faculty

N. Joanne Caid, *Chair*
Enology Program Director, Carlos J. Muller
Coordinators:
Graduate, Agricultural Chemistry, Barry H. Gump
Graduate, Food Science and Nutrition, Marie G. Dunford
Nutrition and Dietetics, Sandra S. Witte
Joo K. Kim Elena F. Kissick

Bachelor of Science Degree Requirements

Food and Nutritional Sciences Major ***Units***

General Education 51
(including 9 upper-division units, to be taken no sooner than the term in which 60 units of coursework are completed)

CORE
1. Engl 1 (required)
2. Spch 3, 7, or 8
3. Ag Ec 71, H S 92, Math 11, Plant 99, or Psych 42 (required for Dietetics and Food Administration Option)
   Ag Ec 71 (required for Enology Option — Wine Marketing career specialty)
   Plant 99 (required for Food Science 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 for all options except Enology Option — Wine Production career specialty which requires Phys 2A)
- Division 2: Bot 10 (required for Enology Option)
- Division 3: Psych 10 (required for Dietetics and Food Administration Option)
- Divisions 4–7: Upon selection with adviser
- Division 8: Ag Ec 1 (required for Enology Option — Wine Marketing career specialty); Soc 1 (required for Dietetics and Food Administration 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, 152; FSM 131, 133, 134; Nutr 149, 153, 157A, 157B, 165, 166; plus additional courses in consultation with adviser.

Enology: Enol 15, 45, 135, 151, 161, 163, 166, 175; FSc 178; VTF 101; career specialty core (select one):

Wine Production
Enol 125; FSc 110, 145

Wine Marketing
Ag Ec 124; Enol 105, 173; plus additional Ag Ec or Mktg course in consultation with adviser

Food Science: FSc 100, 110, 111, 115, 125, 140, 141, 142, 145, 178; plus 6 units of additional courses from the following list: A Sci 171A; Enol 15, 168; FSc 3, 123, 144, 150; I T 92

Additional requirements 27-32

Dietetics and Food Administration ..... (27-30)
Upper-division writing skills; Acct 4A; Chem 8, 109, 150; Micro 20; PhyAn 65; Psych 174

Enology ..... (27-32)
Upper-division writing skills; Chem 8; plus career specialty (select one):

Wine Production
Chem 1A, 105, 150; I T 52; Micro 140; VTF 102

Wine Marketing
Ag Ec 31, 130, 164; MCJ 152; Mktg 100, 102; Spch 170

Food Science ..... (27-30)
Upper-division writing skills; Chem 4, 8, 105, 150; Math 71, 72; Micro 20; Phys 2A

Electives 0-5

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 (Enol 193, 194; 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 Sciences 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 California State University, 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 required:

Food Science: Micro 20, Enol 161 or FSc 123 or 141, and Chem 150.

Dietetics or Nutrition: 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 6-unit thesis completes the program of study.

	Units
Core	
Agri 200	3
Agri 220	3
Agri 229	1+1+1
Required Courses	
Agri 209, 223	6
Select one: Agri 204, 205, 206	3
Approved Electives	
200- or 100-level courses appropriate to individually designed program; must be approved by adviser prior to enrollment	6
Culminating Experience	
Agri 299 (Thesis and defense)	6
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 14 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	
Agri 200	3
Agri 220	3
Agri 229 or Chem 280	1+1+1
Required Courses	
Chem 260: Adv Research Tech	3
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	14
Culminating Experience	
Agri 299 or Chem 299 (Thesis and defense)	4
Total minimum requirements	30

Graduate Advising Notes for Food Science and Nutrition Option and Agricultural Chemistry Option

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 graduate writing skills 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 124 or higher on the Upper-Division Writing Exam (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.
7. Students may apply a maximum of 3 units of independent study to their 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.

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.

45. Wine Evaluation Techniques (3; max total 6)
Parameters that determine sensory quality in wines. Wine appreciation. Critical evaluation of wines including premium varietals. Must be 21 years of age — State law. (1 lecture, two 2-hour labs) (Formerly Enol 25; Enol 35)

102T. Topics in Sensory Evaluation of Wines (1-6; max total 6 if no topic repeated)
Prerequisites: 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)

105. Advanced Sensory Evaluation of Wines (3)
Prerequisites: Enol 45, 161 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)

125. Wine Microbiology (4)
Prerequisites: 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)
Prerequisites: Enol 161; Chem 101 or 109 or IT 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)

151. Winery Equipment (2)
Prerequisites: Enol 15. Evaluation, use, location, operation, and repair of winery equipment. Winery safety. Safety equipment required. (1 lecture, 3 lab hours) (Formerly Enol 165)

161. Wine Analysis and Production (6)
Prerequisites: Chem 8; Chem 105 recommended; Enol 151. Pilot plant, laboratory and winery experience in winemaking operations, including harvest, scheduling, crushing, fermentation, safety, sanitation procedures, record keeping, analysis, and operation of enology facility equipment. Safety equipment required. May be repeated once for credit. (2 lecture, four 3-hour labs) (Formerly 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 university's 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) (Formerly Enol 101)

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) (Formerly Enol 185)

168. Juice and Concentrate Production (2)
Prerequisites: 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) (Formerly FScN 163)

173. Wine Marketing (2)
Prerequisites: Enol 45; 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)
Prerequisites: 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 total 6)
See *Academic Placement — Independent Study*. Approved for ***SP*** grading.

193. Wine Marketing Internship (2-12; max total 12)
Prerequisites: 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)
Prerequisites: 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 (1-6; max total 6)
Prerequisites: Enol 161, 166, 175; FSc 145, 178; VTF 101, 102. Application of management principles in wine production. Operation of the California State University, Fresno commercial winery. Open only to enology majors or to viticulture majors with the appropriate background. ***CR/NC*** grading only.

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. (Formerly 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) (Formerly 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) (Formerly 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) (Formerly FScN 100)

110. Food Chemistry and Biochemistry (4)
Prerequisites: Chem 4, 150 or concurrently. Basic chemical composition, structure, and properties of foods. Chemical and biochemical changes in foods during production, processing, and utilization. (Formerly 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)
Prerequisites: 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) (Formerly FScN 130)

123. Dairy and Food Plant Sanitation (3)
Prerequisites: FSc 3; Micro 20 or equivalent, or permission of instructor. Food plant and dairy farm sanitation as related to food safety. Public health issues. Requirements of regulatory agencies. Cleaning, sanitation procedures, housekeeping, and waste disposal. (Field trips) (Formerly D Ind 113)

125. Food Microbiology (3)
Prerequisite: Micro 20. 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) (Formerly FScN 170)

140. Physical and Thermal Properties of Food (3)
Prerequisites: Math 72; Phys 2A. Mechanical, rheological, electrical, optical and thermal properties of food. Applications in engineering design and analysis of food processing. (2 lecture, 3 lab hours)

141. Food Processing I (3)
Prerequisites: Chem 8; FSc 1; Phys 2A; Micro 20. 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) (Formerly 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, with emphasis on dairy products. (2 lecture, 3 lab hours; field trips) (Formerly FScN 142)

144. Food Engineering (3)
Prerequisite: Phys 2A. Engineering applications in food processing. Principles of heat transfer, fluid mechanics, dehydration and refrigeration. (2 lecture, 3 lab hours) (Formerly AET 109)

145. Food Industry Waste Management (3)
Prerequisite: Phys 2A. Waste material, collection and transportation. Mechanical and thermal processing, composting, and energy recovery. Management, reduction and recycling in food plants. (2 lecture, 3 lab hours) (Formerly AET 108)

150. Advanced Foods (3)
Prerequisites: FSc 50; FSM 30; 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) (Formerly 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) (Formerly FScN 151)

152. Food for Health (3)
Prerequisites: FSc 50; FSM 30; 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) (Formerly FScN 56; FScN 152)

162T. Topics in Food Science (1-4; max total 12 if no topic repeated)
Prerequisites: FSc 50; Nutr 54. Topics relating to food science. Some topics may have labs. (Formerly 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. (Formerly FScN 125)

180. Undergraduate Research (1-4; max total 4)
Prerequisites: junior or senior standing and permission of instructor. Exploratory work on a suitable problem in food science. Approved for ***SP*** grading. (Formerly FScN 180)

190. Independent Study (1-3; max total 6)
See *Academic Placement — Independent Study*. Approved for ***SP*** grading. (Formerly FScN 190)

192. Readings and Conference (1-3; max total 3)
Prerequisite: permission of instructor. Individually directed readings; reports and evaluation. (Hours arranged) (Formerly FScN 192)

193. Supervised Work Experience (1-6; max total 6)
Prerequisites: second semester junior standing and permission of instructor. Supervised work experience in food science. ***CR/NC*** grading only. (Formerly 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) (Computer lab fee, $15) (Formerly FScN 30)

131. Introduction to Food Systems Management (3)
Prerequisite: FSc 50. A managerial and systems approach to foodservice operations. Impact of legislation, labor relations, and marketing on industry. Safety and sanitation applied to quantity foodservice operations. (Formerly FScN 131)

133. Quantity Food Production (4)
Prerequisites: FSM 131; FSc 150; health clearance and health and accident insurance required. Preparation and service of conventional and convenience foods in quantity foodservice operations. Menu planning, recipe standardization, equipment and layout, production controls, work simplification, and quality assurance. (3 lecture, 3 lab hours) (Formerly FScN 133)

134. Cost Analysis in Food Systems Management (3)
Prerequisites: FSM 30, 133; Acct 4A. Advanced concepts of planning, analyzing, decision-making and reporting procedures unique to food systems management. Cost analysis and control, computer applications, and purchasing in food service. (2 lecture, 2 lab hours) (Formerly FScN 134)

135. Institutional Experience (3)
Prerequisites: FSM 134; health clearance and health and accident insurance required. Supervised work experience in food systems management. (1 lecture, 4 lab hours) (Formerly FScN 135)

162T. Topics in Food Systems Management (1-4; max total 12 if no topic repeated)
Prerequisites: FSc 50; Nutr 54. Topics relating to food systems management. (Formerly FScN 162T)

180. Undergraduate Research (1-4; max total 4)
Prerequisites: junior or senior standing and permission of instructor. Exploratory work on a suitable problem in food systems management. Approved for ***SP*** grading. (Formerly FScN 180)

190. Independent Study (1-3; max total 6)
See *Academic Placement — Independent Study*. Approved for ***SP*** grading. (Formerly FScN 190)

192. Readings and Conference (1-3; max total 3)
Prerequisite: permission of instructor. Individually directed readings; reports and evaluation. (Hours arranged) (Formerly FScN 192)

193. Supervised Work Experience (1-6; max total 6)
Prerequisites: second semester junior standing and permission of instructor. Supervised work experience in food systems management. ***CR/NC*** grading only. (Formerly 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. (Formerly FScN 53) (CAN H EC 2)

54. Elementary Nutrition (3)
Application of chemical and biological principles to carbohydrates, proteins, fats, vitamins, minerals and water in human nutrition; recommended nutrient allowances and dietary evaluation; determination of energy needs; and relationship of nutrition to health and disease. (Formerly 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. (Formerly FScN 147)

149. Food and Nutrition Communication (3)
Prerequisites: FSc 50; Nutr 54; senior standing or permission of instructor. Integrating and translating food and nutritional science concepts into easily understood consumer messages. Activities include developing instructional materials, writing lesson plans, and making presentations to a target audience. (Formerly FScN 149)

153. Advanced Nutrition (3)
Prerequisites: 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 me-

tabolism, digestion, bone mineralization and body composition. (Formerly FScN 153)

157A. Diet in Disease (3)
Prerequisites: 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) (Formerly 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) (Formerly FScN 157B)

162T. Topics in Nutrition (1-4; max total 12 if no topic repeated)
Prerequisites: FSc 50; Nutr 54. Topics relating to nutrition. Some topics may have labs. (Formerly FScN 162T)

165. Weight Management (3)
Prerequisite: Nutr 54 or equivalent. Recent developments in the understanding of obesity and its management. Discussion of eating and weight problems in active and sedentary individuals. Evaluation of weight loss programs. (Formerly FScN 162T section; Nutr 162T section)

166. Community Nutrition (3)
Prerequisite: Nutr 54. Survey of nutrition programs created to improve community health. Development and examination of public health nutrition policy. Proposal writing. (Formerly FScN 166)

180. Undergraduate Research (1-4; max total 4)
Prerequisites: junior or senior standing and permission of instructor. Exploratory work on a suitable problem in nutrition and dietetics. Approved for ***SP*** grading. (Formerly FScN 180)

190. Independent Study (1-3; max total 6)
See *Academic Placement — Independent Study*. Approved for ***SP*** grading. (Formerly FScN 190)

192. Readings and Conference (1-3; max total 3)
Prerequisite: permission of instructor. Individually directed readings; reports and evaluation. (Hours arranged) (Formerly FScN 192)

193. Supervised Work Experience (1-6; max total of 6)
Prerequisites: second semester junior standing and permission of instructor. Supervised work experience in dietetics and nutrition. *CR/NC* grading only. (Formerly 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)
Prerequisites: 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; 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)
Prerequisites: Chem 150 and 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)
Prerequisites: 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.

206. Proteins (3)
Prerequisite: Chem 150. Advanced studies in the chemical and biochemical properties of protein. Synthesis and catabolism of tissue proteins. Protein quality. Functional properties of proteins in foods. (Formerly Agri 221T section)

209. Vitamins and Biocatalysts (3)
Prerequisite: Chem 150. Mechanisms of action of vitamins, coenzymes, and cofactors in biological transformations involving food processing and human nutrition. Emphasis on the fundamental nature of biochemical reactions related to food science and nutrition.

220. Research Methodology and Communications (3)
Prerequisite: completion of university graduate writing skills requirement. Critical literature review, quantitative and qualitative research design, scientific writing, questionnaire design and use, and presentation of research results. Ethical research issues examined. Approved for ***SP*** grading.

221T. Topics in Food Science and Nutrition (3; max total 9)
Prerequisites: 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. Food, Nutrition, and Health (3)
Prerequisite: Chem 150. Review and discussion of the recent scientific literature relating to food consumption, nutrient intake, and human health.

229. Seminar (1; required total 3)
Prerequisite: permission of instructor. Students investigate and present current research problems. Observation and evaluation of additional assigned seminars. Oral and written reports required. (Formerly Agri 260)

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; max total 6)
Topics may require lab hours. In-service professional training in selected areas of agriculture.

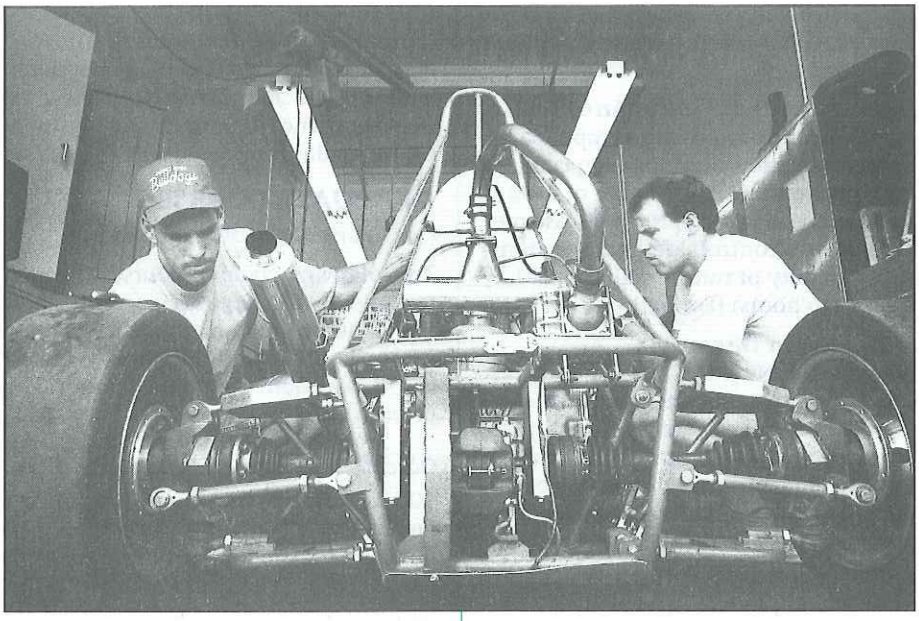
AGRICULTURE Industrial Technology

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.S. in Industrial Technology
Programs of Study:
Computer-Aided Design Management
Computer-Aided Manufacturing Management
Industrial Control Systems Management
Quality Systems Management
Transportation Systems Management

M.S. in Industrial Technology

Minor in Industrial Technology



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.

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.

Faculty

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 their professions.

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 California State University, 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

Industrial Technology. 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 industrial technology 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.

Faculty

Kenneth D. Moshier, *Chair*

Coordinators:
Industrial Technology, Tony M. Au
Teacher Education, Gary H. Winegar
Graduate, Gary E. Grannis

Merle S. Adrian
Clift C. Cullen
Edward A. Gaiser
Norman A. Gullickson
Gary B. Paglierani
Matthew M. Yen

Bachelor of Science Degree Requirements

Industrial Technology Major

Units

General Education 52
(including 9 upper-division units, to be taken no sooner than the term in which 60 units of coursework are completed)

CORE
Category 3: Math 72 or 75 (required)
Category 4: C Sci 1 (recommended)

BREADTH
Division 1: Phys 2A (required)
Division 8: Ag Ec 1, Econ 40 or 50 (one required)

CAPSTONE
Recommended: Energy and Society Cluster, I T 106 and one other course from Geog 134, Psych 168 or Econ 117

Major 72
(including 18 upper-division units)

Industrial Technology 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 ..... (34)
Select one:

Computer-Aided Design Management
I T 44, 116, 119, 134, 135, 144, 147, 148, 158, 177, 192; plus 3 units approved by your adviser

Computer-Aided Manufacturing Management
I T 112, 116, 119, 131, 133, 134, 135, 148, 156, 158, 177, 192

Industrial Control Systems Management
I T 53, 110, 112, 116, 119, 131, 132, 133, 156, 158, 192; plus 3 units approved by your adviser

Quality Systems Management
I T 112, 116, 119, 137, 148, 184, 192, 194; Math 11; plus 9 units approved by your adviser.

Transportation Systems Management
I T 12, 53, 110, 112, 116, 120, 121, 122, 127, 129, 131, 192

Additional requirements 4
Phys 2B; 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 pass the upper-division writing exam or complete I T 198W with a grade of *C* or higher (to be taken no sooner than the term in which 60 units are completed).
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 52 units may be exceeded depending upon the selection of courses.
5. Students must take two science courses to meet the NAIT standards. (Phys 2A will meet the Division 1 General Education requirement. Phys 2B is an additional requirement for the major.)

Industrial Technology Minor

A Minor in Industrial Technology consists of 20 units of which 9 must be upper division. At least 12 units must be taken in one of these specialized areas of study: computer-aided design management, computer-aided manufacturing management, industrial control systems management, quality systems management, or transportation systems management.

Teacher Credential Program

The following requirements for the Single Subject Waiver Program in Industrial and Technology Education include: all I T Core courses required for the B.S. in Industrial Technology; General Education Math 72 or 75, Phys 2A; and Ag Ec 1 or Econ 40 or 50; and I T 12, 41, 52, 60, 80; and 9 units each in two different specializations, i.e.:

- Computer-Aided Design Management
- Computer-Aided Manufacturing Management
- Industrial Control Systems Management
- Transportation Systems Management

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 can 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; a maximum of 6 units may be 100-level courses)	
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 California State University, Fresno, 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 Vehicle Systems (3)
Design, construction, and mechanical functions of vehicle engines, fuel systems, electrical systems, power transmission, brakes, and wheel suspension; proper use and safety of tools and equipment. (2 lecture, 3 lab hours)

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, $4)

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)

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)
(Same as Me Ag 53.) Introduction to electricity including fundamentals of electrostatics, alternating and direct current electrical circuits, electrical calculations, magnetics, circuit applications, electrical measuring, and test equipment. (1 lecture, 4 lab hours) (Course fee, $5) (Formerly AET 53)

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. (1 lecture, 4 lab hours) (Course fee, $5)

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)

71. Metallurgical Processes (3)
(Same as Me Ag 50.) 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. (2 lecture, 3 lab hours) (Course fee, $7) (Formerly AET 50)

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) (Course fee, $7)

80. Wood Processing Technology (3)
Wood properties, materials, finishing; hand, portable electric, and machine tool processing; design, production planning; safety, adhesives, and cutting principles; machine design and use. (6 lab hours) (Course fee, $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.

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. (2 lecture, 2 lab hours) (Computer lab fee, $15)

104. Product Design (3)
Prerequisite: I T 41, 74, or equivalent. Elements, principles, and methods of design. Emphasis will be placed on the development of models and prototypes with attention to standard components, productivity, and packaging. (6 lab hours) (Course fee variable; not less than $5)

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, $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)
Prerequisites: 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. (2 lecture, 2 lab hours) (Computer 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. (1 lecture, 4 lab hours) (Formerly I T 191T section)

117. Quality Assurance (3)
Prerequisites: 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)
Prerequisites: 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)
Prerequisites: 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. (2 lecture, 3 lab hours)

120. Vehicle Engine Systems (3)
Prerequisites: I T 12, 53 or concurrently. Advanced study of vehicle 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)
Prerequisites: 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. Vehicle Chassis Analysis (3)
Prerequisite: I T 12. Advanced study of vehicle 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) (Formerly I T 191T section)

129. Vehicle Diagnostic Procedures (3)
Prerequisites: I T 12, 53 or concurrently. Laboratory study and analysis of mechanical, electrical, and computer control problems. Technical reports. (6 lab hours) (Course fee, $5)

131. Digital Circuits and Systems (3)
Prerequisites: I T 52 and 53. Number systems, Boolean logic, and fundamentals of digital devices; basic applications of logic devices in computers and control systems. (1 lecture, 4 lab hours; field trips) (Course fee, $5)

132. Microprocessor Applications (3)
Prerequisites: I T 116 and 131. Microprocessor characteristics and programming; application and interface to digital and analog control and communication circuits; introduction to microcomputer hardware. (1 lecture, 4 lab hours) (Course fee, $5)

133. Programmable Logic Controllers (3)
Prerequisites: 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. Industrial Robotics (3)
Prerequisite: a high-level programming language. Study, analysis, and evaluation of robotics systems. APT programming language for numerical control and application languages for robots. Use of robot vision and the geometry of computer vision applications. (2 lecture, 3 lab hours)

135. Computer-Aided Process Planning (3)
Prerequisites: I T 115, 177. Group technology, CAD/CAM integration, computer-aided methods for process planning, Flexible Manufacturing Systems. Production planning and control of cellular manufacturing. (2 lecture, 2 lab hours) (Computer lab fee, $15)

137. International Quality Standards (3)
Prerequisite: I T 117. ISO 9000 and related international quality systems. Implementation process. Conformance standards, quality system requirements, and the registration and audit processes.

144. Tool Design Graphics (3)
Prerequisite: I T 41. Application of graphics to industrial work holding devices; their application, drawing, and design. Construction of working drawings aided by standards, company catalogs, and handbooks. Final designs subjected to student presentation and evaluation. (6 lab hours; field trips)

145. Industrial Technology Exhibits and Competitions (3)
Provides a structure for students to be involved in various industrial technology exhibits and competitions, industrial technology research and development, project management, and team work. ***CR/NC*** grading only. (6 lab hours)

147. Advanced CAD Applications (3)
Prerequisites: I T 115, 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. (2 lecture, 3 lab hours) (Computer 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.

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. (1 lecture, 4 lab hours; field trips) (Course fee, $4)

158. Local Area Network Fundamentals (3)
Prerequisites: I T 102, 116, 131. Local Area Network (LAN) concepts, architectures, protocols, and implementations. Data communication and equipment integration. Manufacturing automation and office technology, applications and interfaces. (1 lecture, 4 lab hours, field trips) (Computer lab fee, $15)

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) (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, $20)

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)

177. Computer Numerical Control (3)
Prerequisite: I T 102. 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. (2 lecture, 3 lab hours)

184. Advanced Manufacturing Technology (3)
Prerequisite: I T 74. Production processing, using metallic and nonmetallic materials, including product design, work cells, tooling, capacity planning, material handling, scheduling and flow chart. (6 lab hours; field trips) (Course fee, $10)

185. Advanced Wood Processing (3; max total 6)
Prerequisite: I T 80. Design, construction, and finishing of wood products: furniture, cabinetry, accessories, tools, musical instruments; incorporation of metals, composites, polymers, organic materials, rare and exotic wood; inlaying, turning, veneering, laminating, bending, panel development, caning, and framing. (6 lab hours) (Course fee, $10)

190. Independent Study (1-3; max total 6)
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: senior standing. Preparation for Certification Examinations by the Society of Manufacturing Engineers and the National Association of Industrial Technology. 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)
Prerequisites: 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 majors within options, emphases, or unit areas of study. (Course fee variable)

198W. Technical Writing (3)
Prerequisites: satisfactory completion (*C* or better) of the Engl 1 graduation requirement; to be taken no sooner than the term in which 60 units are completed. Preparation of technical reports, research

proposals, specifications, resumes, and correspondence using effective writing techniques, formats, and styles. Meets upper-division writing skills requirement for graduation.

199. Senior Problem in Industrial Technology (2)
Prerequisite: successful completion of Upper-Division Writing Exam or I T 198W. Approved problem or research project, with seminar, in the area of the student's option and emphasis. Approved for ***SP*** grading.

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 new technology and its impact on people and their institutions. Topics focus on rapid technological changes as they relate to adoption, implementation, management strategies, and social issues.

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.

280. Research Methodology (3)
Prerequisites: ERF 153 and advancement to candidacy. Seminar in research procedures in industrial education and technology; basic bibliography, research form and methods.

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.

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.

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.

285. Advanced Manufacturing Systems (3)
Prerequisites: 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.

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.

298. Project (2-4; max total 4)
Prerequisites: 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.

299. Thesis (2-4; max total 4)
Prerequisites: 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.

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.

AGRICULTURE Plant Science

School of Agricultural Sciences and Technology
Department of Plant Science
SAYED A. BADR, *Chair*
Agriculture Building, Room 220
(209) 278-2861

B.S. in Plant Science
Options: Agronomy, Horticulture, Plant Health
Emphases: Production Management, Science and Technology

M.S. in Plant Science

Minor in Plant Science

Join the leader in science, technology, and management. The Department of Plant Science offers programs in production with classes in science and technology and in business management. Within the production or science emphasis, students select an option in agronomy (Cr Sc and SW courses), horticulture (OH, VTF and some Cr Sc courses), or plant health (PLT H, Cr Sc, OH, and VTF courses).

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, and crop production. 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, contact the department office.

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

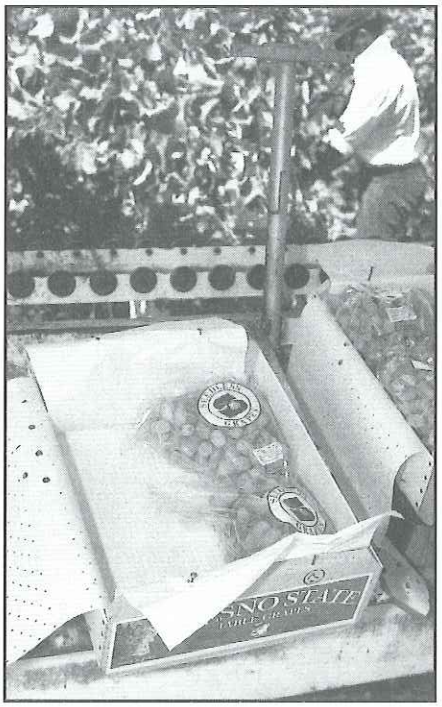
Sayed A. Badr, *Chair*
Graduate Coordinator, Arthur J. Olney

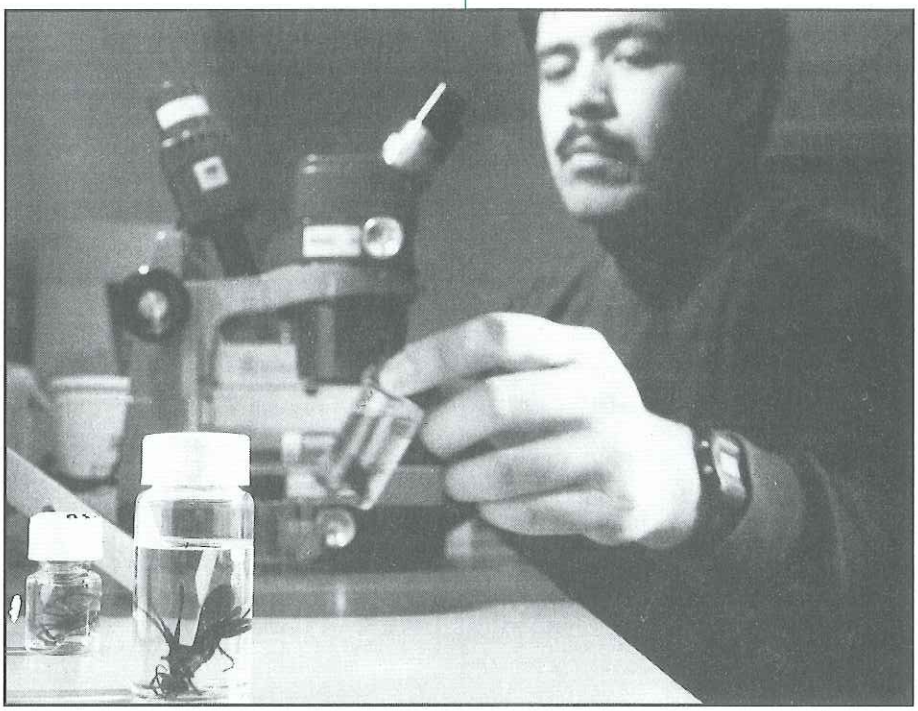
Daniel P. Bartell
Earl H. Bowerman
Mahlon M. S. Hile
Gary M. Koch
Charles F. Krauter
Mark A. Mayse
Jack F. Paris
Gary L. Ritenour

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: Agronomy, Horticulture, Plant Health

Recommended curriculum for students interested in agronomy (crop science and soil and water courses), horticulture (ornamental horticulture, viticulture/tree fruit and some crop science courses), and plant health.

	Units
General Education	51
(including 9 upper-division units, to be taken no sooner than the term in which 60 units of coursework are completed)	
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)
PLT H 103, 105, 106; Plant 107, 150; SW 2, 100, 100L	
Option	(23)
Minimum of 15 units, including 12 upper-division units, from one of the following option categories	(15)
Agronomy	
all from Cr Sc and/or SW courses	
Horticulture	
all from OH, VTF and/or Cr Sc 111, 112 courses	
Plant Health	
9 units from PLT H courses and 6 units from a production area (Cr Sc, OH, VTF, not to include VTF 110)	
Complement the option by choosing one course from each of the following sets. No double counting of courses is permitted within the major	(6)
Set A: SW 101, 104, 111	
Set B: PLT H 107, 108, 109	
Set C: Cr Sc 104, Plant 102, VTF 114	
Select 2 units of research or crop project courses from Plant 180, 190, or 196	(2)
Additional requirements	16-19
Upper-division writing skills requirement by examination or Plant 110W	
Chem 3B, Bot 130	
Management courses	
Ag Ec 31; select two from: Ag Ec 110N, 117, 120, 130, 160, 164	
Electives	13-16
Courses supplementary to the major, selected in consultation with your department faculty adviser, are strongly recommended.	
Total requirements	128
(including 40 upper-division units)	

Advising Notes

1. During the Add/Drop period of their first semester, students are required to attend a department undergraduate orientation session. Alternatively, they are required to meet with the department chair. In either case, they will be assisted in selecting an appropriate faculty adviser and be given the curriculum checksheet(s) from which to select a catalog year.
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: Agronomy, Horticulture, Plant Health

Recommended curriculum for students interested in agronomy (crop science and soil and water courses), horticulture (ornamental horticulture, viticulture/tree fruit and some crop science courses), and plant health. 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, horticulturists, or soil scientists/specialists.

	Units
General Education	51
(including 9 upper-division units, to be taken no sooner than the term in which 60 units of coursework are completed)	
CORE	
Category 3: Plant 99 (required)	
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 ..... (19)
PLT H 103, 105, 106; SW 2, 100, 100L
Select one: Plant 102 or 107

Option ..... (26)
Minimum of 15 units, including 12 upper-division units, from one of the following option categories ..... (15)

Agronomy
all from Cr Sc and/or SW courses

Horticulture
all from OH, VTF and/or Cr Sc 111, 112 courses

Plant Health
9 units from PLT H courses and 6 units from a production area (Cr Sc, OH, VTF, not to include VTF 110)

Complement the option by choosing one course from each of the following sets. No double counting of courses is permitted within the major ..... (9)
Set A: SW 101, 104, 111
Set B: PLT H 107, 108, 109
Set C: Cr Sc 104, Plant 102, VTF 114

Select 2 units of research or crop project courses from Plant 180, 190, or 196 ..... (2)

Additional requirements 16-23
Upper-division writing skills requirement by UDWE or Plant 110W

Science courses
Bot 130; Chem 8; and either Chem 150 or both Chem 4 and 105; Genet 120; Micro 20 or equivalent

Electives 9-16
Courses supplementary to the major, selected in consultation with department faculty adviser, are strongly recommended. Zool 10 recommended for Plant Health Option.

Total requirements 128
(including 40 upper-division units)

Advising Notes
See *Advising Notes*, Plant Science Major, Production Management Emphasis.

Plant Science Minor

Options: Agronomy, Horticulture, Plant Health

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* (Me Ag 3 and permission of instructor and appropriate production course)	
Plant 150: Crop Improvement* (Bot 10 or Biol 10)	
Select from the following	6
PLT H 103: Economic Entomology* (Bot 10 or Biol 10 or Zool 10)	
PLT H 105: Weeds* (Bot 10 or Biol 10 and Chem 3A)	
PLT H 106: Plant Pathology* (Bot 10 or Biol 10)	
Select from the following	3
SW 2: Agricultural Water	
SW 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.

Master of Science Degree Requirements

The Master of Science degree in Plant Science 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, 8; Genet 120; PLT H 103, 105, 106; Plant 99; SW 2, 100, 100L.

Students are required to submit in one complete packet the following materials to the Office of the Dean, School of Agricultural Sciences and Technology, Ag 102:

- one complete set of transcripts of all prior college or university work
- school application to the master's degree program
- 500-word statement of purpose by the candidate
- three letters of recommendation from persons in a position to make an evaluation in support of program entry, and
- one copy of the Institutional Score Report of GRE scores.

All graduate 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 550, unless they have a baccalaureate degree from an institution of higher education in which English is the language of instruction.

The packet of materials must be delivered to the dean's office by the following deadlines:

Desired Semester of Enrollment	Submit Packet by
Spring	October 25
Fall	May 10

Incomplete packets of materials will be returned to students for resubmission the following semester. Required application materials are available in the dean's office, Ag 102, (209) 278-2061.

A committee of department faculty will review all complete applications which were received by the stated deadline. Written notification will be sent, no later than the 15th day of the next succeeding month, regarding whether or not

admission has been granted. Admission to the M.S. in Plant Science degree program is contingent upon admission to California State University, Fresno. Students who have been denied admission to the graduate program in plant science must appeal the decision in writing to the department's graduate coordinator no later than two weeks following the date of the letter of denial in order to be reconsidered by the faculty for admission during the semester for which the application was originally submitted.

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 and that bachelor's degree was conferred
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 California State University, Fresno 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.

Students completing prerequisite coursework, following admission as unclassified postbaccalaureate students in plant science, must achieve a grade of *C* or better in required prerequisite coursework to qualify for admission to the master's degree program.

Program Requirements

All students must complete a 13-unit common core. Students must also complete 9 units of additional requirements, including one course from each of three sets of courses, as well as 5 units of approved electives. Each student is also expected to complete a 3-unit thesis in consultation with a thesis committee.

	Units
Core	13
Agri 200, 201, 220; Plant 257, 270	
Additional requirements	9
Three courses, one from each of three sets:	
Set A: Plant 252, 254, 255	
Set B: Plant 258, 261	
Set C: Plant 253, 256	
Electives	5
In consultation with their advisers, students select additional courses from the three sets listed above, and/or from the department's approved electives list.	
Culminating experience	3
Plant 299	
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. Elective courses are selected in consultation with the student's faculty adviser from the three sets of courses listed under additional requirements. They may also be selected from the department's list of approved electives, consisting of chemistry, biology and plant science courses.
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. Satisfactorily 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. Before enrolling in Agri 220, the student must demonstrate graduate-level writing proficiency. This may be accomplished in one of three ways:
   - achieve a score of 450 or higher on Verbal Section of GRE
   - achieve a score of 124 or higher on Upper-Division Writing Examination (offered each semester) or
   - pass with a grade of ***B*** or better a section of Plant 110W (offered each fall) which has been designated by the School Graduate Committee as fulfilling the requirement.

   Any student who enrolls in Agri 220 before satisfying this requirement will be instructed to drop the course.
8. All students must successfully complete the department qualifying examination, which is taken as soon as possible after completing Agri 200, 201 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.

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 Math 4R on our campus or another college-taught intermediate algebra course. Introduction to experimental methods and statistical procedures used in agricultural research. Design of experiments; statistical analysis and interpretation. General Education CORE, Quantitative Reasoning. (2 lecture, 3 lab hours)

102. Micropropagation (3)
Prerequisites: 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)
Prerequisites: 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) (Formerly Plant 2)

110W. Dimensions in Agriculture (3)
Prerequisites: satisfactory completion (*C* or better) of the Engl 1 graduation requirement, to be taken no sooner than the term in which 60 units of coursework are completed. 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.

115. Computer Applications in Plant Science (4)
Overview of computer hardware. Basics of PC operating systems. Software applications for plant science. Word processing, spreadsheet analysis and modeling, database management, geographic information systems, remote sensing, surveying, and scientific data visualization technologies related to plant science. Hands-on instruction. (3 lecture, 3 lab hours) (Course fee, $15) (Formerly Plant 12)

134. Microclimatology (3)
(See *Geog 114.*)

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 total 6)
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: Me Ag 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)
Not open to students with credit in upper-division Cr Sc courses. Principles of production for cereal, row, forage and vegetable crops. Culture, insect and disease control, harvesting, storage, and marketing.

101. Row Crops (3)
Prerequisites: 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)
Prerequisites: 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)
Prerequisites: 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)
Prerequisites: 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, $65)

105. Range Management (3)
Prerequisites: 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)
Prerequisites: Bot 10 or Biol 10, Cr Sc 1. 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, $65)

112. Cool Season Vegetables (3)
Prerequisites: Bot 10 or Biol 10, Cr Sc 1. 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, $65)

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)

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)

101. Floriculture (3)
Prerequisites: Bot 10 or Biol 10, OH 1. The construction, operation and management of greenhouses; cultural and environmental techniques used in the production of florist crops. Foliage plant identification. (2 lecture, 3 lab hours; field trips)

105. Nursery Management (4)
Prerequisite: OH 1. Practices and principles in planning and managing a retail nursery, flower shop, or garden center; includes some aspects of production and construction of occasional floral designs. (3 lecture, 3 lab hours; field trips)

107. Landscape Design (4)
Prerequisites: OH 1, 109. History and development of landscape design. Landscapes for the modern home, with consideration of effect on microenvironment. Graphic techniques used in developing landscape designs. Analysis and solution of landscape design problems of residential and commercial structures. (2 lecture, 6 lab hours)

108. Ornamental Trees (3)
Prerequisites: 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. Plant Identification and Botanical Gardens (3)
Prerequisites: Bot 10 or Biol 10, OH 1. Identification, growth habits, culture and landscape use of shrubs, vines and ground covers. Botanical gardens of the U.S. and California with particular emphasis on their history and design. (2 lecture, 3 lab hours; 2 Saturday field trips)

110. Turfgrass Production and Management (3)
Prerequisites: 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 Health (PLT H)

1. Introduction to Plant Protection (3)
Not open to students with credit in upper-division Pl Pr or PLT H courses. 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. (Formerly Pl Pr 1)

102. Pesticides (3)
Prerequisite: Chem 3B or 8. Modes of action and effective application of insecticides, herbicides, fungicides, rodenticides, nematocides and plant growth regulators. Emphasis on effective and safe use of agricultural chemicals by reading labels and following laws/regulations. (2 lecture, 3 lab hours) (Formerly Pl Pr 102)

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) (Formerly Ent 106; Pl Pr 103)

105. Weeds (3)
Prerequisites: 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) (Formerly Pl Pr 105)

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) (Formerly Pl Pr 106)

107. Biological Control (3)
Prerequisite: PLT H 103. Study of the action of parasites, predators, and pathogens on the population dynamics of their host/prey organisms; focus on arthropods, with additional emphasis on microorganisms, weeds, nematodes, and vertebrates. (2 lecture, 3 lab hours) (Formerly Pl Pr 107)

108. Integrated Pest Management (3)
Prerequisite: PLT H 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) (Formerly Pl Pr 108)

109. Diagnosis of Plant Diseases (3)
Prerequisite: PLT H 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) (Formerly Pl Pr 109)

Soil and Water (SW)

1. Introduction to Irrigated Soils (3)
Prerequisites: introductory chemistry and/or physics. Interpretation of physical and chemical properties of biological and mineral matter for the management of soils in irrigated agriculture. Emphasis on soil/plant and plant/water relationships. (2 lecture, 3 lab hours) (Formerly SI 1)

2. Agricultural Water (3)
Water resources and problems in California; water requirements for agricultural and ornamental crops; irrigation scheduling and application methods. (2 lecture, 3 lab hours) (Formerly SI 2)

100. Soils (3)
Prerequisites: 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) (Formerly SI 100)

100L. Soils Lab (1)
Prerequisite: SW 100 or concurrently. Physical, chemical, and biological analysis. Interpretation of field and laboratory data. (3 lab hours) (Formerly SI 100L)

101. Crop Nutrition (4)
Prerequisite: SW 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) (Formerly SI 101)

102. Soil Classification and Conservation (3)
Prerequisite: SW 100. Influence of environmental factors on soil development; description of soil profiles; interpretation of soil maps; conservation practices relating to irrigation, drainage and erosion control. Saturday field trips required. (2 lecture, 3 lab hours) (Formerly SI 102)

104. Soil and Water Management (4)
Prerequisites: SW 2, SW 100 (may be taken concurrently). Management of irrigated soils with particular emphasis on crop water requirements, irrigation scheduling, salinity, and other physical and chemical soil problems of field crops, permanent crops and landscapes. (3 lecture, 3 lab hours) (Formerly SI 104)

111. Irrigation Systems (3)
Prerequisite: SW 2. Principles of planning, installation and evaluation of irrigation systems for field crops, permanent crops and ornamental horticulture. Pressurized systems (sprinkler and drip irrigation) emphasized. This course may be supplemented with optional labs in agricultural systems (SW 111AG) or landscape systems (SW 111OH). (Formerly SI 111)

111AG. Agricultural Irrigation Lab (1)
Prerequisite: SW 111 or concurrently. Field experience in planning, installing, and evaluating irrigation systems for agricultural applications. (3 lab hours) (Formerly SI 111AG)

111OH. Ornamental Horticulture Irrigation Lab (1)
Prerequisite: SW 111 or concurrently. Field experience in planning, installing, and evaluating irrigation systems for landscape and other ornamental horticultural applications. (3 lab hours) (Formerly SI 111OH)

114. Pumps and Motors (3)
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) (Formerly SI 114)

Viticulture/Tree Fruit (VTF)

1. Introduction to Grape and Tree Crops (3)
Not open to students with credit in upper-division VTF courses. Origin and distribution of grape and tree fruit crops. Botanical and commercial classification of grapes and tree fruits and their culture in California.

101. Principles of Viticulture (4)
Prerequisite: Bot 10 or Biol 10 or VTF 1. Current status and future of the grape industry. Characteristics and identification of leading raisin, table, wine and rootstock varieties. Growth and physiology of the grapevine. Climatic and soil requirements for grape growing. Principles and practices of vineyard fertilization, irrigation and pruning. (3 lecture, 3 lab hours)

102. Advanced Viticulture (3)
Prerequisite: VTF 101. Planning of new vineyards. Vine propagation, planting and training. Recent developments in viticultural practices, with emphasis on table and wine grape production. (2 lecture, 3 lab hours)

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)

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.

112. Principles of Pomology (3)
Prerequisite: Bot 10 or Biol 10 or VTF 1. Pruning; fruit and vegetative development; pollination; propagation; nutrition. Spring cultural practices. (2 lecture, 3 lab hours)

113. Subtropical and Tropical Fruits (3)
Prerequisite: Bot 10 or Biol 10 or VTF 1. Geographic distribution, climatic and soil adaptation of subtropical and tropical fruit crops. Fruit and vegetative development and cultural practices for globally important fruit crops. Emphasis on citrus, avocado, banana, mango, olive, and pineapple. (2 lecture, 3 lab hours)

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) (Formerly Plant 101)

Mechanized Agriculture (Me Ag)

Note: Suitable eye protection is required in many Me Ag 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, $25) (Formerly AET 1)

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) (Formerly AET 3)

20. Farm Machinery and Equipment (3)
The study of basic functions and applications of farm machinery and equipment. Operation, adjustment and maintenance of farm machinery common to the San Joaquin Valley under field conditions will be emphasized. Equipment will be evaluated for efficiency and effective performance. (2 lecture, 3 lab hours)

50. Metallurgical Processes (3)
(Same as I T 71.) 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. (2 lecture, 3 lab hours) (Course fee, $7) (Formerly AET 50)

53. Basic Electricity (3)
(See I T 52.)

103. Hydraulic Systems (3)
Prerequisites: Me Ag 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) (Formerly AET 103)

112. Farm Power (3)
Prerequisite: Me Ag 3. Principles of the internal combustion engine; overhauling, repairing, and adjusting of gasoline, diesel, and LPG farm engines. (2 lecture, 3 lab hours) (Formerly AET 112)

113. Diesel Engines and Power Transmissions (3)
Prerequisite: Me Ag 3. Theory and operation of diesel injection systems and turbochargers; clutches; transmissions;

brakes; and tractive devices. (2 lecture, 3 lab hours) (Formerly AET 113)

114. Small Gasoline and Diesel Engines (3)
Prerequisite: Me Ag 1. Theory of operation, maintenance, and repair of small gasoline and diesel internal combustion engines. (2 lecture, 3 lab hours) (Formerly AET 114)

120. Advanced Farm Machinery (3)
Prerequisite: Me Ag 3. Theory, operation, and management economics of planters, tillage tools, harvesting and spraying equipment. Managerial responsibilities under State and Federal mandates will be emphasized. (2 lecture, 3 lab hours)

GRADUATE COURSES

The following graduate courses are open to students who have been accepted into the graduate program. Final semester senior undergraduate students may petition the Division of Graduate Studies to enroll in graduate courses. The petition form, which is available in the department office, must be accompanied by GRE scores to be considered.

Agriculture (Agri)

200. Biometrics in Agriculture (3)
Prerequisites: Plant 99, Ag Ec 71, or Math 101, or 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; 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 Methodology and Communications (3)
Prerequisite: completion of university graduate writing skills requirement. Critical literature review, quantitative and qualitative research design, scientific writing, questionnaire design and use, and presentation of research results. Ethical research issues examined. Approved for ***SP*** grading.

Plant Science (Plant)

250T. Topics in Plant Science (3; max total 12)
Prerequisites: upper-division plant science appropriate to study topic; permission of instructor. Advanced studies in a given area: crop physiology, plant breeding, plant pathology, plant nutrition, or economics. Topics may require lab hours.

251. Pesticides (3)
Prerequisites: 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.

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)

253. Irrigation Water Quality (3)
Prerequisite: SW 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)

254. Plant Hormones and Regulators (3)
Prerequisites: 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)

255. Advanced Plant Breeding (3)
Prerequisites: 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.

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.

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.

258. Plant Disease Control (3)
Prerequisite: PLT H 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)

259. Physical Properties of Soil (3)
Prerequisites: SW 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)

261. Advanced Pest Management (3)
Prerequisite: PLT H 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 agro-ecosystems leads to design of economically viable and ecologically sound management programs.

270. Seminar in Plant Science (1; max total 4)
Prerequisite: permission of instructor. Reviews of published and/or original research in the areas of crop development, soils and irrigation, and crop protection.

290. Independent Study (1-3; max total 6)
See *Academic Placement — Independent Study*. Approved for ***SP*** grading.

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.

IN-SERVICE COURSE

(See *Course Numbering System.*)

Agriculture (Agri)

300. Topics in Agriculture (1-3; max total 6)
Topics may require lab hours. In-service professional training in selected areas of agriculture.

Anthropology

School of Social Sciences
Department of Anthropology
ROGER M. LA JEUNESSE, *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.

Our 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, and
- 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

Roger M. La Jeunesse, *Chair*

Gisele Bousquet
Shien-min Jen
Mary A. Ludwig
Franklin C. L. Ng
John H. Pryor
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* — Two upper-division courses, at least one from an area not covered in Anth 103/ Anth 107 Core	(6)
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. 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 of instructor. 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)
Prerequisites: satisfactory completion (*C* or better) of the Engl 1 graduation requirement, to be taken no sooner than the term in which 60 units are completed; Anth 2 or 3. 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. Meets the upper-division writing skills requirement for graduation.

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)
Prerequisites: satisfactory completion (*C* or better) of the Engl 1 graduation requirement, to be taken no sooner than the term in which 60 units are completed; 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 the 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 total 6)
See *Academic Placement — Independent Study*. Approved for ***SP*** grading.

192. Directed Readings (1-3; max total 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.

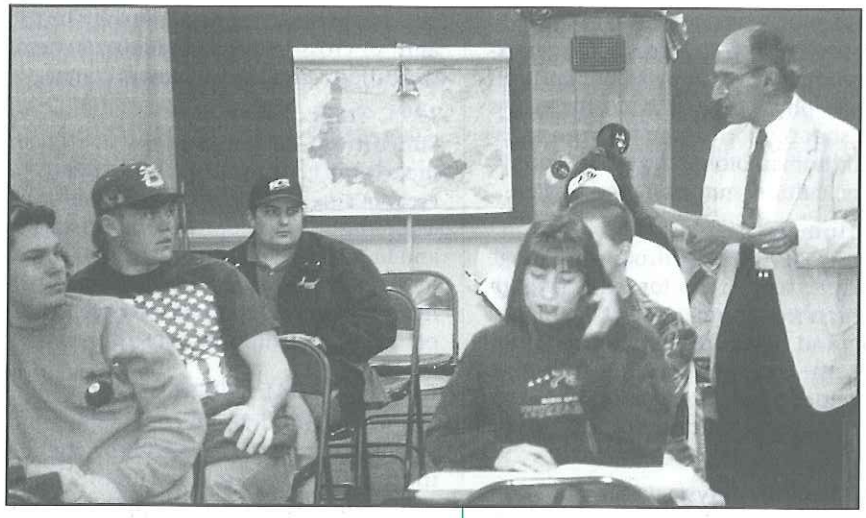
198. Senior Project (2)
Prerequisites: senior standing or permission of instructor; 12 upper-division units in the major. Students will be guided through the selection, definition, and execution of research on an anthropological topic of each student's choosing. Includes lecture, discussion, practice, and independent student research. Satisfies the senior major requirement for the B.A. in Anthropology.

199. Honors Thesis (1-3; max total 3)
Prerequisites: normally open only to students 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 Dean
School of Arts and Humanities
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 courses in Armenian literature, history, art and architecture, William Saroyan, the Genocide, and contemporary issues. Courses in Armenian language and literature, taught by the Armenian Studies staff, are listed under the Department of Foreign Languages and Literatures.

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. The Haig and Isabel Berberian Endowed Chair of Armenian Studies provides financial support for a distinguished Armenologist. Honoring the Berberians, the endowment 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. The Armenian Studies Program is housed in the Sarkis and Meliné Kalfayan Center for Armenian Studies. The Kalfayan family has pledged a major endowment to guarantee the Program's future financial stability. 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 the student newspaper, *Hye Sharzhoom/Armenian Action*.

Thanks to an exchange agreement between Fresno State 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 or simply enrolling in Armenian courses are eligible for 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 to enroll in Armenian studies courses. 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.

50T. Studies in Armenian Literature (3)
Various masterpieces of 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; max total 6)
See *Academic Placement — Independent Study*. Approved for *SP* grading.

Art and Design

The Department of Art and Design offers a B.A. in Art, a graphic design option, and a B.A. in Interior Design. The department's academic programs also include 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 department's 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.

Art. 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.

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.

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.

Faculty and Facilities

The faculty of the department offer diverse, skilled, and professional approaches to art and design 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, designers, 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 and Design
PATRICIA L. HENNINGS, *Chair*
Conley Art Building, Room 105
(209) 278-2516

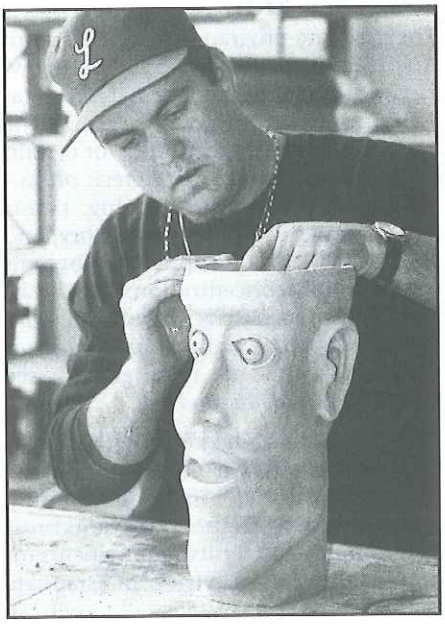
B.A. in Art
Option: Graphic Design
B.A. in Interior Design
M.A. in Art
Minor in Art
Single Subject Credential

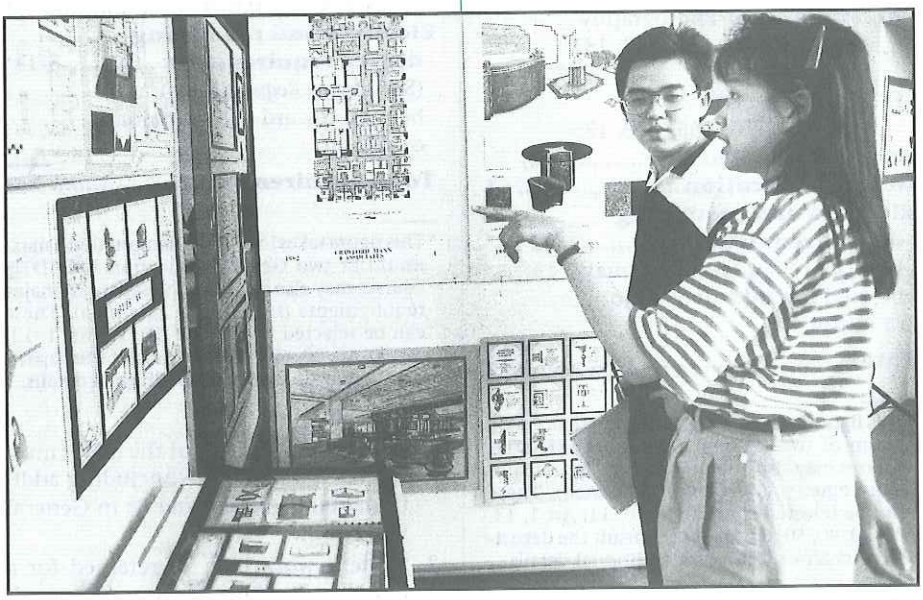
Career Opportunities

Completion of the art major enables graduates to pursue advanced study leading to careers in fields such as:

- Fine Arts
- Studio Production
- Art History
- Graphic Design
- Interior Design

Prospective students should contact faculty in their area of interest to further explore specific career opportunities.





Interior design majors view the annual Senior Portfolio Review exhibit.

Faculty

Patricia L. Hennings, *Chair*

Patricia L. Hennings, *Coordinator of Graphic and Interior Design*

Lawrence L. Anderson
Ronald L. Blanton
Nancy K. Brian
Paulette S. Fleming
Charles F. Gaines
Richard S. Jenne
Mary L. Maughelli
Gary K. McCurry
Thomas McDougall
William E. Minschew Jr.
Daniel G. Nadaner
Ernest Palomino
Raphael X. Reichert
R. Gayle Smalley
Lawrence E. Smith
Gina Strumwasser

Bachelor of Arts Degree Requirements

Art Major ***Units***

Major requirements (See *Note 1*) **51**
Art and Design Core ..... (15)
Art H 10 or 11† ..... (3)
Art 13 ..... (3)
Art 20 or GID 43 ..... (3)
Art 24 or 30 or 40 ..... (3)
Art 50 or 60 or 70 ..... (3)
†Art majors need both courses .... (3)
Computer Imaging requirement
GID 40 or Art 107
or 117 or 137 ..... (3)
Theory requirement
Art 101 ..... (3)
Art History requirement
Art H 132 or 136, plus
an additional 3 units ..... (6)
Area of Emphasis
(I, II, III, or IV) ..... (9)
I. Drawing/Painting
Art 120, 121, 140, 141
II. Ceramics/Sculpture
Art 150, 151, 160, 161, 165
III. Printmaking/Photography
Art 125, 126, 127, 130, 133, 182, 183, 185
IV. Crafts/Design
Art 113, 116, 166, 170, 175
Art and Design electives ..... (12)
General Education **51**
Electives and remaining degree requirements **22-28***
(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 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.

Bachelor of Arts Degree Requirements

Art Major
Graphic Design Option ***Units***

Major requirements **68**
Art and Design Core ..... (15)
Art H 10 or 11 ..... (3)
Art 13 ..... (3)
Art 20 or GID 43 ..... (3)
Art 24 or 30 or 40 ..... (3)
Art 50 or 60 or 70 ..... (3)
Lower-division requirements ..... (15)
GID 7 or I T 41, GID 40, 70; I T 60; Acct 3
Upper-division requirements ..... (38)
GID 111, 141, 142, 143, 144, 146, 147, 148; Art 116, 137; MCJ 142; I T 160, 161
General Education **51**
Electives and remaining degree requirements **5-11***
(See *Degree Requirements*); may be used toward a dual major or minor.
Total requirements **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. 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, to be taken no sooner than the term in which 60 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.

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, or 30; select 3 units from Art 125, 127, or 130; 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 California State University, 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 California State University, 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 and Design 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 and Design.

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*)	21-30
Approved courses in art or related fields in the 100- or 200-series	0-9
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. (CAN ART 2)

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. (CAN ART 4)

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 total 6)
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) (Course fee, $25)

24. Printmaking (3)
Introduction to the printmaking processes of intaglio, lithography, and woodblock printing. (6 lecture-lab hours) (Course fee, $15) (CAN ART 20)

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 softground 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) (Course fee, $25) (CAN ART 18)

40. Painting (3)
Introduction to painting processes through studio problems and critiques. General Education BREADTH, Division 4. (6 lecture-lab hours) (CAN ART 10)

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)

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 6)
Prerequisite: permission of instructor. May be repeated for credit; no more than 6 units may be applied to 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) (Formerly 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) (Formerly 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) (Course fee, $25)

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 nontraditional 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) (Computer lab fee, $15) (Formerly 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)
Prerequisites: 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) (Formerly 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)

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 total 6)
See *Academic Placement — Independent Study*. Approved for ***SP*** grading. (Course fee variable)

198. Internship in Art (1-6; max total 6)
Prerequisites: permission of instructor and sponsoring agency. Experience in art related professions with agency under the Department of Art and Design 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 the 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)
Prerequisites: 6 units of upper-division art history and permission of instructor. Research problems applicable to art history students or studio artists. Meets the graduate writing skills requirement.

290. Independent Study (1-3; max total 6)
See *Academic Placement — Independent Study*. Approved for ***SP*** grading. (Course fee variable)

298. Project (2-6; max total 6)
Prerequisite: permission of the Art and Design 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 the Art and Design 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.

Bachelor of Arts Degree Requirements

Interior Design Major

	Units
Major requirements	**80**
Art and Design Core	(15)
Art H 10 or 11*	(3)
Art 13	(3)
Art 20 or GID 43	(3)
Art 24 or 30 or 40	(3)
Art 50* or 60 or 70	(3)
Interior Design requirements	(65)
GID 7, 37, 70, 71, 110, 111, 112, 114, 115, 130, 131, 133, 134 or 156, 135, 137 or 143, 138, 144, 150, 152, 155; F M 20; I T 115	
General Education	**51****
(including 9 upper-division units, to be taken no sooner than the term in which 60 units of coursework are completed)	
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 4: Art 50 (required in core)	
Division 5: Art H 11 (required in core)	
Additional requirement	**0-4**
Upper-division writing skills by examination or W course	
Total requirements	**124-131**
(including 40 upper-division units)	

* Required for Interior Design majors.

** This figure takes into consideration that a maximum of two General Education BREADTH courses, Art 11 and Art 50, may also be applied to satisfy interior design major requirements (see *General Education*). Consult the department chair or faculty for additional details.

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, to be taken no sooner than the term in which 60 units are completed.

4. The General Education requirement of 51 units may be exceeded depending upon the selection of courses.

COURSES

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)

40. 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) (Computer lab fee, $15) (Formerly GID 172T section; GID 63)

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)

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 and Codes (3)
Not open to students with credit in Const 50 or 162. Fundamentals of building systems and codes as related to interiors, including construction products and techniques, acoustics, electrical, plumbing, heating, ventilating, and cooling. (Field trips) (Formerly GID 172T section)

111. Design Presentation Techniques (2)
Prerequisites: GID 43, 70, 107 or Art 13. Creative design presentation and technique, architectural graphics, product presentation boards, three dimensional model design problems, and use of color media. (4 lab hours) (Course fee, $5) (Formerly GID 72)

112. Space Planning (3)
Prerequisites: 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) (Formerly 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. *CR/NC* grading only. (6 lecture-lab hours) (Course fee, $150) (Formerly 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. (Formerly 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. (Formerly GID 175B)

130. Interior Lighting (3)
Prerequisites: GID 70, 110. Introduction to lighting of residential and commercial interiors. Laboratory testing and lighting calculations. (2 lecture, 2 lab hours) (Course fee, $10) (Formerly GID 182)

131. Interior Design Materials and Specifications (4)
Prerequisites: GID 70; F M 20. Selection, specifications, and computations for interior design materials available for the residential, commercial, and institutional design. Lecture, small group research, product display, and field trips. (2 lecture, 4 lab hours) (Course fee, $10) (Formerly GID 176)

132T. Topics in Graphic and Interior Design (1-4; max total 12 if no topic repeated)
Prerequisites: GID 70, 111. Topics related to graphic and interior design. Some topics may have labs. (Formerly GID 172T)

133. Professional Interior Design Practices (3)
Prerequisites: 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) (Formerly GID 177)

134. Restoration and Preservation (3)
Prerequisites: 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) (Formerly GID 180)

135. Commercial Interior Design (3)
Prerequisites: 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) (Formerly 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)
Prerequisites: 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) (Formerly GID 178A; GID 151)

141. Typography (3)
Prerequisites: I T 60; GID 40. Typographic principles, elements, and techniques: type classification and selection, copyfitting, design and layout. Hand and computer projects. (6 lab hours; field trips) (Formerly GID 165)

142. Advertising Design (3)
Prerequisite: GID 141. Advertising and illustration from thumbnail sketches and rough layouts through comprehensive presentations. Emphasis on good design and professional techniques. Hand and computer projects. (6 lab hours)

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 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 (1; max total 3)
Prerequisites: GID 135; permission of instructor. Provides a structure for students to participate in creative design shows, design competitions, exhibits, and senior portfolio reviews. ***CR/NC*** grading only. (2 lab hours) (Course fee, $10) (Formerly GID 179)

152. Interior Design Practicum (3; max total 6)
Prerequisites: 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. (Formerly GID 181)

155. Advanced Commercial Interior Design (4)
Prerequisites: GID 114, 115, 131, 135, 137, 144; I T 115; senior standing. Comprehensive design solutions for diverse commercial spaces: public buildings, health care, food service, professional offices and merchandising facilities. Complete working and presentation drawings. (8 lab hours) (Formerly GID 178B)

156. Healthcare Interior Design (3)
Prerequisite: junior standing in interior design or health related field. Aspects of aging, illness, and wellness as they impact the interior environment for acute, ambulatory, and long-term care. (Formerly GID 132T section)

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 total 6)
See *Academic Placement — Independent Study*. Approved for ***SP*** grading.

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 American 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.

School of Social Sciences
Department of Anthropology
FRANKLIN C. L. NG, Coordinator
Peters Business Building, Room 389
(209) 278-3002

Minor in Asian American Studies

151. Cultures and Foods of East Asia (3)
(See *Anth 181.*)

180T. Topics in Asian American Studies (3; max total 6)
Prerequisites: 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 total 6)
See *Academic Placement — Independent Study*. Approved for *SP* grading.

195. Diversity in the United States: Race and Gender Issues (3)
(See CLS 195.) (Formerly Eth S 195)

Athletics

Office of the President
Department of Athletics
ALLEN R. BOHL, *Chair*
North Gym, Room 146
(209) 278-2643

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, tennis, track, and wrestling is offered for men, while basketball, cross country, soccer, 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.

Athletic Academic Services

The Athletic Academic Services Office provides tutoring, academic advising, individual consultations, and NCAA eligibility monitoring for more than 450 student athletes on a year-round basis. It offers a "Strategies for Academic Success" class, works with NCAA in providing a Life Skills Development program that emphasizes personal, career, community service and athletic development, and advises the Student Athlete Advisory Board. The board, with representatives from every sport, serves as a communication link between student athletes, the Athletics Department administration, and the campus community on matters of student athlete welfare.

Faculty

Allen R. Bohl, *Chair*

Bob G. Bennett
John R. Bluem
Dennis A. DeLiddo
Gene L. Estes
Edward L. Ferreira
Robert E. Fraley
Jethro F. Franklin
Ken Greene
Irene H. Harris
Yvette Harris
Laurie Hayward
Anthony D. Hemmelgarn
Michael P. Hill
John Husby
Daniella J. Irle
Scott Johnson
Robert G. Knudsen
John D. Miklesh
Diane Milutinovich
Thomas J. Pagani
Robin Ross
Michael L. Rupcich
Scott R. Sailor
Paul M. Schechter
Kelly D. Skipper
Peter L. Smith
Les Snyder
Steve Sobonya
Margaret Sutter
James J. Sweeney
Danny Tarkanian
Jerry Tarkanian
Jeffrey R. Tedford
Dave Telford
Linda L. Vivas
L. Michael Watney
John Welch
Marjorie A. Wright
Linda M. Wunder

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.

INTERCOLLEGIATE
(Courses may be repeated)

100. Conditioning of Athletes (1)
Prerequisite: must be enrolled in a varsity team sport (ATHL 176-199). Refer to current *Schedule of Courses* for appropriate section and schedule number.

176. Baseball (2)
Men only.

177. Basketball (2)
Men only.

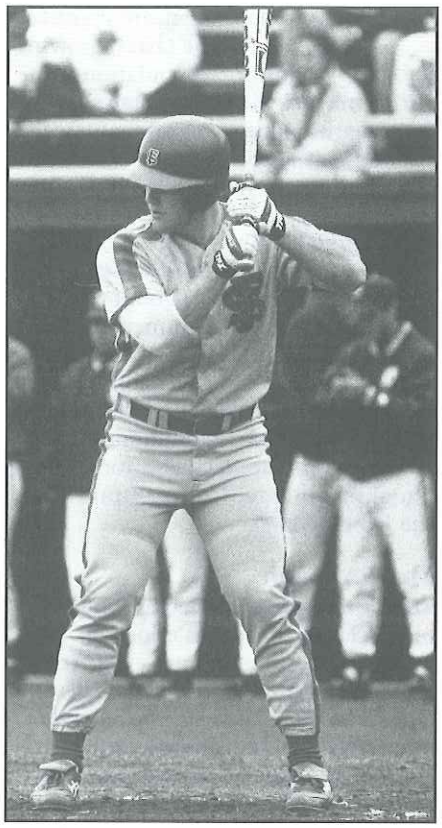
178. Basketball (2)
Women only.

180. Cross Country (2)

182. Football (2)

183. Golf (2)
Men only.

185. Soccer (2)
Women only.



By Steve R. Fujimoto, Sports Information

Senior catcher Matt Curtis was named to the WAC All-Western Division team in 1995, after batting .337 with five home runs and 40 RBIs. Curtis, also an Academic All-WAC pick, led the team with 22 doubles and was one of only two Bulldogs to start all 63 games for the Diamond 'Dogs a year ago. A native of Visalia, Curtis led Fresno State to a 41-22 record and NCAA postseason play for the eighth consecutive year.

186. Soccer (2)
Men only.

187. Softball (2)
Women 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)

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.

Students submit a rat to hyperbaric oxygen therapy; an effective treatment to speed healing processes. University students and faculty often cooperate with physician-scientists in the local community. These cooperative efforts have produced numerous publications in important journals.

School of Natural Sciences
Department of Biology
THOMAS E. MALLORY, *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 Science

Preprofessional advising in:
Clinical Laboratory Technology
Dentistry
Forestry
Medicine
Pharmacy
Veterinary Medicine

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 is awarded to those students who successfully complete 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 some part of 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. 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

Thomas E. Mallory, *Chair*

Coordinators:
Graduate: Raymond Abhold
Marine Science: Bert Tribbey
Moss Landing Marine Laboratories: Gregor M. Cailliet
Credential Adviser: David M. Andrews
Undergraduate advisers are assigned by the department chair.

Gina Arce
David L. Chesemore
S. Fai Cheuk
William K. Collin
Stephen Ervin
David E. Grubbs
Ethelynda E. Harding
Wallace M. Harmon
Shirley A. Kovacs
James Prince
Kristina A. Schierenbeck
Fred E. Schreiber
Brian Tsukimura
Vivian A. Vidoli
Lorraine Wiley
Lenore Yousef

Bachelor of Science Degree Requirements

Biology Major

The Bachelor of Science degree in Biology is a 124-unit program. Of the total, 42 units are required to satisfy the university's General Education Program and 22 units are required by the Department of Biology to satisfy the core curriculum in biology. The core curriculum is a sequence of six courses required to be taken by all biology majors. The core curriculum builds the foundation upon which all further learning in biology will be based. Additional requirements, varying from 25–41 units depending upon the option choice the student selects, are specified courses from related fields outside the Department of Biology.

Each biology major must select one of the four option choices to complete the Biology Bachelor of Science degree requirements. All of the four option choices are flexibly designed. As a result, virtually any career goal in the life sciences and related fields can be accommodated by selecting the most appropriate option and by judiciously choosing specific courses within that option.

Academic advising is essential in making these option and course selections. Therefore, all biology majors are assigned faculty advisers. Students majoring in biology should report to the Department of Biology office for assignment of an appropriate adviser. Students should meet with their adviser a minimum of two times a semester so the adviser can review the student's program and progress.

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 *Advising Notes* for all options, page 174.)

	Units
BioSc 1A, 1B, 130, 140A-B, 180	22

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. It 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	(22)
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 134, 135, 158; M Sci 122; Zool 132	
4. Bot 130; Genet 172; Micro 161; PhyAn 151, 160, 163	
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.	(0-4)
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; SW 101	(4)
Remaining General Education requirements	**42***
Electives and remaining degree requirements (See *Degree Requirements*); may be used toward a dual major or 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 ..... (22)
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 ..... (2-5)
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 be used toward a dual major or 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 ..... (22)
A. Select one course from each of these three lines ..... (9-12)
1. Bot 133; PhyAn 130, 134, 135; Zool 132
2. Bot 137; Micro 161; PhyAn 160
3. Bot 130; PhyAn 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, 163, 165, 172
C. Biological Science Electives ..... (0-4)
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 be used toward a dual major or 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 ..... (22)
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 151
At least one botany (Bot) or microbiology (Micro) course must be se-

lected 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 ..... (13-15)
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. Select one course from the following ..... (3-4)
   C Sci 20; Phys 2A; M Sci 142, 143; Geol 1, 105; SW 101

Remaining General Education requirements 42*

Electives and remaining degree requirements 10-11
(See *Degree Requirements*); may be used toward a dual major or 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 and 1B 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.

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 and 1B, 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 but no sooner than the term in which 60 units of coursework are completed and 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 22-unit biology core: BioSc 1A, 1B, 130, 140A-B, 180.

Bachelor of Arts in Natural Sciences

Teaching Credential — Biology Emphasis

The B.A. in Natural Sciences serves as a waiver program for the Single Subject Teaching Credential in Science. This degree program is designed for students who wish to become high school science teachers. The full program is described in the Natural Science section in this catalog. The program consists of two parts. The Core requirements are courses required of all natural science students and the Emphasis provides training in biology, chemistry, earth science, or physics. Students may also earn the credential while obtaining a degree in biology. The B.A. in Natural Sciences with the Biology Emphasis is as follows.

Units

Core requirements 48-49
Biology ..... (12-13)
BioSc 1A or Biol 15, BioSc 1B and 130
Chemistry ..... (13)
Chem 1A, 1B; Chem 8 or 128A
Geology ..... (5)
Geol 1 and 3 (or 15)
Natural Science ..... (3)
N Sci 106
Physics ..... (8)
Phys 2A, 2B
Physical Science ..... (7)
P Sci 21, 168

Biology Emphasis[1] 20-22
BioSc 140A, 140B ..... (7)
BioSc 180 ..... (3)
Micro 140 ..... (4)
Select one course from the following:
A. Bot 131, 132, 144, Micro 171, Ecol 151, 152, 162, Zool 120, 141, 148, 150, 174, 177 ..... (3-4)
B. Bot 130, Micro 161, PhyAn 151, 163 ..... (3-4)

Additional requirements 8
Math 70 or 75 and 101

General Education ..... 42[2]
6-unit CAPSTONE requirement to be met by Geol/Geog 168

Electives and remaining degree requirements[3] 3-6
(See *Degree Requirements*)

Total 124

See footnotes on next page (bottom, left column).

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 science 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 California State University, Fresno. 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 California State University, Fresno 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 California State University, 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.

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[1] Consult your faculty adviser regarding the selection of your elective units to have this emphasis used as the Science Waiver Program.

[2] This figure takes into account that 9 units in the major and additional requirements may also be applied to satisfy General Education requirements as follows: CORE, Quantitative Reasoning — Math 70 or 75 (3 units); BREADTH, Division 1 — Chem 1A or Geol 1 or 15 or Phys 2A (3 units); and Division 2 — BioSc 1A or Biol 15 (3 units). Consult your major academic adviser for details. (See *General Education*.)

[3] Students should be sure to take sufficient upper-division units in their General Education courses and electives to satisfy the university requirement of 40 upper-division units for graduation.

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 classification 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	**21**
Electives (May be 100- or 200-series)	**9**
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 previous information for 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, forensic science, bioremediation, 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 California State University, Fresno as components of master's degree programs in biology, chemistry, plant science, and related departments.

Program 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).

Admission to the program requires a bachelor's degree with an overall GPA and science GPA of 3.0 or better. Upper-division courses in genetics (minimum 3 units), biochemistry with a laboratory (minimum 5 units), and microbiology with a laboratory (minimum 4 units) are also prerequisites for entrance into the program. Consult with an adviser for determining recommended or equivalent courses.

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.

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. See *Man/Woman and the Natural Environment*, Natural Science — Interdisciplinary Courses section. General Education BREADTH, Division 2. (MNE program field trip fee, $300)

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) (Formerly 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. (Formerly Biol 105)

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) (Formerly Biol 185T; Micro 160T)

190. Independent Study (1-3; max total 6)
See *Academic Placement — Independent Study*. Approved for ***SP*** grading. (Formerly Bot 190, Ent 190, Micro 190, Phy 190, Zool 190)

Biological Science Core (BioSc)

1A. Introductory Biology (4)
Course one of 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. General Education BREADTH, Division 2. (3 lecture, 3 lab hours)

1B. Introductory Biology (5)
Prerequisite: BioSc 1A. Course two of a two-semester sequence required of all biology majors. Continuation of thematic introduction to the unifying concepts of life science: classification and diversity of life; survey of the living organisms; physiology; ecology and environmental biology. (3 lecture, 6 lab hours)*

130. General Ecology (3)
Prerequisites: BioSc 1A and 1B; 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)* (Formerly Biol 140)

140A-B. Genetics and Cellular Biology (3-4)
Prerequisites: BioSc 1A, 1B and Chem 8 or 128A. 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 and either Chem 150 or 155 are prerequisites to BioSc 140B. (A: 3 lecture hours; B: 3 lecture, 3 lab hours) (Formerly Biol 130; Biol 135)

180. Evolution (3)
Prerequisites: 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. (Formerly 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)
Prerequisites: BioSc 1A and 1B; Chem 1A or 3A; or permission of instructor; organic chemistry recommended. General metabolism and related processes. (2 lecture, 6 lab hours) (Formerly Bot 104)

131. Vascular Plants (4)
Prerequisites: BioSc 1A and 1B 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) (Formerly Bot 136)

132. Nonvascular Plants (3)
Prerequisites: BioSc 1A and 1B or permission of instructor. Comparative structure and phylogeny of the fungi, algae, mosses, and liverworts. (2 lecture, 3 lab hours) (Formerly Bot 135)

133. Plant Anatomy (3)
Prerequisites: BioSc 1A and 1B or permission of instructor. Structure and development of flowering plants at the cellular and tissue levels. (2 lecture, 3 lab hours) (Formerly Bot 134)

137. Plant Growth and Development (3)
Prerequisites: BioSc 1A and 1B 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)
Prerequisites: BioSc 1A and 1B 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)
Prerequisites: BioSc 1A and 1B or permission of instructor. Principles of plant classification; local flora. (1 lecture, 9 lab or field hours)* (Formerly 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) (Formerly 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)* (Formerly Bot 107)

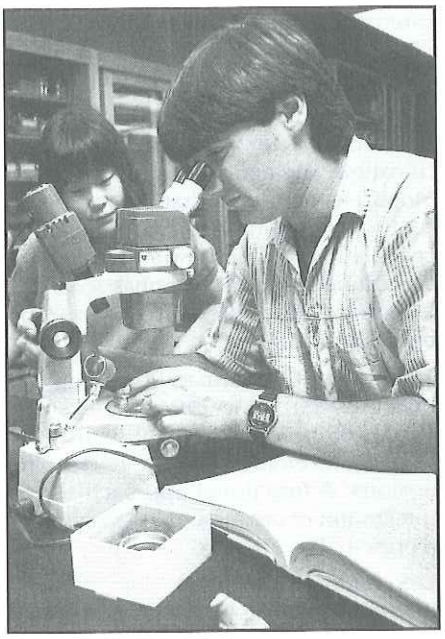
152. Aquatic Ecology (4)
Prerequisite: BioSc 130. Physical-chemical features of inland waters as related to their biology; community structure and function, ecological interactions, adaptations, and identification of aquatic organisms. (3 lecture, 3 lab or field hours)* (Formerly Biol 133)

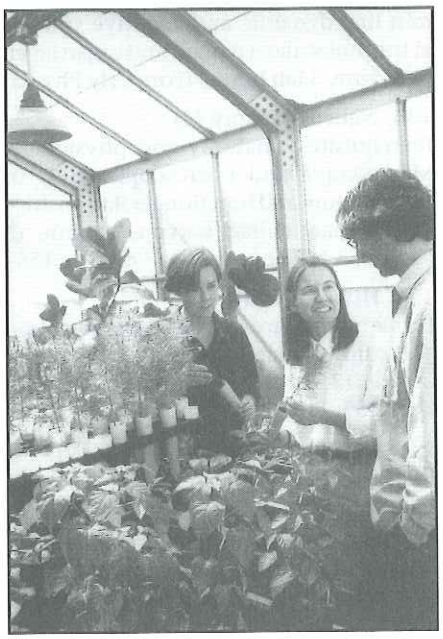
162. Microbial Ecology (4)
Prerequisites: BioSc 130 and Micro 140. Physiological ecology of microorganisms; interactions of microorganisms with abiotic and biotic factors in the environment; microbial habitats including soil, water, and organisms; techniques of microbial ecology (field and laboratory). (3 lecture, 3 lab hours)* (Formerly 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)* (Formerly 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 manage-

*Late afternoon, Saturday and/or overnight field trips may be required.





ment decisions. (2 lecture, 6 lab or field hours)* (Formerly 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. Prerequisites: BioSc 1A and 1B or equivalent. Principles of biological inheritance, including gene structure, gene function, statistical methods, problem solving, and human genetics. (Formerly Biol 120)

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) (Formerly Micro 189)

172. Developmental Biology (4)
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. (3 lecture, 3 lab hours) (Formerly Biol 160)

Microbiology (Micro)

20. Introductory Microbiology (4)
Not open to students with credit in Micro 140. Prerequisites: Chem 3A; Chem 3B or 8; plus a college course in the biological sciences. Introduction to microbiology; principles and selected applications. (3 lecture, 3 lab hours)

140. Microbiology (4)
Prerequisites: BioSc 1A, 1B; 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) (Formerly 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)
Prerequisites: BioSc 130, 140A-B. The biology of protozoan organisms. (2 lecture, 3 lab hours) (Formerly 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) (Formerly 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) (Formerly 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) (Formerly 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) (Formerly 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 main-

* Late afternoon, Saturday and/or overnight field trips may be required.

tain life; dynamic and adaptive systems at the molecular, cellular, and organ level. (4 lecture, 3 lab hours) (Formerly Phy 65)

130. Neuroanatomy (4)
Prerequisites: anatomy and physiology. Macroscopic and microscopic study of the structure and functional relationships of the mammalian nervous system. (3 lecture, 3 lab hours) (Formerly Phy 155)

134. Histology (4)
Prerequisites: BioSc 140A-B. Identification and study of vertebrate cells, tissues, and organs. (2 lecture, 6 lab hours) (Formerly Zool 157; PhyAn 133)

135. Vertebrate Embryology (4)
Prerequisites: BioSc 1A, 1B. 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) (Formerly Zool 160)

140. Neurophysiology (3)
Prerequisites: anatomy and physiology. Function of the nervous and muscular systems with emphasis on molecular mechanisms. (Formerly Phy 160)

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) (Formerly 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. (Formerly Biol 238)

160. Immunology (3)
Prerequisite: BioSc 140A. Principles of mammalian immune response, featuring the molecular and cellular interactions involved in both humoral and cell-mediated immunity. Regulatory controls an adverse clinical conditions involving immune functions are addressed. Experimental basis of inquiry is emphasized. (Formerly Micro 117)

160L. Immunology Laboratory (2)
Prerequisites: PhyAn 160 and either BioSc 140B or Micro 140. Experimental illustration of immune response; classical and contemporary immunology techniques; interpretation and presentation of experimental outcomes. (6 lab hours)

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) (Formerly Zool 158)

163. Integrative Human Physiology (3)
Prerequisites: BioSc 140A-B and either PhyAn 65 or equivalent. Primarily for students in biology and the health professions. A functional approach to the integration of organs and organ systems. (Formerly PhyAn 164)

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. (Formerly Biol 185T section)

172. Pathophysiology (3)
Prerequisite: PhyAn 65 or equivalent or PhyAn 163. An application of anatomic and physiologic principles in the study of those disturbances that underlie the etiology and pathogenesis of human diseases. (Formerly Biol 185T section)

(See also *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)
Prerequisites: BioSc 1A, 1B. Anatomy, physiology, life history, and classification of insects and other arthropods. (2 lecture, 3 lab or field hours)* (Formerly Ent 101)

122. Economic Entomology (3)
(See Plt H 103.)

132. Comparative Vertebrate Morphology (4)
Prerequisites: BioSc 1A, 1B. Comparative structure of vertebrate organ systems; laboratory study of representative vertebrates. (2 lecture, 6 lab hours) (Formerly Zool 103)

141. Invertebrate Zoology (4)
Prerequisites: BioSc 1A, 1B. Systematics and phylogeny (based primarily upon external and internal anatomy) and general ecology of free-living invertebrates (excluding insects). Includes field studies of marine and occasionally freshwater habitats. (2 lecture, 6 lab or field hours)* (Formerly Zool 114)

147. Medical Parasitology (3)
Prerequisites: BioSc 1A, 1B. Epidemiology, pathogenesis, and identification of the parasites of man. (2 lecture, 3 lab hours) (Formerly Zool 107)

148. Parasitology (4)
Prerequisites: BioSc 1A, 1B; 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) (Formerly 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)* (Formerly 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)* (Formerly 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)* (Formerly 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)* (Formerly Zool 137; Zool 165; Zool 172)

*Late afternoon, Saturday and/or overnight field trips may be required.

177. Mammalogy (3)
Prerequisite: BioSc 130. Ecology, evolution, and diversity of the mammals of the world. (2 lecture, 3 lab or field hours)* (Formerly 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)
Prerequisites: 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)
Prerequisites: 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)

241A-B. Molecular Biology I-II (3-3)
(Same as Chem 241A-B.) Prerequisites: 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.) Prerequisites: Biol/Chem 241A and 242. Corequisite: Biol/Chem 241B. A lecture/laboratory course focusing on the technologies used in nucleic acid chemistry, such as 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)

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; max total 8)
Prerequisite: permission of instructor. Reviews and reports on current literature in the various phases of biology.

290. Independent Study (1-3; max total 6)
See *Academic Placement — Independent Study*. Approved for ***SP*** grading.

295. Research (2-6; max total 6)
Prerequisite: permission of 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.

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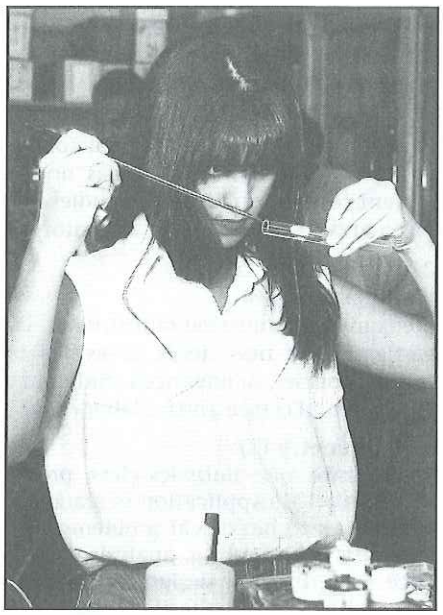
*Late afternoon, Saturday and/or overnight field trips may be required.



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 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 Fresno State 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)
Prerequisites: 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)
Prerequisites: 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)

135. Physiology of Marine Algae (4)
Prerequisites: M Sci 103, 131, 144. Develops physiological basis for understanding the adaptation of marine algae (seaweeds and microalgae) to their environment. Students will learn modern methods in physiological research, covering areas such as photosynthesis, respiration, enzyme activity, and biochemical composition. (2 lecture, 6 lab 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)
Prerequisites: 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)
Prerequisites: 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; max total 6)
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)
Prerequisites: 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)
Prerequisites: 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. (Formerly M Sci 285T section)

211. Ecology of Marine Birds and Mammals (4)
Prerequisites: 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)
Prerequisites: M Sci 112 or 113 and 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)
Prerequisites: 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)
Prerequisites: 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 ori-

ented individual research projects involving laboratory culture and field experimentation. (2 lecture, 6 lab or field hours)

233T. Advanced Topics in Marine Ecology (1-4)
Prerequisites: 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) (Formerly M Sci 274T section)

263. Application of Computers in Oceanography (4)
Prerequisites: M Sci 104, college math, permission of instructor. Lecture, discussion, practical experience with a multiuser 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) (Formerly M Sci 274T section)

271. Population Biology (3)
Prerequisites: 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)
Prerequisites: 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)
Prerequisites: 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. (Formerly 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; max total 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
Department of Accountancy
DENNIS M. BAKER, *Chair*
Peters Business Building, Room 284
(209) 278-2852

B.S. in Business Administration
Accountancy Option
General Business Minor
Business Teaching Credential

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.

Stephanie Yamamura, a 1993 graduate of the department and recipient of the Dean's Medal, was honored by the American Institute of Certified Public Accountants (AICPA) with the Elijah Watt Sells Award. Each year, the AICPA presents this award to CPA candidates who attain the highest grades when taking all four sections of the Uniform Certified Public Accountant Examination at one time. 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
Robert M. Harper
Patricia L. Huff
Garo Kalfayan
W. Don McFerrin
John P. Osborn
Sheng-Der Pan
Denise Patterson
Ali A. Peyvandi
Benjamin Y. Tai

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 2*) 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, 124, 187; Mktg 100	**40-43**
General Education (see *Advising Notes 1 and 3*)	**54**
Accountancy Option	**31-32**
Required courses	(16)
Acct 120A, 120B, 132, 146	
Electives	(15-16)
Select four courses from the following: Acct 144, 145, 147, 148, 162, 165, 167, 189T; B A 150	
Upper-Division Writing Skills Requirement	**0-3**
Electives (see *Advising Note 4*)	**0**
Total	**125-132**

Advising Notes

1. Students desiring to major in business must formally declare themselves business administration majors and select an option prior to enrolling in 100-level business courses. In order to select an option and be eligible to register for 100-level business courses, a business major must:
   a. complete the following courses or their equivalents with a grade of *C* or better in each course: Acct 4A; Acct 4B; B A 18; DS 71; DS 73; Econ 40 (or Ag Ec 1) and Econ 50 (in BREADTH, Division 8); Engl 1; and IS 50
   b. have a cumulative grade point average of at least 2.0, and
   c. submit an Option Form to formally declare an option in business. Students may obtain this form from the Craig School of Business Undergraduate Student Services Office, Peters Building, Room 181.

   Students may apply for an option in the semester during which they will complete all work needed for enrollment qualification in 100-level business courses. Approval will be contingent upon satisfactory fulfillment of the lower-division course prerequisites and the GPA standard.

   Transfer students, and those changing majors, will need to have their transcripts screened to see if they will receive equivalent credit for the above prerequisite courses. Transfer students will need to have a complete set of transcripts (official or unofficial) or grade reports of all college-level study sent to the Undergraduate Student Services Office, 5245 N. Backer Ave., Fresno, CA 93740-0008. Transfer students from another region need to have a copy of the catalog(s) and course syllabi from the different colleges they attended. Upon receipt of these materials, transfer students' records will be evaluated. Notification of course credit transfer will then be sent by mail.

   All requests to waive any portion of these requirements must be submitted to the Undergraduate Student Services Office via a Permission Form. Students may obtain this form from the Undergraduate Student Services Office, Peters Building, Room 181.
2. 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.
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 California State University, Fresno 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.
5. International (foreign) students who wish to declare business administration as a major must achieve a minimum score of 500 on the Test of English as a Foreign Language (TOEFL) examination.

General Business Minor

	Units
Acct 4A	3
Elect two courses from: B A 18, DS 73, Fin 120, IS 160, Mgt 104, 106, 110, Mktg 100	6-8
Elect upper-division courses from not more than two fields: Acct, B A, DS, Fin, HRM, IS, Mgt, Mktg	11
Total	**20-22**

Business Teaching Credential Requirements

The school offers students a single subject business credential to teach in departmentalized classrooms typically found in middle school and senior high school settings. All students seeking a credential in business must complete the requirements for a Bachelor of Science degree in Business Administration.

Business teacher education students should consult the appropriate advisers in the Sid Craig School of Business and the School of Education and Human Development as early in their programs as possible.

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. Prerequisites: 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)
Prerequisites: 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) (Computer 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)
Prerequisites: 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) (Computer 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) (Computer lab fee, $15)

148. Accounting for Governmental and Nonprofit Organizations (4)
Prerequisites: 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)
Prerequisites: 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) (Computer lab fee, $15)

165. International Accounting (4)
Prerequisites: 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; max total 8 if no topic repeated)
Prerequisites: 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 total 6)
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
Department of Finance
and Business Law
K. C. CHEN, *Chair*
Peters Business Building, Room 285
(209) 278-2341

B.S. in Business Administration
Options:
Finance
International Business
Legal Environment of Business
Real Estate and Urban Land Economics

General Business Minor

Business Teaching Credential

The Department of Finance and Business Law offers four options (areas of emphasis) within the Bachelor of Science in the Business Administration degree program.

The **Finance Option** stresses the financial structure of businesses through a common set of courses and specialized courses directed at various applications. It consists of two tracks — *General Finance* and *Financial Services*. The *General Finance* track is designed to provide students with 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 the *General Finance* track 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* track offers students the opportunity to broaden their knowledge and understanding of financial services so as to improve their ability to make effective decisions in financial planning and to facilitate career development in this area.

Since financial planning typically involves responsibility for coordinating work in more than one financial area, the *Financial Planning* emphasis enables students to take the broad range of courses necessary to be knowledgeable in this rapidly expanding field. The *Risk Management and Insurance* emphasis 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 governments seek insurance-trained employees to manage employee benefit plans, oversee risk management programs, and serve as actuaries. Government also offers positions in insurance regulation and administration of social insurance programs, including health insurance.

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 Rim.

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 and regulatory problems. Those obtaining a legal environment option will be able to adjust and adapt to a variety of career paths. These include working in law office management and in a number of business departments, including public affairs, government relations, trust, and finance. Depending upon the elective coursework chosen, this option may prepare students for careers in underwriting, pension or benefits planning, arbitration or other forms of alternative dispute resolution, and other business areas requiring a familiarity with legal principles and processes. 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 residential and commercial real estate sales. These areas include development, lending, banking, appraising, escrow, property management, and construction. Usually students who enroll in the real estate option will complete all courses necessary to take the California Brokers License Examination.

Notice of Discontinuance

In the past, the department has offered an agribusiness option. That option has been discontinued. The appropriate manner for gaining agribusiness preparation is to complete the Minor in Agricultural Business in conjunction with your chosen option in the Craig School. Contact the chair of the Agricultural Economics Department, Peters Building, Room 302.

Faculty and Facilities

The faculty is comprised of more than 20 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, collaborative work groups, 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

K. C. Chen, *Chair*

Tom Doyel	Paul M. Lange
Lynn M. Forsythe	J. David Reitzel
James M. Highsmith	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 2*) 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, 124, 187; Mktg 100	40-43
General Education (see *Advising Notes 1 and 3*)	54
Option requirements Business students all have one common major — business administration. Within the major, there are nine options from which students can choose; each student is required to complete an option. The Department of Finance and Business Law offers four of these options.	24-28
Electives (see *Advising Note 4*)	0-6
Total	124-125

Advising Notes

1. Students desiring to major in business must formally declare themselves business administration majors and select an option prior to enrolling in 100-level business courses. In order to select an option and be eligible to register for 100-level business courses, a business major must:
   a. complete the following courses or their equivalents with a grade of *C* or better in each course: Acct 4A; Acct 4B; B A 18; DS 71; DS 73; Econ 40 (or Ag Ec 1) and Econ 50 (in BREADTH, Division 8); Engl 1; and IS 50
   b. have a cumulative grade point average of at least 2.0, and
   c. submit an Option Form to formally declare an option in business. Students may obtain this form from the Craig School of Business Undergraduate Student Services Office, Peters Building, Room 181.

   Students may apply for an option in the semester during which they will complete all work needed for enrollment qualification in 100-level business courses. Approval will be contingent upon satisfactory fulfillment of the lower-division course prerequisites and the GPA standard.

   Transfer students, and those changing majors, will need to have their transcripts screened to see if they will receive equivalent credit for the above prerequisite courses. Transfer students will need to have a complete set of transcripts (official or unofficial) or grade reports of all college-level study sent to the Undergraduate Student Services Office, 5245 N. Backer Ave., Fresno, CA 93740-0008. Transfer students from another region need to have a copy of the catalog(s) and course syllabi from the different colleges they attended. Upon receipt of these materials, transfer students' records will be evaluated. Notification of course credit transfer will then be sent by mail.

   All requests to waive any portion of these requirements must be submitted to the Undergraduate Student Services Office via a Permission Form. Students may obtain this form from the Undergraduate Student Services Office, Peters Building, Room 181.
2. 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.
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 California State University, Fresno 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.
5. International (foreign) students who wish to declare business administration as a major must achieve a minimum score of 500 on the Test of English as a Foreign Language (TOEFL) examination.

Options

The four options available to students are outlined below. The completion of 24-28 units as required by the options, the General Education requirements, special course requirements, and the electives, which may include a minor, total the 124-125 units required for the Bachelor of Science in Business Administration.

Finance Option	*Units*
Fin 122, 128	6
Track (select one)	21-22
General Finance Track	(22)
Fin 121, 123, 139; B A 178	(13)
Elect 3 from Fin 131, 133, 137, 138; B A 100, 150	(9)
Financial Services Track	(21-22)
Fin 143, 150; B A 160	(9)
Emphasis (select one)	
*Financial Planning Emphasis**	(13)
Acct 144	(4)
Elect 3 from Fin 131, 133, 138, 144, 146, 180; B A 100, 150, 151, 178	(9)
Risk Management and Insurance Emphasis	(12)
Fin 144, 146; B A 151	(9)
Fin 133 or 138	(3)
Total	27-28

* Ask adviser about eligibility for Certified Financial Planner Comprehensive Exam.

International Business Option	*Units*
B A 174, 175, 176	9
Elect 3 from Acct 165; B A 177, 178; Mktg 176; and Mgt 131	9
Electives Select three upper-division courses outside the Craig School of Business which can be justified as contributing to global cultural	9

awareness. Introductory language courses and courses used for a second major are not accepted. Electives must be approved in advance by the coordinator of the International Business Option, in consultation with the department chair.

Total 27

The Language Requirement. English is the required language of the International Business Option. Every student is also required to demonstrate to the coordinator, by a note from a faculty member of the Department of Foreign Languages and Literatures or by special test, a working commercial knowledge of a second language. The second language is chosen by the student and approved by the coordinator of the program.

The International Business Association (IBA). While not a university requirement, membership in IBA is strongly encouraged. More than a student club, IBA is the vehicle by which students acquire the personal international network they will need for a successful career in international business. IBA also sponsors field trips and invites current practitioners in international business to speak and interact with students in the program.

Computer Use and Email Access. Students in the International Business Option are encouraged to acquire their own personal computers. Should they be unable to do so, computers with communications capacity are provided in several labs in the Craig School of Business. Students will be required to demonstrate an ability to generate international trade leads from the ATI-NET, and they will be given university Email access (which permits access to the INTERNET) during several of their courses.

Legal Environment of Business Option — *Units*

B A 150, 151, 155 9
Elect 2 from B A 101, 154, 156, 158, 160, 177; HRM 157 6
Elect from approved upper-division courses in accountancy, business administration (including international business), finance, human resource management, management, marketing, logistics, decision sciences, and information systems 9
Total 24

Real Estate and Urban Land Economics Option — *Units*

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 two courses from: B A 18, DS 73, Fin 120, IS 160, Mgt 104, 106, 110, Mktg 100 6-8
Elect upper-division courses from not more than two fields: Acct, B A, DS, Fin, HRM, IS, Mgt, Mktg 11
Total 20-22

Business Teaching Credential Requirements

The school offers students a single subject business credential to teach in departmentalized classrooms typically found in middle school and senior high school settings. All students seeking a credential in business must complete the requirements for a Bachelor of Science degree in Business Administration.

Business teacher education students should consult the appropriate advisers in the Sid Craig School of Business and the School of Education and Human Development as early in their programs as possible.

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)
Required of students seeking transfer credit for a 3-unit business law course in lieu of B A 18. Not open to students who completed B A 18 at California State University, 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)
Prerequisites: 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)
(Same as A Eth 102A.) 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, an-

titrust law, and development of public policy through regulation and deregulation. Case studies; discussion and analysis.

156. Labor Law (3)
Prerequisites: 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 global markets. Accommodating to differing cultural, legal, and political systems. Role of start-up and medium-sized firms, importing, exporting, international contracts, and investment, multi-country production and distribution. Forecasting and compensating for changing government policies, market conditions affecting profitability.

175. Tools and Techniques of International Business (3)
Prerequisite: B A 174 or permission of instructor, and Fin 120. Organizing international operations, entering foreign markets using global communications, finding business connections and potential imports or exports. Selling abroad, government support services, pricing, shipping, documentation, taxes, duties, quotas, trade licenses. International personnel strategies, accounting systems, travel, international business control.

176. The International Business Environment (3)
Prerequisite: B A 174 or permission of instructor. Evolution of international business. Political regimes, economic success and failure, identifying prosperity, picking winners. Dealing with changing cultures, variations within cultures. Doing business in unstable regions. Implications of global downsizing. Trading blocks and their effects. Forecasting and international business opportunities.

The broad background of the faculty and their strong commitment to business education assures students of a challenging and rewarding course of study.

177. Legal Environment of World Commerce (3)
Prerequisites: B A 18; junior standing; B A 150 recommended. Seminar on international sales, documents, credits, dispute resolution; trade law, including GATT/WTO customs, tariff laws; regulatory ethical environment of international marketplace, intellectual property transfers, political risk, exploitation of labor and environment. (Formerly B A 189T section)

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 total 6)
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) (Computer lab fee, $15)

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.

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) (Computer lab fee, $15)

128. Security Analysis (3)
Prerequisite: Fin 120. Analysis of securities markets; debt and equity instruments; options and futures; fundamental analysis; technical analysis.

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. (Formerly 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. (Formerly 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.

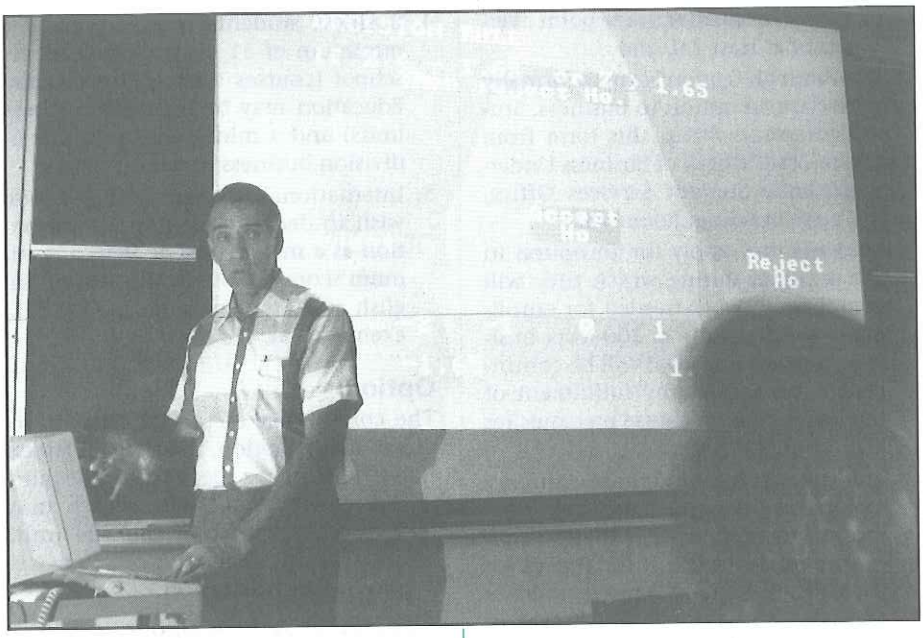
190. Independent Study (1-3; max total 6)
See *Academic Placement — Independent Study*. Approved for ***SP*** grading.

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
Department of Information Systems and Decision Sciences
PETER SIMIS, *Chair*
Peters Business Building, Room 287
(209) 278-2823

B.S. in Business Administration
Information Systems Option

General Business Minor

Certificate in Business Information Systems

Business Teaching Credential

The computer and information systems are at the forefront of most courses offered in the department. Every course deals with the use of information by managers in support of their decision-making role. Those interested in specializing in the Information Systems option can choose from a broad set of courses designed to prepare one for a challenging and productive job in one of the fastest growing career paths.

The **Information Systems Option** 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 and database systems, as well as 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 is 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 EUS role. 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.

Systems Design and Programming. Skilled in both traditional and newer computer languages, the systems analyst develops the larger systems that drive most business enterprises. Using a database orientation, this graduate uses fourth-generation language development skills to provide speedy and effective solutions to business problems.

The **Certificate in Business Information Systems** 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 in the Information Systems and Decision Sciences Department are exposed to modern 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 statistics laboratories offer students a unique opportunity to become acquainted with the developments in the field of computer technology and applications.

Faculty

Peter Simis, *Chair*

Randy J. Anderson
Donald L. Beringson
Kelly J. Black
Priscilla M. Chaffe-Stengel
Harry G. Costis
Mostafa Elhag
Myron E. Hatcher
Charlotte J. Hiatt
Richard C. Lacy
Patricia A. LaRosa
Wallace C. Liu
William S. Mallios
Kathleen E. Moffitt
Arlene A. Motz
Sasan Rahmatian
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 2*) 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, 124, 187; Mktg 100	**40-43**
General Education (see *Advising Notes 1 and 3*)	**54**
Option requirements Business students all have one common major — business administration. Within the major, there are nine option areas from which students can choose; each student is required to complete an option. The Department of Information Systems and Decision Sciences offers one option.	**24**
Electives (see *Advising Note 4*)	**0-6**
Total	**124**

Advising Notes

1. Students desiring to major in business must formally declare themselves business administration majors and select an option prior to enrolling in 100-level business courses. In order to select an option and be eligible to register for 100-level business courses, a business major must:
   a. complete the following courses or their equivalents with a grade of *C* or better in each course: Acct 4A; Acct 4B; B A 18; DS 71; DS 73; Econ 40 (or Ag Ec 1) and Econ 50 (in BREADTH, Division 8); Engl 1; and IS 50
   b. have a cumulative grade point average of at least 2.0, and
   c. submit an Option Form to formally declare an option in business. Students may obtain this form from the Craig School of Business Undergraduate Student Services Office, Peters Building, Room 181.

   Students may apply for an option in the semester during which they will complete all work needed for enrollment qualification in 100-level business courses. Approval will be contingent upon satisfactory fulfillment of the lower-division course prerequisites and the GPA standard.

   Transfer students, and those changing majors, will need to have their transcripts screened to see if they will receive equivalent credit for the above prerequisite courses. Transfer students will need to have a complete set of transcripts (official or unofficial) or grade reports of all college-level study sent to the Undergraduate Student Services Office, 5245 N. Backer Ave., Fresno, CA 93740-0008. Transfer students from another region need to have a copy of the catalog(s) and course syllabi from the different colleges they attended. Upon receipt of these materials, transfer students' records will be evaluated. Notification of course credit transfer will then be sent by mail.

   All requests to waive any portion of these requirements must be submitted to the Undergraduate Student Services Office via a Permission Form. Students may obtain this form from the Undergraduate Student Services Office, Peters Building, Room 181.
2. 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.
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 California State University, Fresno 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.
5. International (foreign) students who wish to declare business administration as a major must achieve a minimum score of 500 on the Test of English as a Foreign Language (TOEFL) examination.

Option

The completion of the 24 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.

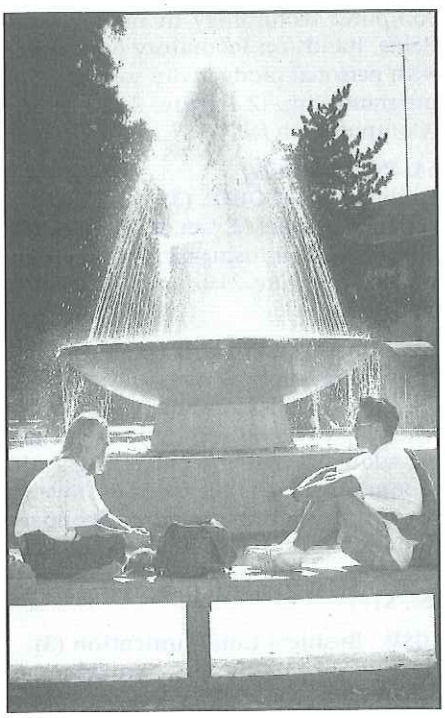
Information Systems Option	*Units*
IS core IS 109, 150, 161, 165	**12**
Technical Track (select one)	**12**
Information Resource Management IS 116, 117, 164, or 168 ..... (9) Approved elective (see below) .. (3)	
End-User Support IS 117, 164, 166 ..... (9) Approved elective (see below) .. (3)	
Systems 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 116, 117, 151, 152, 164, 168, 189T, 190, 195; Mgt 126 or any other approved upper-division IS elective.	
Total	**24**

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 Information Systems 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 a computer language. Approval of the certificate program coordinator or the department chair is necessary. Students also need to meet either one of the following criteria:

1. a bachelor's degree in any field from an accredited institution or



2. an Associate of Arts degree from a two-year accredited college and a minimum of two years of business experience.

	Units
Required Courses	9
IS 161, 165, 166	
Elective Courses	6
Select a minimum of 6 units from: IS 109, 151, 152, 164, 168, 190, 195	

IS 190 or 195 can be counted for credit toward the certificate.

General Business Minor

	Units
Acct 4A	3
Elect two courses from: B A 18, DS 73, Fin 120, IS 160, Mgt 104, 106, 110, Mktg 100	6-8
Elect upper-division courses from not more than two fields: Acct, B A, DS, Fin, HRM, IS, Mgt, Mktg	11
Total	20-22

Business Teaching Credential Requirements

The school offers students a single subject business credential to teach in departmentalized classrooms typically found in middle school and senior high school settings. All students seeking a credential in business must complete the requirements for a Bachelor of Science degree in Business Administration.

Business teacher education students should consult the appropriate advisers in the Sid Craig School of Business and the School of Education and Human Development as early in their programs as possible.

COURSES

Decision Sciences (DS)

71. Quantitative Analysis I (3)
Prerequisites: 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)
Prerequisites: 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)
Prerequisites: 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.

163. Business Models and Simulation (3)
Prerequisite: IS 150. Computer modeling of inventory, queuing, network, financial, and planning problems. (2 lecture, 2 lab hours) (Formerly IS 163)

173. Statistical Analysis II (3)
Prerequisites: DS 71, 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) (Computer 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) (Computer lab fee, $15)

180. Microcomputer Tools for Information Analysis (3)
Prerequisites: 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) (Computer 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) (Computer 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 squares. The Box-Jenkins Model; case studies. (3 lecture, 2 lab hours) (Computer 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) (Computer lab fee, $15)

188. Decision Support and Expert Systems (4)
Prerequisites: 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) (Computer lab fee, $15)

189T. Topics in Decision Sciences (1-3; max total 6 if no topic repeated)
Prerequisites: 12 units in decision sciences. Theory or application of statistics or operations research applied to current developments.

190. Independent Study (1-3; max total 6)
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) (Computer 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) (Computer lab fee, $15) (Formerly 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) (Computer lab fee, $15)

54. Programming Languages — COBOL (3)
Prerequisites: ELM Exam, IS 50. Programming in COBOL, using batch and on-line systems. (2 lecture, 2 lab hours) (Computer lab fee, $15)

104. Advanced Word/Information Processing Applications (3)
Prerequisite: IS 50. 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) (Computer lab fee, $15)

105W. Business Communication (3)
Prerequisites: satisfactory completion (*C* or better) of the Engl 1 graduation requirement or approved equivalent, 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.

109. Data Communications (3)
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.

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.

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) (Computer lab fee, $15) (Formerly IS 189T section)

151. Advanced Applications Software — Microcomputers (3)
Prerequisites: Acct 4A; IS 150 and one semester of programming, IS 161 recommended. Advanced software development using the management of visual objects on microcomputers. Emphasis on structure and style, using visual environments, windows, and graphics. Program planning, logic structures, sorts and searches, variable passing, and file/database access. (2 lecture, 2 lab hours) (Computer lab fee, $15)

152. Advanced Applications Software — Mainframe and Mini Computers (3)
Prerequisites: 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 large and medium size computers. (2 lecture, 2 lab hours) (Computer lab fee, $15)

160. Management Information Systems (3)
Prerequisites: 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)
Prerequisites: 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 system technology: processors, storage devices, I/O devices; distributed processing; client-server; connectivity; LANs and WANs; selection, installation, and implementation processes.

165. Database Systems (3)
Prerequisites: IS 150, 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) (Computer lab fee, $15)

166. Information Systems Design (3)
Prerequisite: IS 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) (Computer lab fee, $15) (Formerly IS 162)

168. Information Systems Management (3)
Prerequisites: 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. (Computer lab fee, $15)

190. Independent Study (1-3; max total 6)
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*.

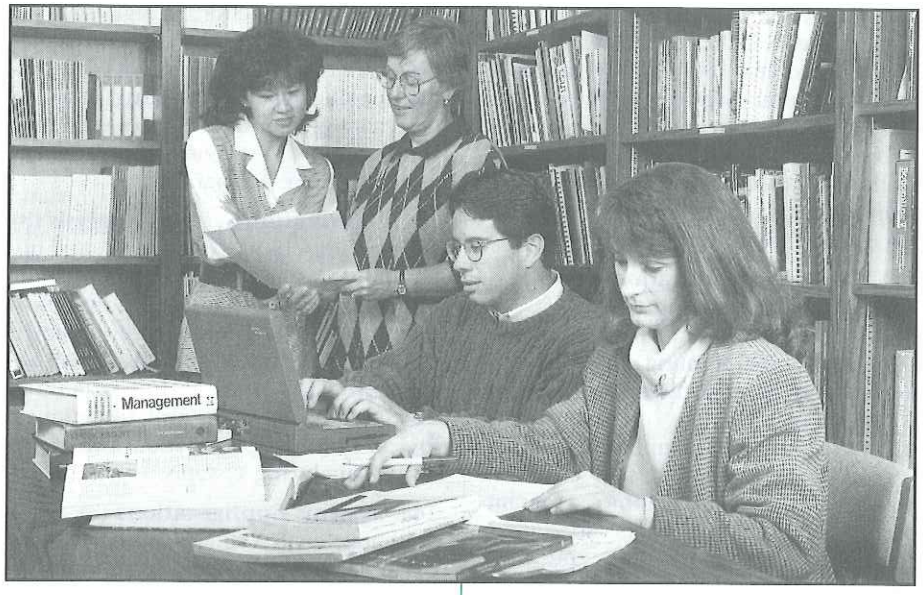
BUSINESS Management

The Sid Craig School of Business
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

General Business Minor

Business Teaching Credential



The Department of Management offers two options (areas of emphasis) within the Bachelor of Science in the Business Administration degree program.

The **Human Resource Management Option** is one of only 57 programs nationally — and the only program in the California State University system — that has been certified by the Association of University and College Industrial Relations and Human Resource programs. The program is consistently ranked in the top five nationally. This ranking is based on the number of students who pass the Society of Human Resource Management's "Professional in Human Resource" certification exam.

The 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.

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*

Timothy M. Stearns, *Edward M. Reighard Chair of Business Management*

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-Buchanan
Victor G. Panico
Joseph J. Penbera
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 2*) 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, 124, 187; Mktg 100	40-43
General Education (see *Advising Notes 1 and 3*)	54
Option requirements Business students all have one common major — business administration. Within the major, there are nine option areas from which students can choose; each student is required to complete an option. The Department of Management offers two of these options.	24-30
Electives (see *Advising Note 4*)	0-9
Total	124-127

Advising Notes

1. Students desiring to major in business must formally declare themselves business administration majors and select an option prior to enrolling in 100-level business courses. In order to select an option and be eligible to register for 100-level business courses, a business major must:
   a. complete the following courses or their equivalents with a grade of *C* or better in each course: Acct 4A; Acct 4B; B A 18; DS 71; DS 73; Econ 40 (or Ag Ec 1) and Econ 50 (in BREADTH, Division 8); Engl 1; and IS 50
   b. have a cumulative grade point average of at least 2.0, and
   c. submit an Option Form to formally declare an option in business. Students may obtain this form from the Craig School of Business Undergraduate Student Services Office, Peters Building, Room 181.

   Students may apply for an option in the semester during which they will complete all work needed for enrollment qualification in 100-level business courses. Approval will be contingent upon satisfactory fulfillment of the lower-division course prerequisites and the GPA standard.

   Transfer students, and those changing majors, will need to have their transcripts screened to see if they will receive equivalent credit for the above prerequisite courses. Transfer students will need to have a complete set of transcripts (official or unofficial) or grade reports of all college-level study sent to the Undergraduate Student Services Office, 5245 N. Backer Ave., Fresno, CA 93740-0008. Transfer students from another region need to have a copy of the catalog(s) and course syllabi from the different colleges they attended. Upon receipt of these materials, transfer students' records will be evaluated. Notification of course credit transfer will then be sent by mail.

   All requests to waive any portion of these requirements must be submitted to the Undergraduate Student Services Office via a Permission Form. Students may obtain this form from the Undergraduate Student Services Office, Peters Building, Room 181.
2. 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.
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 California State University, Fresno 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.
5. International (foreign) students who wish to declare business administration as a major must achieve a minimum score of 500 on the Test of English as a Foreign Language (TOEFL) examination.

Options

The two 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 or Mgt 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 114 and 120 or 125; Mgt 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.
2. B A 120 and Soc 149 cannot be double counted as fulfilling both the General Education requirement and an elective within the option.

General Business Minor

	Units
Acct 4A	3
Elect two courses from: B A 18, DS 73, Fin 120, IS 160, Mgt 104, 106, 110, Mktg 100	6-8
Elect upper division courses from not more than two fields: Acct, B A, DS, Fin, HRM, IS, Mgt, Mktg	11
Total	20-22

Business Teaching Credential Requirements

The school offers students a single subject business credential to teach in departmentalized classrooms typically found in middle school and senior high school settings. All students seeking a credential in business must complete the requirements for a Bachelor of Science degree in Business Administration.

Business teacher education students should consult the appropriate advisers in the Sid Craig School of Business and the School of Education and Human Development as early in their programs as possible.

COURSES

Human Resource Management (HRM)

150. Administration of Personnel (3)
Prerequisites: 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 permission of instructor. 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 permission of instructor. 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 permission of instructor. 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)
Prerequisites: 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 total 6)
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. Prerequisites: 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.

124. Production/Operations Management (4)
Prerequisites: 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. (Formerly POM 124; PLM 124)

126. Total Quality Management (3)
Prerequisites: 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)
Prerequisites: 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 (3)
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)
Prerequisites: 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)
Prerequisites: 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.

160. Manufacturing Planning and Control (4)
Prerequisite: Mgt 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. (Formerly POM 160; PLM 160)

180. Seminar in Management Theory and Organization Design (4)
Prerequisites: 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)
Prerequisites: 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 Strategic Management (3)
Prerequisites: last-semester senior, completion of CSB core requirements and the upper-division writing skills requirement. Integrating knowledge of functional areas, this seminar focuses on the concept of strategic management, industry analysis, global competitive environment, formulation and implementation of strategy, ethical issues, mergers and acquisitions, and the management of strategic alliances. The concepts and applications are strengthened by case analysis/computer simulations.

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 total 6)
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 Marketing and Logistics

The Sid Craig School of Business
Department of Marketing
and Logistics
GERALD O. BRYAN, *Chair*
Peters Business Building, Room 388
(209) 278-7830

B.S. in Business Administration
Marketing Option

General Business Minor

Business Teaching Credential

The Marketing option offers an integrated set of courses that seek to prepare students to become competitive and ethical marketing practitioners. In this degree program, students learn to apply their imagination, initiative, sound judgment, and hard work to solve problems; to search for and analyze opportunities; and to survive in a dynamic, competitive environment.

Building on basic marketing theories and concepts, each student studies the domestic and international applications of buyer behavior, market segmentation, market research, channel management, physical distribution, and strategic planning. In addition, students are permitted to explore special interest areas such as advertising, sales, sales management, retailing, product management, purchasing, logistics, and international marketing.

Marketing is the motor that powers our economy. Nothing happens in business until someone sells something. Only then can firms produce, suppliers distribute, and consumers enjoy the goods and services that contribute to our high standards of living. Marketing is the activity that provides the revenues business needs to meet its expenses, pay its employees, and generate its long-term success and growth.

William E. Rice, 1995-96 Outstanding Professor, California State University, Fresno

Marketing is an exciting, fast-paced, dynamic field that offers career opportunities which stimulate personal growth, challenge the imagination, and capture a variety of interests.

Faculty and Facilities

The faculty of the Department of Marketing and Logistics bring together 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 2*) 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, 124, 187; Mktg 100	40-43
General Education (see *Advising Notes 1 and 3*)	54
Marketing Option Mktg 102; 114 or 115; 120 or 125; 188	23-24 (16)
Elect two of the following: Mktg 130, 132, 134, 136, 138, 176 or, with departmental approval, 189T	(7-8)
Electives (see *Advising Note 4*)	0-10
Total	124

Advising Notes

1. Students desiring to major in business must formally declare themselves business administration majors and select an option prior to enrolling in 100-level business courses. In order to select an option and be eligible to register for 100-level business courses, a business major must:
   a. complete the following courses or their equivalents with a grade of *C* or better in each course: Acct 4A; Acct 4B; B A 18; DS 71; DS 73; Econ 40 (or Ag Ec 1) and Econ 50 (in BREADTH, Division 8); Engl 1; and IS 50
   b. have a cumulative grade point average of at least 2.0, and
   c. submit an Option Form to formally declare an option in business. Students may obtain this form from the Craig School of Business Undergraduate Student Services Office, Peters Building, Room 181.

   Students may apply for an option in the semester during which they will complete all work needed for enrollment qualification in 100-level business courses. Approval will be contingent upon satisfactory fulfillment of the lower-division course prerequisites and the GPA standard.

   Transfer students, and those changing majors, will need to have their transcripts screened to see if they will receive equivalent credit for the above prerequisite courses. Transfer students will need to have a complete set of transcripts (official or unofficial) or grade reports of all college-level study sent to the Undergraduate Student Services Office, 5245 N. Backer Ave., Fresno, CA 93740-0008. Transfer students from another region need to have a copy of the catalog(s) and course syllabi from the different colleges they attended. Upon receipt of these materials, transfer students' records will be evaluated. Notification of course credit transfer will then be sent by mail.

   All requests to waive any portion of these requirements must be submitted to the Undergraduate Student Services Office via a Permission Form. Students may obtain this form from the Undergraduate Student Services Office, Peters Building, Room 181.
2. 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.
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 California State University, Fresno 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.
5. Students desiring more depth may also take Mktg 190, 193, or 195. This would count as free electives outside the requirements of the Marketing Option.
6. International (foreign) students who wish to declare business administration as a major must achieve a minimum score of 500 on the Test of English as a Foreign Language (TOEFL) examination.

The Marketing option offers an integrated set of courses that seek to prepare students to become competitive and ethical marketing practitioners.

General Business Minor

	Units
Acct 4A	3
Elect two courses from: B A 18, DS 73, Fin 120, IS 160, Mgt 104, 106, 110, Mktg 100	6-8
Elect upper-division courses from not more than two fields: Acct, B A, DS, Fin, HRM, IS, Mgt, Mktg	11
Total	20-22

Business Teaching Credential Requirements

The school offers students a single subject business credential to teach in departmentalized classrooms typically found in middle school and senior high school settings. All students seeking a credential in business must complete the requirements for a Bachelor of Science degree in Business Administration.

Business teacher education students should consult the appropriate advisers in the Sid Craig School of Business and the School of Education and Human Development as early in their programs as possible.

COURSES

Marketing (Mktg)

100. Marketing Concepts (4)
Not open to senior-level business students. Prerequisites: Econ 40, 50, and upper-division standing. Study/analysis of the challenges and problems faced by individuals and organizations (profit and nonprofit) that attempt to expedite and facilitate exchange in a dynamic en-

vironment. Emphasis on strategic marketing planning and the decision-making process in the marketplace.

102. Buyer Behavior (4)
Prerequisites: DS 73; Mktg 100. 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)

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. (Formerly LOG 114; PLM 114)

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)
Prerequisites: 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) (Computer lab fee, $15)

125. Analysis of Marketing Operations (4)
Prerequisites: DS 173; Mgt 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)

126. Purchasing and Materials Management (4)
Prerequisite: Mgt 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. (Formerly LOG 136; PLM 136)

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)
Prerequisites: 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 Management (4)
Prerequisite: Mktg 102. Selection, retention, supervision, compensation, and termination of sales personnel are approached from a perspective of a middle manager who needs to employ modern behavioral and supervision techniques to build a motivated and productive sales force.

138. Sales and Persuasion Techniques (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, lectures by special guests, role playing, and skill development. (3 lecture, 2 lab hours)

176. International Marketing (3)
Prerequisites: Mktg 100; B A 174 for International Business Option only. 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.

188. Marketing Strategy (4)
Prerequisites: Mktg 102; 114 or 115; 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 total 6)
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.*

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 California State University, Fresno 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, and
6. a description of work experience.

The director of the Graduate Business Program may waive the Graduate Management Admission Test record requirement for applicants with superior transcripts. Contact the Graduate Business Program Office to confirm whether a waiver will be given.

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, without permission from the graduate business director.

Group I

The following five courses or equivalent knowledge are required: MBA 200, 201, 203, 204, and 205. Some or all of Group I requirements may be waived on the basis of an evaluation of previous coursework.

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	
Agribusiness	(9)
Select from Ag Bs 210*, 225, 250*, 260	
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.

The Sid Craig School of Business
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 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

* Lists of approved electives are available in the Graduate Business Program Office.

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)
Prerequisites: finite mathematics, admission to graduate business program or permission of director. Logic and methods of economic analysis for business decisions. Production, cost, supply; buyer behavior, consumer demand, derived demand; forecasting; market structure, pricing, negotiation; government regulation; risk, uncertainty; linear programming. (Formerly 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 or ganization, information access and display/reporting. (Formerly 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) (Computer lab fee, $15) (Formerly Bus 243)

204. Global Environment of Business (3)
Prerequisite: 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. (Formerly 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. (Formerly 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. (Formerly 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. (Formerly 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. (Formerly 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. (Formerly 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. (Formerly 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. (Formerly 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. (Formerly 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. (Formerly 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. (Formerly 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. (Formerly 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. (Formerly 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. (Formerly 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. (Formerly 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. (Formerly 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. (Formerly 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. (Formerly Bus 265)

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. (Formerly Bus 266)

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.

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. (Formerly 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 the Management of Marketing Operations (3)
Prerequisites: MBA 210, 214, and 260. Implementation and control decisions in marketing operations with particular emphasis on product management, marketing research/information systems, channel/logistics management, sales management, advertising/promotion management. Cases, readings, projects, and industry analyses.

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. (Formerly 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. (Formerly Bus 289T section)

290. Independent Study (1-3; max total 6)
Prerequisite: Advanced to Candidacy; permission of director and instructor. Approved for *SP* grading. (Formerly Bus 290)

292. Readings in Business (2-3; max total 3; not repeatable for credit)
Prerequisite: Advanced to Candidacy; permission of director. Approved for *SP* grading. (Formerly 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. (Formerly 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. (Formerly 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. (Formerly 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. (Formerly 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. (Formerly 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. (Formerly 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. (Formerly 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. (Formerly Bus 270)

227. Seminar in Taxation of Corporations and Shareholders (3)
Prerequisites: Acct 144; 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. (Formerly 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. (Formerly 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. (Formerly Bus 279)

IN-SERVICE COURSES

(See *Course Numbering System.*)

Business (Bus)

367. CPA Review (2-4)

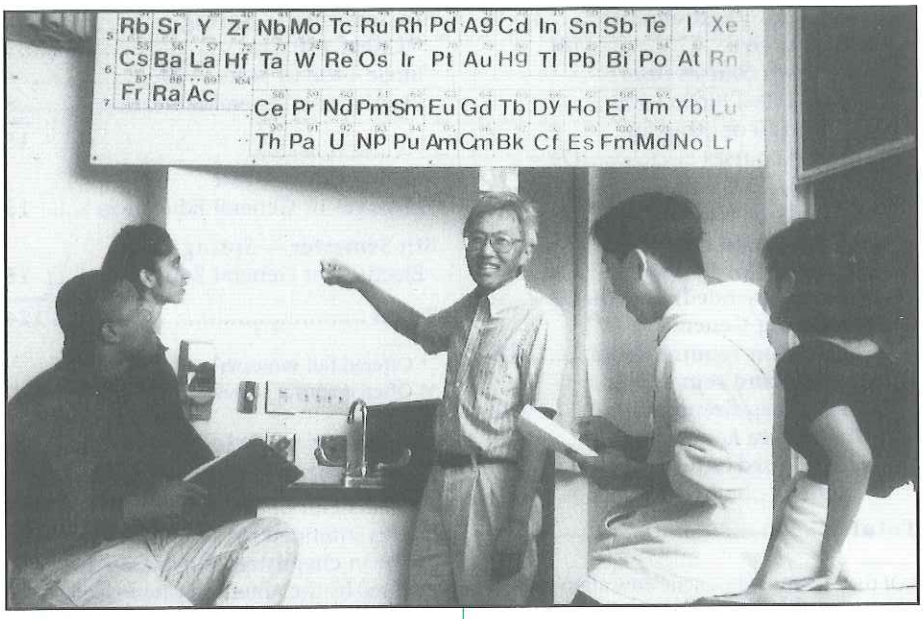
380T. Topics in Business (1-3; may be repeated if no topic repeated)

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.



School of Natural Sciences
Department of Chemistry
HOWARD K. ONO, *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 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 non-science 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 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. Eight four-station graduate laboratories are well equipped, with access to modern instrumentation. Instrumentation in the department includes: Varian EM 360 and Gemini 200 FT 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, gas chromatographs, and Unix workstations for advanced computational chemistry. The university library includes many 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

Howard K. Ono, *Chair*

Sydney Bluestone
Richard P. Ciula
David L. Frank
Joseph R. Gandler
Helen J. Gigliotti
Barry H. Gump
Donald K. Kunimitsu
Kimberly A. Lawler
Ronald L. Marhenke
Barbara J. Mayer
C. Dean Mitchell
Kin C. Ng
Stephen A. Rodemeyer
Kenneth H. Russell
Jose Sy
Joe D. Toney
Kin-Ping Wong
David L. Zellmer
Stanley M. Ziegler

Undergraduate Programs

Chemistry Majors: The Bachelor of Arts degree with a major in chemistry consists of a total of 124 units including 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 46 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.

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 ..... (4-6)

B. Additional requirements 31-34
BioSc 1A, 1B ..... (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 and remaining degree requirements 9-14
(See *Degree Requirements*); may be used toward a dual major or minor.

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:

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
BioSc 1A	4
General Education	3
	16

4th Semester — Spring	
Chem 128B	3
Chem 102	5
BioSc 1B	4
Electives or General Education	4
	16

5th Semester — Fall	
*Chem 108	4
*Chem 155	3
BioSc 140A	4
Electives or General Education	5
	16

6th Semester — Spring	
**Chem 156	3
BioSc 140B or Micro 140	4
Electives or General Education	8
	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.

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. 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

8th Semester — Spring	
Chem 190 (recommended) or other elective	3
Chemistry or other elective	3
General Education	9
	15
Total	**124**

* Offered fall semester only.
** Offered spring semester only.

Bachelor of Arts in Natural Sciences Degree Requirements

Chemistry Emphasis

The B.A. in Natural Sciences serves as a waiver program for the Single Subject Teaching Credential in Science. With this credential you are able to teach any introductory science class, i.e., earth, general, life, or physical science along with the courses in your chosen emphasis. Students interested in teaching chemistry in high school may pursue a B.A. in Natural Sciences with a chemistry emphasis (see specific course requirements below). For additional information see the listing under Natural Science or see the science credential adviser.

	Units
Core requirements	**48-49**
Biology	(12-13)
BioSc 1A or Biol 15, BioSc 1B and 130	
Chemistry	(13)
Chem 1A, 1B; Chem 8 or 128A	
Geology	(5)
Geol 1 and 3 (or 15)	
Natural Science	(3)
N Sci 106	
Physics	(8)
Phys 2A, 2B[1]	
Physical Science	(7)
P Sci 21, 168	
Chemistry Emphasis[2]	**20**
Chem 102, 108, 128B, 129A, 139, 155	
Additional requirements	**8**
Math 75, 76	
General Education	**42[3]**
6-unit CAPSTONE requirement to be met by Geol/Geog 168	
Electives and remaining degree requirements[4]	**5-6**
(see *Degree Requirements*)	
Total	**124**

[1] Substitutions may be made with the permission of the appropriate department chair. Phys 4A-B (with labs) is recommended instead of Phys 2A-B for those students well prepared for Physics.

[2] Consult your faculty adviser regarding the selection of your elective units to have this emphasis used as the Science Waiver Program.

[3] This figure takes into account that 9 units in the major and additional requirements may also be applied to satisfy General Education requirements as follows: CORE, Quantitative Reasoning — Math 75 (3 units); BREADTH, Division 1 — Chem 1A or Geol 1 or 15 or Phys 2A (3 units); and Division 2 — BioSc 1A or Biol 15 (3 units). Consult your major academic adviser for details. (See *General Education*.)

[4] Students should be sure to take sufficient upper-division units in their General Education courses and electives to satisfy the university requirement of 40 upper-division units for graduation.

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 or 128A-B and 129A), and Quantitative Analysis (105).

Those students requiring additional upper-division chemistry units may choose from courses such as: Chem 125, 150, 151, 153, 155, and 156.

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 California State University, Fresno B.S. 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 California State University, Fresno 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: Math 4R or second-year 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. Prerequisites: high school chemistry or physics, Math 4R or second-year high school algebra. 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 or second-year high school algebra. For nonscience majors. Compo-

* 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.

sition 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)*

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)

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. Prerequisites: 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. Prerequisites: 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)
Prerequisites: 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) (Fall semester)*

108. Introductory Physical Chemistry (4)
Prerequisites: 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. (Fall semester)

109. Elementary Organic Chemistry Laboratory (3)
Not open to chemistry majors. Prerequisite: Chem 8 or 128B or concurrently. Laboratory study of the carbon compounds with coordinating lectures. (1 lecture, 6 lab hours)*

110A-B. Physical Chemistry (3-3)
Prerequisites: 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. (110A Fall semester; 110B Spring semester)

111. Physical Chemistry Laboratory (3)
Prerequisite: Chem 110B or concurrently, Chem 102. May not be taken concurrently with 106. Techniques of physical measurements, error analysis and statistics; ultraviolet, infrared, and nuclear magnetic resonance spectroscopy; dipole moments, viscosity, calorimetry, kinetics, phase diagrams, thermodynamic measurements, and report writing. (1 lecture, 6 lab hours) (Spring semester)*

123. Advanced Inorganic Chemistry (3)
Prerequisites: 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. (Fall semester)

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) (Spring semester)*

125. Laboratory Instrumentation (3)
Not open to chemistry majors. Prerequisites: 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)*

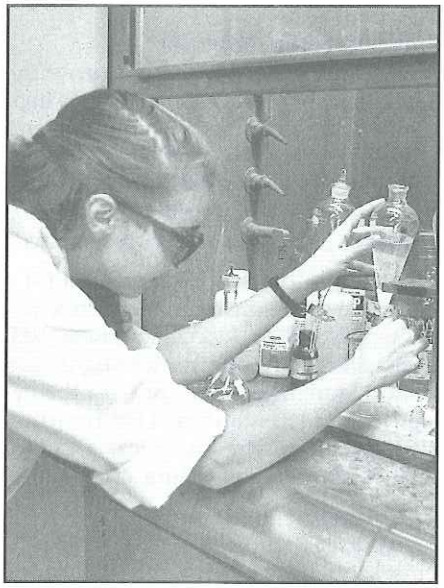
127. Organic Problems (1)
Prerequisites: Chem 8 or 128A; 128B concurrently. Designed to review organic chemistry, in particular for those students who have taken only a brief course in organic chemistry. *CR/NC* grading only; not applicable to the requirements of a major in chemistry.

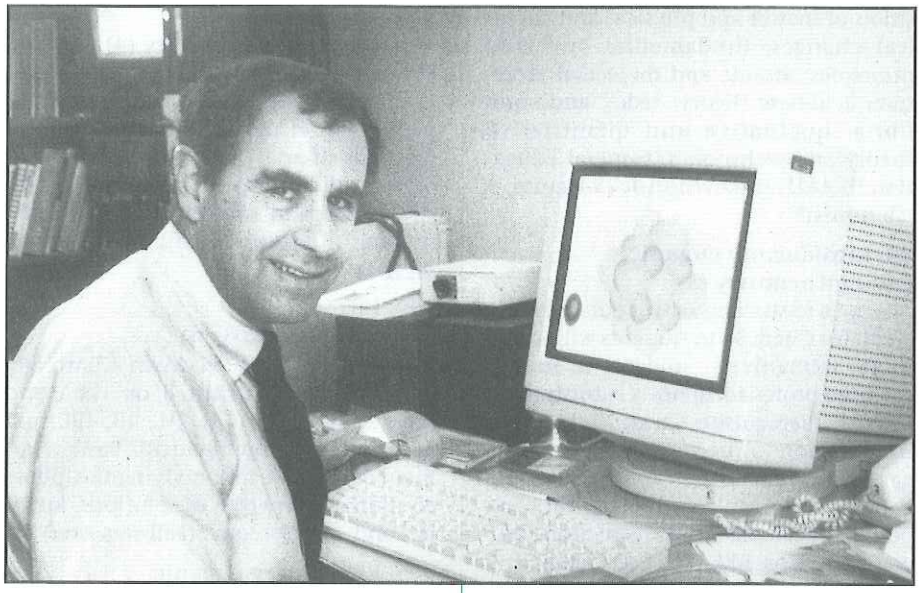
128A-B. Organic Chemistry (3-3)
For chemistry majors; recommended for premedical students and other science majors. Chem 128A not open for credit to students with credit in Chem 8. Prerequisites: Chem 1B or Chem 4 with a grade of *C* or better; for Chem 128B: Chem 128A with a grade of *C* or better. Introduction to structure and reactivity of principal classes of organic compounds with emphasis on theory and mechanism.

129A-B. Organic Chemistry Laboratory (2-2)
Prerequisites: Chem 128A or concurrently for 129A; Chem 128B or concurrently **and** Chem 129A for 129B. Chem 129A must be taken before Chem 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)
Prerequisites: Chem 102, 128B, 129B. Characterization of organic compounds through study of chemical and physical properties; application of spectroscopy,

* 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.





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. 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)
Prerequisites: 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 128B. (Chem 155 and 153 together constitute a year sequence.) Structure, function, and metabolism of chemical entities in living systems. (Fall semester)

156. Biochemical Laboratory Techniques (3)
Prerequisites: senior standing or permission of instructor; Chem 150 or 155 (or concurrently), 102 or 105, 109 or 129A. 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) (Spring semester)*

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 total 6)
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.

211. Chemical Thermodynamics (3)
Prerequisites: 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; max total 2)
Prerequisites: 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)
Prerequisites: 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)
Prerequisites: 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)
Prerequisites: 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)
Prerequisites: 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)
Prerequisites: 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)
Prerequisites: 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.) Prerequisites: 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. 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 Biol 243.) Prerequisites: 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.) Prerequisites: 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.

260. Advanced Research Techniques (3)
Prerequisites: 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 total 6)
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

School of Social Sciences
Department of Chicano and
Latin American Studies
LUZ GONZALEZ, *Chair*
Social Science Building, Room 211
(209) 278-2848

B.A. in Chicano Studies
Minor in Chicano/Latino Studies
Minor in 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.

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. Also, students are encouraged to pursue dual majors; one in Chicano Studies and the second in a professional area of their preference. 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

Luz Gonzalez, *Chair*

Manuel Figueroa-Unda
Bill Flores
Hisauro Garza
Juan Felipe Herrera
Ernesto A. Martinez
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)
U.S.-Mexico Relations:	
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 or 116	(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 no sooner than the term 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.
6. Liberal Studies Program and BCLAD students may take CLS 145 in lieu of EHD 50 or EHD 115, but not both.

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

The Bilingual Cross-Cultural Language and Academic Development (BCLAD) Emphasis program has replaced the Bilingual/Cross-Cultural Credential program. BCLAD will authorize teachers to provide academic instruction to limited-English proficient student 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.

42A. Introduction to Chicano-Latino Literature and Resources (3)
University Migrant Services students have first priority; other students may receive priority status by permission of instructor. Introduces students to the professional literature on Chicano-Latino communities. Focuses on the use of library resources; identifying and analyzing problems in specific areas of research; interpretation of existing research findings; preparation of research paper. (Formerly CLS 180T section)

42B. Introduction to Chicano-Latino Research Methods (3)
Prerequisite: CLS 42A or permission of instructor. Introduces students to basic research methodologies and theories pertaining to Chicano/Latino communities. Focuses on identifying specific areas in need of further research; locating and formulating problems; basic techniques including methods of observation, gathering, and analysis of data; interpretation of data; access database programs; preparation of research paper. (Formerly 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.

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*.

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 CLS majors; CLS 5 recommended for CLAD/BCLAD students. 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. (Formerly 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 CLS majors; CLS 116 recommended for CLAD/BCLAD students. 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 CLS majors and recommended for BCLAD students. Supervised placement in community and educational settings. Provides a variety of learning experiences in community agencies, organizations, or educational institutions. (Liberal Studies Program and BCLAD students, see *Advising Notes*.)

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.

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. (Formerly CLS 180T section)

180T. Topics of Chicano Society (1-3; max total 3 if no topic repeated)
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 total 6)
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. Fulfills Liberal Studies Program requirement.

CLASSICAL STUDIES Interdisciplinary Minor

School of Arts and Humanities
Department of Foreign Languages and Literatures
VICTOR D. HANSON
San Ramon 4, Room 128
(209) 278-6437
BRUCE S. THORNTON
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

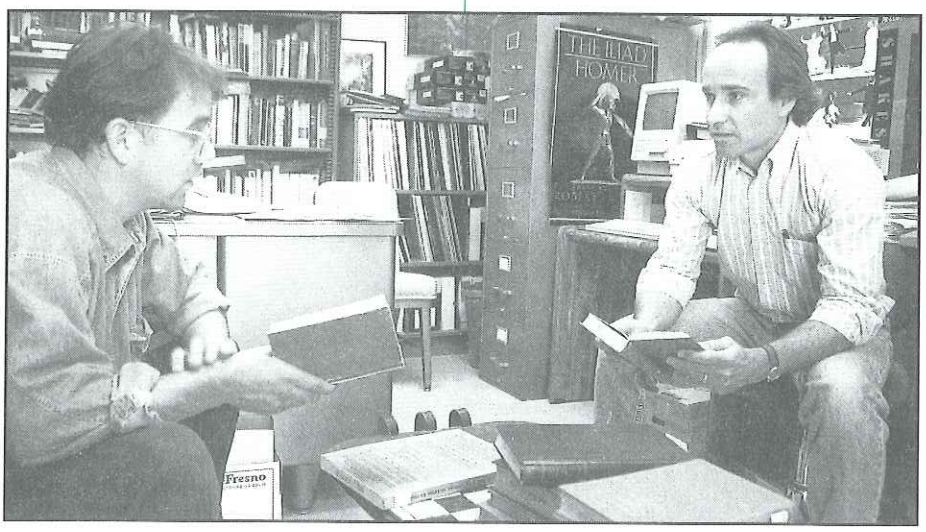
Greek	***Units***
History 111 or IntD 108	3
Greek 1A, 1B	6
Greek 131T (2)	6
Electives	9
Total	24

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 Victor D. Hanson or Bruce S. Thornton, San Ramon 4, Room 137.

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)
Foreign Language:		
Greek	1A, 1B	Elementary Greek (3, 3)
	10	Fifth Century Athens (3)
	48	Masterpieces of Classical Greek Literature (3)
	131T	Greek Literature (3; max total 12 if no topic repeated)
	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 Sciences and Disorders

School of Health and Social Work
Department of Communicative Sciences and 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, deaf education, 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 specializations in deaf education and 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. Two professional option areas are available to the student:

Deaf Education. Our deaf education program gives you a broad background in bilingual-bicultural education, total communication, and cued speech philosophies along with speech, language, auditory training, deaf culture, and American Sign Language. This program includes all of the essential elements of a good education for deaf and hard-of-hearing children. The program is nationally accredited by the Council of 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, national certification in speech-language pathology by the American Speech-Language-Hearing Association, provisional certification in deaf education by the Council on Education of the Deaf, public school special education specialist, clinical rehabilitative services credential, 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, 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, you have access to a wide range of therapy production materials such as films, video, clinical equipment, and professional journals.

University Speech and Hearing Clinic. The department 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 and educators of deaf and hard-of-hearing children. 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 of the American Speech-Language-Hearing Association.

Career Opportunities

The department 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*

Graduate Coordinator: Steven D. Wadsworth
Audiology Adviser: Ron M. Parker
Deaf Education Advisers: Bette J. Baldis, Karen M. Jensen, Paul W. Ogden
Speech-Language Pathology Advisers: M. N. Hedge, Celeste Roseberry-McKibbin, Kenneth G. Shipley, Steven D. Wadsworth
Clinic Director: Deborah J. Davis

Bette J. Baldis
M. N. Hegde
Karen M. Jensen
Paul W. Ogden
Ron M. Parker
Celeste Roseberry-McKibbin
Steven D. Wadsworth

Bachelor of Arts Degree Requirements

Communicative Disorders Major	***Units***
Major requirements	**41-44**
Core: CSD 80, 95, 102, 128, 131	(13)
Concentration	(28-31)
Select one:	
Audiology	
CSD 101, 103, 105, 107, 109, 110, 116, 133, 141, 172	(28)
Deaf Education	
CSD 106, 114, 133, 134, 135, 139, 141, 162, 163, 164	(30)
Speech and Language Pathology	
CSD 101, 103, 105, 107, 109, 110, 115, 116, 122, 171, 172	(31)
General Education	**51**
Remaining degree requirements (See *Degree Requirements*); may be courses used to satisfy credential requirements or a minor in another field	**29-32***
Total	**124**

*This figure takes into consideration that CSD 133 may be applied to satisfy a communication sciences and disorders major requirement as well as the requirement for General Education BREADTH, Division 7 (see *General Education*). Consult the department chair or faculty adviser for additional details.

Advising Notes

1. *CR/NC* grading is not permitted for CSD majors for any coursework required in the major, with the exception of specified clinical courses.
2. 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.
3. Students in CSD 110, 160, and other clinical, internship, and student teaching courses are required to show health certification that they are free from tuberculosis and rubella, and to purchase student clinic malpractice insurance for the clinical courses (see the University Speech and Hearing Clinic director for details).

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
Select one of the following:	
Speech Pathology/Audiology	
CSD 80, 95, 101, 102, 109, 133	**18**
Deaf Education	
CSD 80, 133, 134, 135, 139, 141	**18**

Note: With permission of the department chair, substitutions can be made.

Graduate Program

The master's degree is considered essential for the professional training needed for effective clinical practice in deaf education 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. The graduate program is open to students with communicative disorders or related bachelor's degrees who have demonstrated the ability to excel at an advanced level as well as indicated great potential for success in academic work and clinical work. In order to be considered for admission to the graduate program, the applicant needs to submit the following: (1) a minimum GPA of 3.0 in the last 60 units of any coursework and a minimum GPA of 3.0 in CSD coursework; (2) three letters of recommendation; (3) a letter of intent; and (4) Graduate Record Examination (GRE) scores.

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 October 1 for the spring semester and February 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 California State University, Fresno
   - Official GRE scores
2. ***To the Department***
   - Departmental application
   - Official transcripts from all universities attended. (California State University, Fresno students may supply the unofficial transcripts issued by Admissions and Records.)
   - Official GRE scores
   - Three letters of recommendation. These letters should be written by instructors or other persons familiar with communicative disorders.

The departmental application, including information about the letter of intent, and letter of recommendation forms are available from the department. 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. California State University, 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 CSD 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 CSD 200.

Statistics. Any 3-unit, one semester statistics course (lower division, upper division, or graduate level) is required to complete the Master of Arts in Communicative Disorders. Students are encouraged to take the course during their senior year. Exceptions may be made with the consent of their faculty adviser.

Grade Requirements. To be eligible to receive the master's degree, a student must have maintained a ***B*** average with no more than two ***C*** grades on the approved Program of Study. Once a student has received three *C*s at any point in the graduate program, he or she will automatically be disqualified from the graduate program.

Master of Arts Degree Requirements

Communicative Disorders Major ***Units***

Thesis or Project

Core: CSD 200, 201, 202 9
Specialization (select one) 21
Deaf Education
CSD 232, 261, 262, 263, 264, 268 ..... (21)
Speech-Language Pathology
CSD 204, 206, 207, 210, 213, 214, 216 ..... (21)
Thesis or project 6
Total 36

Comprehensive Examination

Core: CSD 200, 201, 202 9
Specialization (select one) 21
Deaf Education
CSD 232, 261, 262, 263, 264, 268 ..... (21)
Speech-Language Pathology
CSD 204, 206, 207, 210, 213, 214, 216 ..... (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.

Student Teaching and Internship. Students are required to take their final student teaching and internship (e.g. CSD 257, 258, 267, 268) during the last two semesters of their approved Program of Study and within the last 12 units of graduate coursework. Earlier final student teaching and internships are not permitted in the Communicative Sciences and Disorders Department.

Thesis, Project, and Non-Thesis or Project Alternatives. A limited number of students may be permitted to undertake a thesis or project, depending on availability of the faculty committee members. Selection of students for these assignments is determined by their consistent demonstration of academic superiority in coursework and evidence of outstanding writing skills and research papers. Six units of credit are earned for a thesis or project. These units may be applied toward the unit requirements of the degree. (See *Criteria for Thesis and Project.*) Students considering a thesis or project need to consult the faculty very early in the graduate program. Selecting a thesis or project option is recommended for students who may at some point consider working toward a doctoral degree. Students who do not participate in a thesis or project complete written and oral comprehensive examinations.

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 250 of these hours must be at the graduate level. These hours are gained at the University Speech and Hearing Clinic and in at least two other settings (internship, student teaching, residency program, etc.).

Culminating Experience. A culminating experience is required of all California State University, 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 specific areas of the field, as approved by an adviser, 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. Completion of the master's degree fulfills all the academic and clinical practicum requirements for the Certificate of Clinical Competence (CCC) in Speech Pathology. A Clinical Fellowship Year (CFY) of paid, professional supervised experience is required along with passing the National Examination in Speech Pathology (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. The master's degree fulfills all academic and clinical practicum requirements for the State License. A year of paid 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 deaf education, 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 deaf and hard-of-hearing children. All students are encouraged to acquire national certification.

Credentials

Two major school credentials for employment are available through the Department of Communicative Sciences and Disorders. Students majoring in speech-language pathology complete their Clinical Rehabilitative Services Credential before they work as speech-language pathologists with individuals and/or small groups in one or several schools. Speech-language pathology students accepted into the graduate program in the fall of 1994 or thereafter must complete the master's degree before they are issued the Clinical Rehabilitative Services Credential.

Students majoring in deaf education have a choice of completing the Special Education Specialist: Communication Handicapped Credential (Deaf and Severely Hard-of-Hearing) with or without the master's degree in communicative disorders. They are trained to teach classes of deaf and hard-of-hearing children.

Information regarding the two credentials is available from departmental credential advisers and the School of Education and Human Development.

Special Education Specialist: Communication Handicapped Credential

Deaf and Severely Hard-of-Hearing

	Units
Core: CSD 80, 95, 102, 106, 114, 128 and 131 (concurrently)	19
Deaf Ed core: CSD 133, 134, 135, 139, 141, 162, 163, 164, 202, 261, 262, 263, 264	39
Clinical core: CSD 160 or 260 (1-6 units); CSD 258 (4-9 units); CSD 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
	93-103

*See requirements for the Student Teaching Multiple Subject Credential — School of Education and Human Development.

Clinical Rehabilitative Services Credential

Language, Speech, and Hearing Services

	Units
Generic courses: CSD 80, 95, 101, 102, 103, 105; 107 and 110 (concurrently), 109, 115, 116; 122, 128 and 131 (concurrently), 171, 172; Psych 101	47
Advanced Specialization in Language, Speech, and Hearing: CSD 200, 201, 202, 204, 206, 207, 210, 213, 214, 216	30
Clinical core: CSD 257 (4-9 units), 209 (1 unit), 130 or 230 (10-15 units), 150 or 250 (5 units)	20-30
	97-107

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 Sciences and Disorders (CSD)

80. Introduction to Human Communication and Disorders (3)
An overview of speech, language and hearing, and disorders of communication; interrelations among audiology, deaf education, and speech-language pathology. (Formerly C D 80)

95. Introduction to Speech and Language Development (3)
Study of normal verbal development; compilation of developmental milestones in speech and language acquisition. (Formerly C D 95)

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) (Formerly C D 90; C D 101)

102. Anatomy and Physiology of Speech and Hearing (3)
Anatomic and physiologic bases of the speech and hearing mechanisms. (Formerly C D 102)

103. Speech and Hearing Science (3)
Physiological acoustics, psychoacoustics, acoustic phonetics, and perception of speech. (2 lecture, 2 lab hours) (Formerly C D 103)

105. Disorders of Articulation (3)
Prerequisites: CSD 80, 95, 101, 102. Seminar on the assessment and treatment of articulation and phonological disorders. (2 lecture, 2 lab hours) (Formerly C D 105)

106. Written Language Skills for Deaf Children (3)
Prerequisite: Engl 1. Comparative analysis of the structure of written language of normally developing and language handicapped children. (Formerly C D 106W; C D 106)

107. Observation in Speech-Language Pathology (1-3; max total 3)
Prerequisites: CSD 80, 95, 101, 102, 103, 105; corequisite: CSD 110. Observation of assessment, treatment, parent counseling, and other clinical services in the University Speech and Hearing Clinic. (Formerly C D 107)

109. Disorders of Language in Children (3)
Prerequisites: CSD 80, 95, 101, 102. Language disorders in children and adolescents; description of clinical subgroups; assessment and treatment. (2 lecture, 2 lab hours) (Formerly C D 109)

110. Diagnostic Procedures (3)
Prerequisites: CSD 80, 95, 101, 102, 105. Corequisite: CSD 107 (1 unit). Principles and procedures of diagnostic evaluation of communicative disorders. (2 lecture, 2 lab hours) (Formerly C D 110)

113. Introduction to Birth Defects (3)
Genetic and non-genetic syndromes and their implications for the health professional; newborn and carrier screening, prenatal diagnosis, genetic counseling, and ethical considerations. (Formerly C D 113)

114. Education of Exceptional Children (3)
Characteristics of exceptional children; diagnostic and instructional programs; legal and certification issues; observation. (2 lecture, 2 lab hours) (Formerly C D 114)

115. Disorders of Fluency and Voice (3)
Prerequisites: CSD 80, 95, 101, 102. Normal and deviant vocal productions; introduction to assessment and treatment principles in voice. Foundational principles of analysis, measurement, and management of fluency disorders in children and adults. (Formerly C D 115)

116. Treatment Procedures in Communicative Disorders (3)
Prerequisite: CSD 105. Treatment procedures that apply across disorders of communication; developing client-specific treatment programs. (2 seminar, 2 lab hours) (Formerly C D 116)

122. Communicative Disorders in Multicultural Populations (3)
Prerequisites: CSD 80, 95, 101, 105. Differentiation between speech-language differences due to cultural and linguistic variables and underlying speech-language disorders in culturally and linguistically diverse clients. Current research in specific diagnosis and remediation techniques for children and adults. Application to case studies.

128. Observation in Audiology (1-3; max total 3)
Corequisite: CSD 131. Observation of audiologic testing. (Formerly C D 128)

130. Clinical Practice in Speech-Language Pathology (1-6; max total 24)
Prerequisites: CSD 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. ***CR/NC*** grading only. (Lab fee, $10) (Formerly C D 130)

131. Principles of Audiology (3)
Prerequisite: CSD 102; corequisite: CSD 128. Hearing loss and its medical aspects; introduction to hearing conservation; assessment of hearing loss; interpretation of diagnostic test results. (Formerly C D 131)

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. (Formerly C D 133)

134. American Sign Language II (3)
Prerequisite: CSD 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. (Formerly C D 134)

135. Sign Language for Classroom Use (3)
Prerequisites: CSD 133, 134. Signing skills necessary to teach and communicate with deaf and hard-of-hearing children in a classroom. (Formerly C D 135)

Professionals in communicative sciences are devoted to providing rehabilitative and educational services to children and adults with communicative disorders.

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. (Formerly C D 108; C D 137; C D 139)

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. (Formerly C D 108; C D 137; C D 141)

150. Clinical Practice in Audiology (1-6; max total 24)
Prerequisites: CSD 80, 95, 101, 102, 103, 128, 131. Supervised clinical practice in the diagnosis and management of hearing problems. ***CR/NC*** grading only. (Lab fee, $10) (Formerly C D 150)

160. Clinical Practice in Deaf Education (1-6; max total 12)
Prerequisites: CSD 135, 162, 163, 164. Supervised clinical participation and practice in teaching persons who are deaf and severely hard-of-hearing; parent counseling; on- or off-campus clinical sites. ***CR/NC*** grading only. (Lab fee, $10) (Formerly C D 160)

162. Speech for Deaf and Hard-of-Hearing Children (3)
Prerequisites: CSD 80, 95, 106, 133, 134; corequisite: CSD 135. Seminar on techniques to develop speech in deaf and hard-of-hearing children; observation, demonstration, and practice with deaf and hard-of-hearing children. (Formerly C D 162)

163. Language for Deaf and Hard-of-Hearing Children (3)
Prerequisites: CSD 80, 95, 106, 133, 134; corequisite: CSD 135. Teaching techniques to develop language in deaf and hard-of-hearing children; construction of English sentences and grammar; comparative studies of various language curricula. (Formerly C D 163)

164. Elementary School Subjects for Deaf and Hard-of-Hearing Children (3)
Prerequisites: CSD 80, 95, 106, 133, 134; corequisite: CSD 135; and permission of instructor. The process of teaching reading to deaf and hard-of-hearing children; observation and demonstration. (2 lecture, 2 lab hours) (Formerly C D 164)

171. Professional Writing in Communicative Sciences and Disorders (3)
Prerequisites: CSD 105 and 109, or 162 and 163. Principles of clinical and scientific writing in communicative disorders; exercises in writing professional and scientific reports. (Formerly C D 171)

172. Neural Bases of Speech, Language, and Hearing (3)
Prerequisites: CSD 80, 95, 101, 102. Neuroanatomical and neurophysiological bases of speech, language, and hearing; clinical implications of neuropathology. (Formerly C D 172)

188T. Topics in Communicative Sciences and 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. (Formerly C D 188T)

190. Independent Study (1-3; max total 6)
See *Academic Placement — Independent Study*. (Formerly C D 190)

GRADUATE COURSES

(See *Course Numbering System*.)

Communicative Sciences and Disorders (CSD)

200. Graduate Studies and Research in Communicative Sciences and Disorders (3)
Introduction to graduate studies and methods of research in communicative disorders; concepts and methods of sci-

ence and clinical research designs; graduate level professional and scientific writing skills. (Formerly C D 200)

201. Interviewing and Counseling in Communicative Sciences and 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. (Formerly C D 201)

202. Aural Rehabilitation (3)
Prerequisites: CSD 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) (Formerly C D 202)

203. Hearing Aids I (3)
Prerequisite: CSD 202. Electroacoustic analysis of amplification systems; identification, evaluation, and management of the candidate for amplification. (2 lecture, 2 lab hours) (Formerly C D 203)

204. Seminar in Stuttering (3)
Prerequisite: permission of instructor. Research on stuttering in children and adults; assessment and treatment procedures. (Formerly C D 204)

206. Seminar in Phonological Disorders (3)
Prerequisites: CSD 95, 101, 105, 107, 110. Phonological and articulatory processes and disorders in first and second language production; assessment and treatment procedures. (Formerly C D 206)

207. Seminar in Neurogenic Language Disorders (3)
Prerequisite: CSD 172. Demography, etiology, and symptomatology of aphasia, traumatic brain injury, and dementia; medical and communication assessment; treatment and treatment efficacy research. (Formerly C D 207)

209. Speech-Hearing in Public School Environment (1)
Corequisite: CSD 257. 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. (Formerly C D 209)

210. Seminar in Communicative Disorders with Orofacial Anomalies (3)
Prerequisite: permission of instructor. Etiology and symptomatology of cleft palate and other orofacial syndromes in children; medical and communication assessment and treatment procedures. (Formerly C D 210)

213. Seminar in Motor Speech Disorders and Dysphagia (3)
Prerequisites: CSD 102, 172. Etiology and symptomatology of apraxia, dysarthia, and dysphagia; assessment and treatment. (Formerly C D 213)

214. Seminar in Language Disorders of Infants and Toddlers (3)
Prerequisites: CSD 95, 109. Etiology, symptomatology, assessment, and habilitation of language disorders in infants and toddlers. (Formerly C D 214)

216. Seminar in Voice Disorders (3)
Information addressing significant clinical, theoretical, and scientific issues in the study, diagnosis, and treatment of voice disorders in children and adults. Presentation of case studies. Analysis of current research.

230. Advanced Clinical Practice in Speech-Language Pathology (1-6; max total 24)
Prerequisites: CSD 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. ***CR/NC*** grading only. (Lab fee, $10) (Formerly C D 230)

231. Audiology II (3)
Prerequisites: CSD 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) (Formerly C D 231)

232. Seminar in Pediatric Audiology (3)
Evaluation and management of children with auditory disorders. (Formerly C D 232)

233. Seminar in Amplification II (3)
Prerequisites: CSD 203 and permission of instructor. Advanced topics and special considerations related to rehabilitation through amplification. (Formerly C D 233)

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) (Formerly C D 234)

235. Seminar in Instrumentation in Communicative Sciences and 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) (Formerly C D 235)

240. Assessment (3)
Prerequisites: CSD 172 and permission of instructor. Electrocochleography, auditory brainstem response, middle latency response, and electronystamography. (Formerly C D 240)

250. Advanced Clinical Practice: Audiology (1-6; max total 24)
Prerequisites: CSD 103, 128, 131, graduate standing and permission of instructor. Supervised clinical practice in diagnosis and management of hearing problems. ***CR/NC*** grading only. (Lab fee, $10) (Formerly C D 250)

257. Student Teaching: Speech-Language Pathology (4-9; max total 9)
Prerequisites: 5-15 units of CSD 130 or 230, including 150 supervised clinical hours; admission to the credential program; corequisite: CSD 209. Directed observation, participation, and clinical practice (100 hours minimum) under supervision. ***CR/NC*** grading only. (Formerly A S 164A; C D 164A; CSD 164A)

258. Student Teaching: Deaf and Hard of Hearing (4-9; max total 9)
Prerequisites: 4 units of CSD 160 or 260; approval by departmental review committee; admission to the credential program. Teaching under supervision in a class for deaf or hard-of-hearing children. Directed observation, participation, and weekly conference with university supervisor. ***CR/NC*** grading only. (Formerly C D 164B; CSD 164B)

259. Student Teaching: Audiology (5-15; max total 15)
Prerequisites: 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. *CR/NC* grading only. (Formerly C D 164C; CSD 164C)

260. Advanced Clinical Practice: Deaf Education (1-6; max total 12)
Prerequisites: CSD 135, 162, 163, 164. Supervised clinical participation and practice in teaching people who are deaf and severely hard-of-hearing; parent counseling; on- and off-campus clinical sites. *CR/NC* grading only. (Lab fee, $10) (Formerly C D 260)

261. Instructional Technology with Deaf and Hard-of-Hearing Children (3)
Principles, analysis, assessment techniques, and implementation of instructional technology for teaching deaf and hard-of-hearing students. Includes computer-based approaches for teaching deaf and hard-of-hearing individuals. (2 lecture, 2 lab hours) (Formerly C D 261)

262. Seminar in Speech for Deaf and Hard-of-Hearing Children (3)
Prerequisites: CSD 162, 202, permission of instructor, and successful completion of the Multiple Subjects Assessment for Teachers (MSAT) and tests for Content Knowledge and Content Area Exercises 1 and 2 or a Single or Multiple Subject Credential. Methods to develop oral communication for deaf and hard-of-hearing children; demonstration and off-campus practicum. (2 lecture, 2 lab hours) (Formerly C D 262)

263. Seminar in Language for Deaf and Hard-of-Hearing Children (3)
Prerequisites: CSD 163, permission of instructor, and successful completion of the Multiple Subjects Assessment for Teachers (MSAT) and tests for Content Knowledge and Content Area Exercises 1 and 2 or a Single or Multiple Subject Credential. Language problems of deaf and hard-of-hearing children; techniques of remediation; use of specialized equipment and development of teaching materials. (2 lecture, 2 lab hours) (Formerly C D 263)

264. Seminar in Elementary School Subjects for Deaf and Hard-of-Hearing Children (3)
Prerequisites: CSD 164 and successful completion of the Multiple Subjects Assessment for Teachers (MSAT) and tests for Content Knowledge and Content Area Exercises 1 and 2 or a Single or Multiple Subject Credential. Special problems and techniques of adapting elementary school curriculum to the needs of deaf and hard-of-hearing children; demonstration and practice. Project required. (Formerly C D 264)

267. Internship in Speech-Language Pathology (1-6; max total 24)
Prerequisites: 5-15 units of CSD 130 or 230 and permission of instructor. Supervised internship in speech-language pathology; diagnosis and management of communicative disorders. *CR/NC* grading only. (Formerly C D 267)

268. Internship with Deaf Children (6)
Prerequisites: CSD 135, 258, 261, 262, 263, 264, and successful completion of the Multiple Subjects Assessment for Teachers (MSAT) and tests for Content Knowledge and Content Area Exercises 1 and 2 or a Single or Multiple Subject Credential. Supervised internship in a residential school for deaf children. Full time in residence for 8 weeks. *CR/NC* grading only. (Formerly C D 268)

269. Internship in Audiology (1-6; max total 24)
Prerequisites: CSD 203, 231, 232 and permission of instructor. Supervised internship involving diagnosis and management of audiologic conditions. *CR/NC* grading only. (Formerly C D 269)

270. Seminar in Organization and Management of Speech, Language, and Hearing Clinics (1-3; max total 3)
Prerequisite: permission of instructor. Establishing, organizing, and maintaining speech, language, and hearing clinics. (Formerly C D 270)

290. Independent Study (1-3; max total 6)
See *Academic Placement — Independent Study*. Approved for *SP* grading. (Formerly C D 290)

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. (Formerly C D 298)

299. Thesis (2-6; max total 6)
Prerequisite: See *Criteria for Thesis and Project.* Preparation and submission of a thesis. Approved for *SP* grading. (Formerly C D 299)

IN-SERVICE COURSE

(See *Course Numbering System.*)

Communicative Sciences and Disorders (CSD)

300T. Selected Topics in Communicative Sciences and Disorders for Continuing Education (1-3; max total 6)
(Formerly C D 300T)

Computer Science

School of Engineering
Department of Computer Science
WALTER READ, *Chair*
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(209) 278-4373
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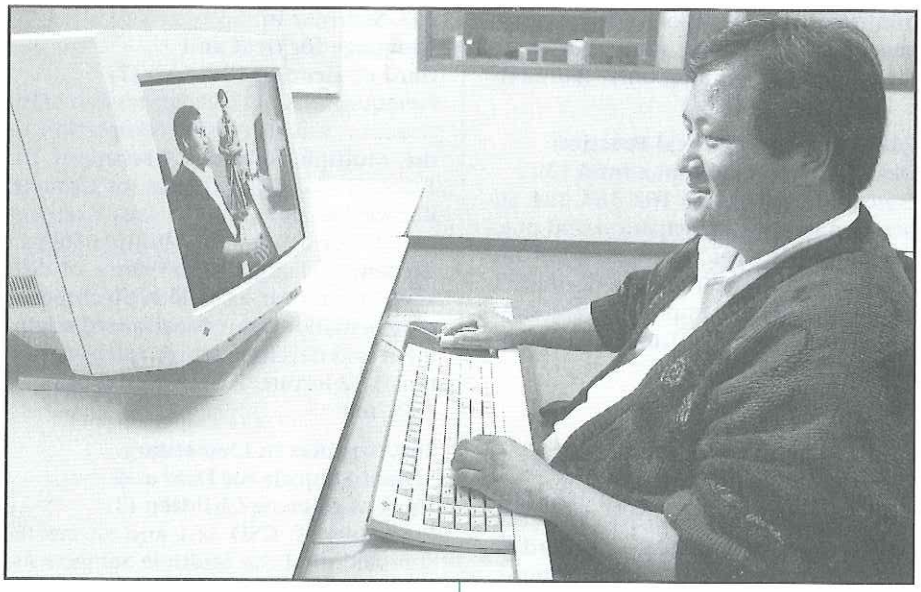
B.S. in Computer Science
M.S. in Computer Science
Minor in Computer Science



Computer science is applied reasoning using both art and science: It requires the ability to communicate ideas through a combination of language and powerful technology. It is concerned with the interaction of man and machine, and man's conquest of the future through continuing developments in the application of computers to a myriad of common and specialized problems.

The goal of the Department of Computer Science is to offer programs to a diverse audience: (1) students interested primarily in computing, (2) students interested primarily in applying computing to some other field of study, and (3) students who wish to include computing as part of their general education.

Faculty and Facilities

The faculty members who support this program come from a variety of areas including computer systems and architecture, theoretical computer science, program-ming 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 8530 and a Macintosh IIci microcomputer laboratory for lower-division courses; Sun Micro-systems, SGI, 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 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.

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 Programming Contest.

Computer science majors who have a distinguished academic record in computer science are invited to join Upsilon Pi Epsilon, the 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.

Administrative Academic Probation. A minimum Grade Point Average (GPA) of 2.0 must be maintained in all courses taken in the School of Engineering. Students who fail to maintain a 2.0 GPA in courses within their major may be placed on administrative academic probation. Failure to eliminate the grade point deficiency could result in disqualification from the School of Engineering.

Bachelor of Science Degree Requirements

Computer Science Major	***Units***
Major requirements	55-59
C Sci 40, 41, 60, 112, 115, 117, 119, 144	(28)
Select five courses from the following	(15-17)
C Sci 124, 134, 150, 154, 156, 164, 172, 174, 176, 186, 191T	
Complete 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	
C Sci 156-ECE 146	
C Sci 164-166	
C Sci 172-173	
C Sci 176-177	
C Sci 186-188	
C Sci 191T, 198 or complete a fourth sequence	(3)
Additional requirements	23
C Sci 1 or Phil 25 or Phil 45	(3)
Math 75, 76	(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	0-5
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 1, 60, 72, or upper-division courses. At least 6 of the 20 units must be upper division.

Suggested minor sequences (after completion of C Sci 40, 41):

Artificial Intelligence:	C Sci 60, 112, 117, 164, 166
Computer Architecture:	C Sci 112, 113A, 176, 177
Computer Graphics:	C Sci 112, 172, 173
Computer Languages:	C Sci 60, 112, 115, 117, 134
Database Emphasis:	C Sci 60, 115, 124, 126, 144
Scientific Computation:	C Sci 60, 112, 154*, 172*
Secondary Teaching:	C Sci 60, 101, 112, 113A, 117
Software Engineering:	C Sci 60, 112, 115, 150, 152
System Software:	C Sci 112, 113A, 144, (146 or 148)
Theory of Computation:	C Sci 60, 119, 174, 186, 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 may hold an acceptable bachelor's degree in any field of study and must submit Graduate Record Examination (GRE) scores.

To attain classified standing at the time of admission, an applicant must:

1. have a minimum grade point average of 2.75 in the last 60 units and
2. have completed the following undergraduate prerequisite courses or equivalents with a minimum grade point average of 3.0: C Sci 40, 41, 60, 112, 113A, 115, 117, 119, 144, Math 75, 76, and two additional C Sci courses numbered over 120.

Applicants who do not meet the requirements 1 and 2 above may be admitted to conditionally classified standing to complete the remaining prerequisites at California State University, Fresno. Approved coursework up to a maximum of 10 units of the 30 units required for the M.S. degree can be taken concurrently with prerequisite courses by a student with conditionally classified standing.

To attain classified standing from conditionally classified standing, a student must complete the remaining prerequisite courses with a minimum grade point average of 3.0 and have earned a minimum grade point average of 3.0 in all coursework taken toward the M.S. degree in Computer Science.

(See also *Graduate Studies*)

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 or 188, 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. PC (Windows) environment. (2 lecture, 2 lab hours) (Computer lab fee, $15)

7. Computer Literacy (3)
Overview of the history of computing, a presentation of the components of computer hardware and software systems, a study of applications, programming, electronic mail, societal impact, and the future of computing. Macintosh environment. (2 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)
Prerequisites: 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)
Prerequisites: 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; a high-level programming language. 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)
Prerequisites: 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; Internet and World Wide Web; introduction to computer languages. (2 lecture, 2 lab hours)

105T. Workshop on Computer Languages (1-3; max total 6)
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)
Prerequisites: 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)
Prerequisites: C Sci 41, 60, 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)
Prerequisites: 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.

126. Database Systems (3)
Prerequisite: C Sci 115. Database concepts; hierarchical, relational, and network models. Data normalization, data description languages, data manipulation languages, and query design.

134. Compiler Design (3)
Prerequisites: C Sci 112, 115, 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.

136. Compiler Construction (3)
Prerequisite: C Sci 134. Advanced topics in compiler design. Type checking. Runtime storage management. Intermediate code generation. Interpreters. Error recovery techniques. Code generation and optimization.

144. Introduction to Operating Systems (3)
Prerequisites: 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)
Prerequisites: 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.

148. Systems Programming (3)
Prerequisites: 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 software systems. Team programming. (2 lecture, 3 lab hours)

152. Software Engineering (4)
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. (3 lecture, 3 lab hours)

154. Simulation (3)
Prerequisites: 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 protocol stacks. (2 lecture, 3 lab hours)

164. Artificial Intelligence Programming (3)
Prerequisite: C Sci 117. Introduction to problem-solving methods from artificial intelligence. Production systems. Knowledge-based systems. Machine learning. Topics chosen from fuzzy logic, neural network models, genetic algorithms. Verification, validation, testing.

166. Principles of Artificial Intelligence (3)
Prerequisite: C Sci 164. Analysis of knowledge-based and neural models, including self-organization, sequential learning models, neurally inspired models of reasoning and perception. Integration of different paradigms.

172. Computer Graphics (4)
Prerequisites: Math 76, C Sci 41. Hardware devices, raster graphics, device in dependence, 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)
Prerequisites: 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.

176. Parallel Processing (4)
Prerequisites: 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)
Prerequisites: 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. Context-free grammars, context-sensitive grammars, unrestricted grammars, graph grammars, and rewriting systems; properties of context-free languages, push-down automata.

188. Introduction to Computability (3)
Prerequisite: C Sci 119. Introduction to computability and complexity. Turing machines, recursive functions, reduction, undecidability, classes P and NP, and intractable problems.

190. Independent Study (1-3; max total 6)
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)
Prerequisites: 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: classified standing in computer science. Orientation to the graduate program, introduction to research methodology, and discussion of possible project and thesis topics.

213. Computer Organization (3)
Prerequisites: 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)
Prerequisites: C Sci 124, 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. 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; max total 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 for credit with different topics)

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; 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 11 full-time faculty members whose expertise includes numerous specialties in the criminal justice system, including corrections, counseling, victimology, juvenile delinquency, theory, legal studies, supervision and management, and criminal justice administration. 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, California Youth Authority, 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
Candice A. Skrapec
Harvey Wallace
Arthur V. N. Wint

Bachelor of Science Degree Requirements

Criminology Major ***Units***

Criminology — Corrections Option Major 43
Lower-division requirements: (see *Note 1*): Crim 2, 20, 31, 50 ..... (12)
Upper-division core (see *Note 2*): Crim 100, 102, 109, 112, 170 (see *Note 6*) ..... (13)
Upper-division requirements: Crim 118, 130, 134, 181 ..... (12)
Crim electives: Crim 113, 117, 120, 126, 127, 131, 136T, 139, 140, 141, 153, 160T, 174, 175, 176, 177, 190 ..... (6)

Criminology — Law Enforcement Option Major 43
Lower-division requirements: (see *Note 1*): Crim 2, 20, 31, 50 ..... (12)
Upper-division core (see *Note 2*): Crim 100, 102, 109, 112, 170 (see *Note 6*) ..... (13)
Upper-division requirements: Crim 113, 117, 127, 108 or 180 ..... (12)
Crim electives: Crim 118, 120, 126, 130, 131, 134, 136T, 139, 140, 141, 153, 160T, 174, 175, 176, 177, 190 ..... (6)

Criminology — Victimology Option Major 43
Lower-division requirements: (see *Note 1*): Crim 2, 20, 31, 50 .. (12)
Upper-division core (see *Note 2*): Crim 100, 102, 109, 112, 170 (see *Note 6*) ..... (13)
Upper-division requirements: Crim 134, 174, 175, 177, 182 ..... (15)
Electives: Af Am 135, 144, 146; Anth 122, 123, 146, 172; AsAm 110; CLS 116, 160; Crim 139, 140; EHD 107, 108, 109; Hist 186; Pl Si 150, 160, 181; S Wrk 128, 129, 136; Soc 111, 122, 165; W S 108, 109, 116, 126, 160 ..... (3)

General Education 51
Electives and remaining degree requirements 34
(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, 131, 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.
9. Only a grade of *C* or higher in Crim 20, 100, 102, 109, 112, and 170 will apply to the major in criminology.

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 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 Fresno State 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:

1. Theory ***Units***
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)

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; and the critical role of communication, including verbal, nonverbal and written communication.

50. Statistical and Computer Applications in Criminal Justice (3)
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.

100. Criminology (3)
Graduating criminology seniors have first priority; other students may receive priority status by permission of instructor. 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)
Graduating criminology seniors have first priority; other students may receive priority status by permission of instructor. 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: 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. ***CR/NC*** grading only. (Minimum of 6 field hours per unit.)

109. Comparative Systems of Criminal Justice (3)
Graduating criminology seniors have first priority; other students may receive priority status by permission of instructor. 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 (1)
Graduating criminology seniors have first priority; other students may receive priority status by permission of instructor. 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. Graduating criminology seniors have first priority; other students may receive priority status by permission of instructor. Advanced study of scientific crime investigation, identification, and detection methods.

117. Criminal Legal Process (3)
Prerequisite: Crim 20. Graduating criminology seniors have first priority; other students may receive priority status by permission of instructor. 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. Graduating criminology seniors have first priority; other students may receive priority status by permission of instructor. 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. Graduating criminology seniors have first priority; other students may receive priority status by permission of instructor. 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.

130. Corrections in America (3)
A survey of corrections in America. The history and philosophy of correctional thought and practice. Special attention given to adult and juvenile treatment, jails, prisons, probation, parole and community corrections, and current issues such as prisoners rights, gender, ethnicity, and overcrowding.

131. Correctional Institution Visitations (1-3; max total 3)
The opportunity to visit, examine, and investigate various correctional institutions within the state of California. Visitations will be mandatory. *CR/NC* grading only.

134. Criminal Justice Counseling (3)
Graduating criminology seniors have first priority; other students may receive priority status by permission of instructor. An overview of counseling modalities and counseling techniques in criminal justice settings.

136T. Topics in Criminology (1-3; max total 12 if no topic repeated)
Analysis of selected areas of criminology; deviant behavior; institutional and non-institutional treatment; corrections; administration and management; law enforcement; criminalistics.

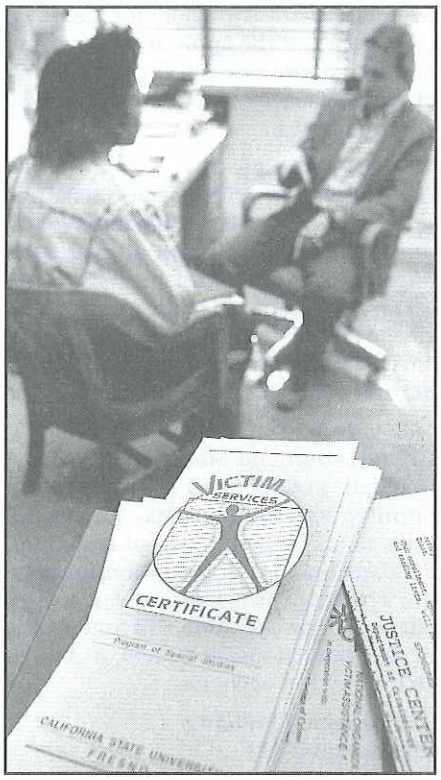
139. Criminal Justice Counseling Skills Practicum (3)
Prerequisite: Crim 134. An experiential course designed to teach students essential skills in structuring counseling sessions with offenders. Emphasis on listening, validation, empathy, interviewing, probing, concreteness, self-disclosure, summarizing, confrontation, goal-setting, taking action, closure, and resistance.

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. Graduating criminology seniors have first priority; other students may receive priority status by permission of instructor. 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)
Graduating criminology seniors have first priority; other students may receive priority status by permission of instructor. 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. Includes an examination of victim service organizations.

176. Victim Services (3)
Graduating criminology seniors have first priority; other students may receive priority status by permission of instructor. 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. Graduating criminology seniors have first priority; other students may receive priority status by permission of instructor. 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. Prerequisites: permission of instructor and sponsoring agency. Graduating criminology seniors have first priority; other students may receive priority status by permission of instructor. 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. Prerequisites: Crim 130, permission of instructor and sponsoring agency. Graduating criminology seniors have first priority; other students may receive priority status by permission of instructor. 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)
Open only to criminology majors. Prerequisites: Crim 175 and permission of instructor and sponsoring agency. Graduating criminology seniors have first pri-

ority; other students may receive priority status by permission of instructor. 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 total 6)
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 the Criminal Justice System (3)
Prerequisite: Crim 117 or 118. The nature and philosophy of law; the common law tradition and our judicial system; the role of legislation and rules of statutory interpretation; Constitutional Law concepts and their applications in the Criminal Justice System; the rights and liabilities of criminal justice personnel; legal research including the use of Lexis.

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)
Prerequisites: 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)
Prerequisites: 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)
Prerequisites: 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)
Prerequisites: 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)
Prerequisites: 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 total 6)
See *Academic Placement — Independent Study*. Approved for ***SP*** grading.

292. Readings in Criminology (1-3; max total 3)
Prerequisites: 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)
Prerequisites: 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)
Prerequisites: 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; max total 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.

Economics

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
Minor in International Political Economy

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 department 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 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 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 prerequisites for most upper-division courses in economics. 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

International Political Economy Minor

International political economy is the systematic inquiry into the political and economic forces generating wealth and social change on a global scale. As an interdisciplinary program it is administered from two departments: Political Science and Economics. Students who desire a greater understanding of the complex political and economic interactions of nations are encouraged to learn more about this program by consulting with a faculty adviser in either department.

	Units
Political Science	
Pl Si 120	3
Electives*	6
Select from: Pl Si 121, 125, 126, 128T, 140, 141, 142T, 143T, 144T, 145T, 146T, 149T	
Economics	
Electives**	9
Select from: Econ 109, 114, 161, 178, 179, 180, 181, 182, 185, 190	
Total	18

* Pl Si 1 or 2 may be listed as a prerequisite for some of these courses.

** Econ 40 and 50 are prerequisites for some of these courses.

Advising Note for Minors

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)
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)
Prerequisites: 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.

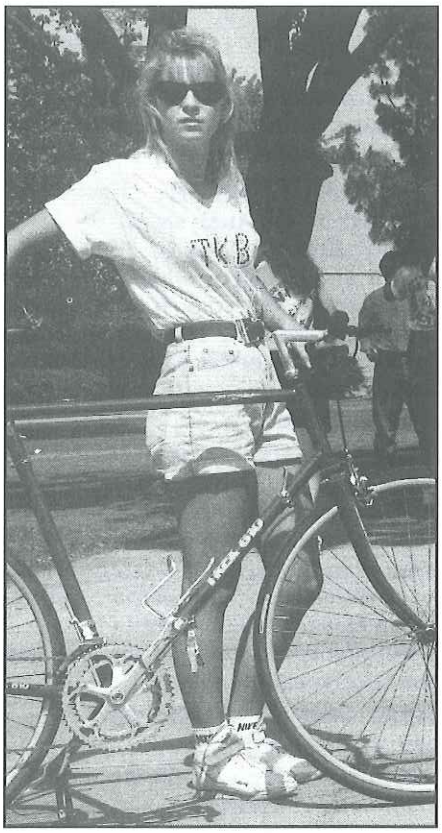
100B. Economic Theory: Macroeconomic Analysis (3)
Prerequisites: Econ 40, 50. An examination of classical, Keynesian and post-Keynesian theories of the determination of the levels of income, output, and employment; the scientific and ideological implications of Keynesian thought; and the theoretical foundations of contemporary monetary and fiscal policies.

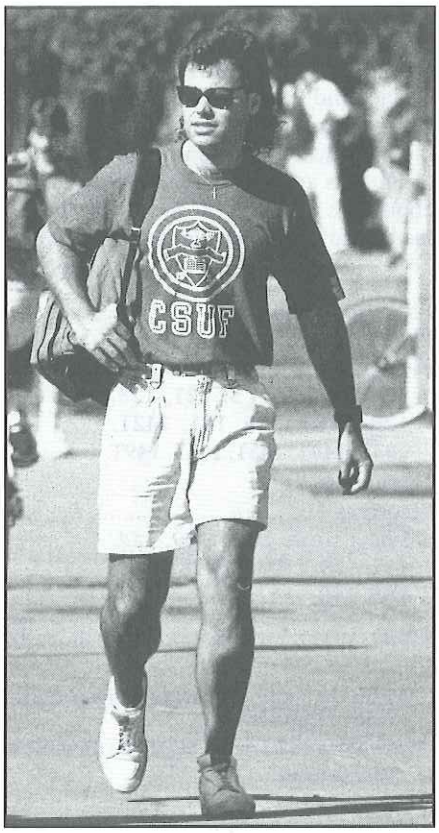
101. History of Economic Thought (3)
Prerequisites: Econ 40, 50. Evolution of economics as a science; doctrines of different schools of thought — Mercantilists, Physiocrats, Historical School, Classical Economists; contributions of outstanding economists.

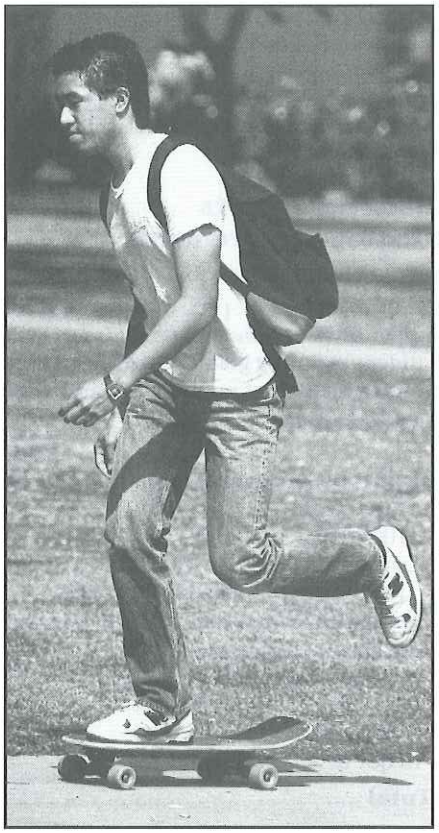
102W. Explorations in Economic Literature (3)
Prerequisites: Econ 40, 50; satisfactory completion (*C* or better) of the Engl 1 graduation requirement; upper-division standing. An investigation into important economic ideas and issues through selected readings of either contemporary literature or classics in the history of economic thought or both. The class is conducted as a seminar with emphasis on student contributions. 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)
Prerequisites: 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)
Prerequisites: 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)
Prerequisites: 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)
Prerequisites: 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)
Prerequisites: 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)
Prerequisites: 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)
Prerequisites: 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)
Prerequisites: 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)
Prerequisites: 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)
Prerequisites: 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)
Prerequisites: 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)
Prerequisites: 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)
Prerequisites: 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)
Prerequisites: 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)
Prerequisites: 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)
No prerequisites. 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)
Prerequisites: 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)
Prerequisites: 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)
Prerequisites: Econ 40, 50. International economic relations; problems and policies in the light of fundamental economic theory.

179. International Political 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)
Prerequisites: 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)
Prerequisites: 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)
Prerequisites: 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)
Prerequisites: 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)
Prerequisites: 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 total 6)
See *Academic Placement — Independent Study*. Approved for ***SP*** grading.

IN-SERVICE COURSE

(See *Course Numbering System.*)

Economics (Econ)

365T. Economics for Teachers (1-6; max total 12)

School of Education and Human Development
BARBARA G. BURCH, *Dean*
Education Building, Room 210
(209) 278-0210

ROBERT H. MONKE, *Associate Dean*
Education Building, Room 205
(209) 278-0205

BERTA GONZALEZ, *Associate Dean*
Education Building, Room 205
(209) 278-0209

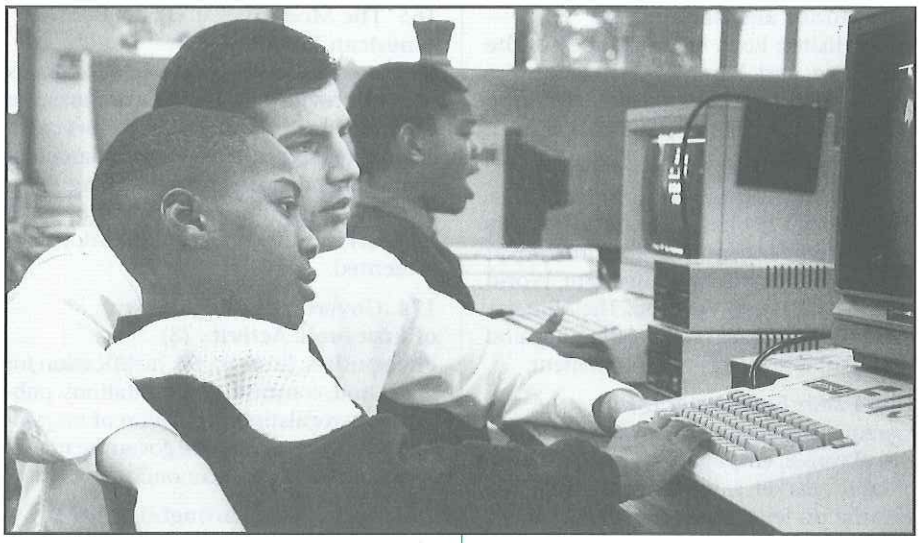
LYNN EILEFSON, *Director of Advancement*
Education Building, Room 236
(209) 278-0249

THERESA PEREZ, *Coordinator*
DAVID LOPEZ, *Adviser*
Multiple Subject Credential Program
(209) 278-0300

JOLYNE DAUGHTRY, *Coordinator*
Single Subject Credential Program
(209) 278-0300

M.A. in Education
Curriculum and Instruction Option

Victim Services Certificate



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.

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. For admission information, contact the Department of Criminology in McKee Fisk 244 (209) 278-2305.

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.

	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 ED 334.

Advancement. 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 for advancement. 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 Advancement program is provided by Lynn Eilefson, director of advancement, in ED 236. For more information, call 278-0249.

The Instructional Technology and Resource Center (INTERESC) provides support to faculty for the utilization and integration of technology in the curriculum. INTERESC staff provide assistance in instructional design required for the preparation and production of instructional materials such as slides, videotapes, multimedia, and other media formats. Center personnel also consult with students, faculty, and staff in selecting computer hardware and software, and audiovisual equipment. This unit also includes a Resource Center which contains print and non-print curriculum materials that are available for both immediate examination and checkout. A Support Services area can be accessed for development of special publications and presentations as well as for volume duplication and reproduction. INTERESC manages all SOEHD computerized classrooms and laboratories and provides technical support for the Human Development Center. Coordination of INTERESC is provided by Otto E. Benavides in ED 481.

The Human Development Center provides support for instruction and also includes specialized services for clientele ranging in age from infant through adult. This center is comprised of two major areas: the Early Childhood Education Center and the Clinic.

- **The Early Childhood Education Center** provides opportunities for students to observe child development and learning processes as well as to participate in the educational processes through supervised laboratory experiences. The clientele include children from low-income families and other children from the local community who are on-site throughout the day.
- **The Clinic** provides laboratory space in support of instruction in counseling, reading, and special education programs. Clientele using this facility receive a variety of special clinical services delivered in one-to-one or small group formats. These services include individual and group testing, special reading instruction, work skills assessment, parenting instruction, and other programs that are focused on unique client needs.

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 ED 205.

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 80 migrant students who are interested in becoming teachers. For more information contact Directors Lilly Lomeli or Jose Mejia in the Mini Corps Office located in ED 461.

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. (Formerly T Ed 50)

101. Peace Education (1-3; max total 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 are explored. 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)
Not open to students with credit in EHD 110BC. Prerequisites: admission to Multiple Subject Program; ERF 130, 140, or concurrent enrollment; CTET 150 and LEE 156M must be taken concurrently, except in Option 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, $7; less than 3 units, $2 per unit) (Formerly T Ed 110)

115. Liberal Studies Senior Project (3)
Prerequisite: senior standing and if planning to enter the Multiple Subject Credential Program, EHD 50 or equivalent. Supervised tutorial in the public schools, working one-on-one with students identified as "at risk" of school failure. A journal, final paper, and other written and oral work 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) (Formerly 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. (Formerly T Ed 155B)

160A. Student Teaching in Elementary School (6)
Not open to students with credit in EHD 160BC. 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) (Formerly T Ed 160A)

160B. Student Teaching in Elementary School (6)
Not open to students with credit in EHD 160BC. 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) (Formerly T Ed 160B)

160C. Student Teaching in Elementary School (12)
Not open to students with credit in EHD 160BC. 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) (Formerly T Ed 160C)

180T. Topics in Education and Human Development (1; max total 9)
Issues and topics in education and human development. (Formerly 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. (Formerly 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. (Formerly 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. (Formerly T Ed 326)

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. (Formerly 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. (Formerly 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). (Formerly 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) (Formerly 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. (Formerly 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. Instruction in all programs emphasizes the development and refinement of the "Reflective, Collaborative Leader" who will make a difference in our increasingly diverse society.

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 38-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 teaching of learning handicapped and severely handicapped students. Persons desiring to work with these unique populations in a school setting (grades K-12) must possess the appropriate Special Education Specialist Credential. The desired specialist credential may be attained by completing one of three program alternatives: a traditional program, an innovative internship program, or a unique program whereby students may attain their Multiple Subject Credential along with the Special Education Specialist Credential. For additional information on the alternative programs, students are urged to inquire at the department office.

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 graduates 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. Since this program is accredited by the Council for Accreditation of Counseling and Related Educational Programs (CACREP), MFCC students are qualified to take the National Certified Counselor Exam upon graduation. This national examination is being used as the written portion of the professional counselor licensing process in more than 35 states.

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 Building, Room 350
(209) 278-0340

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
Credential programs:
Special Education Specialist
- Learning Handicapped
- Severely Handicapped

Special Education Specialist Internship
- Learning Handicapped
- Severely Handicapped

Certificate in Serious Emotional Disturbance

Faculty

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Coordinator of Counselor Education, Juan C. García, (209) 278-0287

Rehabilitation Counseling Adviser/ Coordinator, E.W. "Bud" Stude, (209) 278-0324

Coordinator of Special Education, Landa J. Iverson, (209) 278-0290

Ray E. Brewer
Dana Caseau
Janice A. Chavez
Sari H. Dworkin
Chris D. Erickson
Deanna Evans-Schilling
Leslie J. Farlow
Ronald S. Kiyuna
Louis F. Markert
Robert H. Monke

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.

Application Deadlines

University Admission. University deadlines for graduate admission applications normally are set during the semester prior to anticipated program enrollment. (Deadlines occur during April or May for fall enrollment and October or November for spring enrollment.) The university may extend admission deadlines if anticipated enrollment targets are not met. For specific deadlines, applicants need to check with the Admissions Office, Joyal Administration Public Contact Window, or call 278-6283.

SOEHD Admission. All SOEHD admission materials required for full admission (Classified Standing) are to be submitted to the graduate technician in the Student Services Office, ED 100, no later than 30 days following the deadline for university admission. Students submitting all application material within these timelines will receive priority consideration for admission. For SOEHD admission deadlines, contact the Student Services Office, ED 100, or call 278-0300.

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 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, 242, 249A, 249B.
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 California State University, 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, 173, 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, 211, 213, 214, 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, 213, 214, 220, 221, 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, 190, 218, 228, 290, 298 — must contact and receive permission from the coordinator of special education the semester prior to enrolling in the course.

Certificate in Serious Emotional Disturbance. A Certificate in Serious Emotional Disturbance is an addition to the Learning Handicapped Credential which allows teachers to instruct individuals with serious emotional disturbance. This certificate is recommended by the university and authorized by the California Commission on Teacher Credentialing. Those recommended for authorization must meet the following criteria:

1. Possess a valid California Learning Handicapped Credential.
2. Complete the following courses:
   a. *SPED 205* — Nature and Needs of Individuals with Serious Emotional Disturbance/Behavior Disorders.
   b. *SPED 217* — Advanced Instruction of Individuals with Serious Emotional Disturbance/Behavior Disorders.
   c. *SPED 238* — Practicum in Serious Emotional Disturbance/Behavior Disorders.

Special Education Specialist Internship Credential. The Special Education Specialist Internship Credential Program provides coursework and field experiences leading to either the Learning Handicapped Specialist or Severely Handicapped Specialist credential. This unique internship program provides an opportunity for the student to be employed as a special education teacher in a cooperating school district while completing the desired Special Education credential. To be accepted into the two-year Special Education Specialist Internship Credential Program, students must:

1. Hold a preliminary credential either in multiple or single subjects.
2. Be admitted to the Special Education Specialist Internship Credential Program by meeting all admission requirements for the Special Education Program (see *Admission Requirements*, page 246).
3. Be employed as a special education teacher under a special internship contract with the School of Education and Human Development and the employing school district.

Multiple Subject, Teachers in Inclusive Educational Settings (TIES) Block. The TIES block is designed to prepare preservice, multiple-subject, special education teachers to work collaboratively in serving the needs of an increasingly diverse student body. Students selecting this block register for courses taught onsite at elementary schools in the Fresno area. Fieldwork participation is extensive. Students may choose to complete the Multiple Subject credential and/or complete the Multiple Subject and Special Education Specialist Credential. This three-semester program is for a Multiple Subject Credential. Students in this block complete the prerequisite coursework for all master's programs in the SOEHD. Twelve of the 50 hours (SPED 160, 173, 201, 214) apply to an advanced credential in special education.

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
ERF 153	3
ERF 130	3
CTET 150	3
SPED 160	3
SPED 173	3
LEE 138	3
LEE 156M	3
CTET 125	2
CTET 121	3
EHD 110	3
ERF 140	3
SPED 201	3
SPED 280T	3
EHD 160C	12
Total	50

3. **Completion of a bachelor's degree.** California law requires a bachelor's degree in a subject area other than professional education.
4. **Special Education Credential Candidates** must meet the admission requirements and graduate requirements specified under the heading: **Special Education Specialist Credential** described in the Counseling and Special Education department listings.

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.

Application Deadlines

University Admission. University deadlines for graduate admission applications normally are set during the semester prior to anticipated program enrollment. (Deadlines occur during April or May for fall enrollment and October or November for spring enrollment.) The university may extend admission deadlines if anticipated enrollment targets are not met. For specific deadlines, applicants need to check with the Admissions Office, Joyal Administration Public Contact Window, or call 278-6283.

SOEHD Admission. All SOEHD admission materials required for full admission (Classified Standing) are to be submitted to the graduate technician in the Student Services Office, ED 100, no later than 30 days following the deadline for university admission. Students submitting all application material within these timelines will receive priority consideration for admission. For SOEHD admission deadlines, contact the Student Services Office, ED 100, or call 278-0300.

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 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, 242, 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 1 unit) 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. This degree program is designed to meet the requirements of Division 2, Chapter 13, §4980.37 of the California Business and Professions Code.

In 1995 the Council for Accreditation of Counseling and Related Educational Programs (CACREP) conferred accreditation to the MFCC option in counseling in Marriage and Family Counseling/Therapy. CACREP is a specialized accrediting body recognized by the Council on Postsecondary Accreditation. Since this program is CACREP accredited, MFCC students are qualified to take the National Certified Counselor Exam upon graduation.

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 200, 201, 202, 203, 206, 207, 208	(22)
Option	22
Marriage, Family and Child Counseling COUN 211, 220, 230, 231, 238, 239 (6 units)	
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 Requirements. Applicants for admission to the Master of Science degree in Rehabilitation Counseling must complete 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, 173; ERF 153; statement of purpose; interview with program coordinator; faculty review.

	Units
Core requirements	19
ERF 220 and SPED 298 or 299	(7)
Twelve units from: SPED 201, 202, 213; COUN 240 or SPED 219	(12)
Area of specialization	11
Learning Handicapped: SPED 211, 215, 218	
Severely Handicapped: SPED 220, 221, 228	
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) (Formerly 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. (Formerly 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. (Formerly 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. (Formerly 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) (Formerly A S 185T)

190. Independent Study
(1-3; max total 6)
See *Academic Placement — Independent Study*. Approved for *SP* grading. (Formerly 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) (Formerly 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) (Formerly 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 membership, role perceptions, verbal and nonverbal interaction, and group counseling. (2 seminar, 2 lab hours) (Formerly 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) (Formerly 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) (Formerly 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) (Formerly 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. (Formerly COUN 280T section)

207. Psychopathology and the *Diagnostic and Statistical Manual of Mental Disorders* (3)
Prerequisite: COUN 174 or 250, and 176 or equivalent. Analysis of psychopathology within the framework of the current DSM. Emphasis on integrating the etiology of the disorders with diagnosis, theory and treatment.

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) (Formerly A S 231)

211. Seminar in Sexuality Counseling (3)
Presents an overview of theories and research on sexual behaviors and disorders as well as methods and techniques for the effective treatment of sexual dysfunctions and sexuality counseling issues. (Formerly COUN 280T section)

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) (Formerly 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) (Formerly 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) (Formerly 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. (Formerly A S 235)

230. Seminar in Theories and Techniques 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) (Formerly A S 223)

231. Seminar in Professional Practices of Marriage, Family and Child Counseling (3)
Prerequisites: COUN 200, 230, and permission of instructor. Familiarization with the mental status exam and its components. Issues confronting the MFCC therapist in the world of practice including but not limited to: legal/ethical issues, professional consultation, professional identity, and rules and regulations of the Board of Behavioral Science Examiners.

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. (Formerly 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, recommended COUN 238. 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. (225 hours of field practice required for 3 units of credit) (Formerly 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) (Formerly 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) (Formerly A S 226)

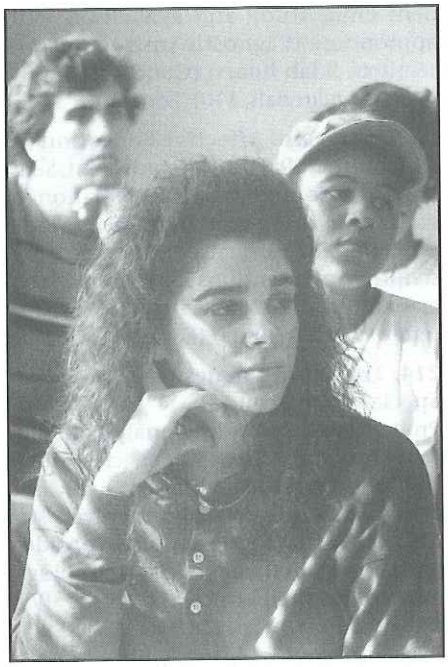
242. Seminar on Parent Education, Pupil Advocacy, and Consulting (3)
Prerequisites: COUN 174 and 200 or equivalent. Emphasis on current theory and methods of parent education, pupil advocacy, and consulting. Examination of current models in each area including ethical standards, legal concepts, and professional responsibilities. (2 seminar, 2 lab hours) (Formerly COUN 280T section)

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) (Formerly 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) (Formerly 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. (Formerly 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. (Formerly 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) (Formerly 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. (Formerly 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) (Formerly 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) (Formerly 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. (Formerly 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. (Formerly A S 281T; R C 251T)

290. Independent Study (1-3; max total 6)
See *Academic Placement — Independent Study*. Approved for ***SP*** grading. (Formerly 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 audio-visual materials or computer software for counselor education or service delivery. An approved proposal is required for enrollment. Approved for ***SP*** grading. (Formerly 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 programs coordinator for school thesis guidelines. Approved for ***SP*** grading. (Formerly 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. (Formerly 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. (Formerly 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) (Formerly 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. (Formerly A S 115F)

173. Introduction to Teaching Students with Disabilities (3)
Prerequisite: SPED 160 or equivalent. Introduction to theories, characteristics, programs, curriculum, and instructional strategies applicable to students with learning handicaps and students with severe handicaps. (2 seminar, 2 lab hours) (Formerly A S 170; A S 171; SPED 170; SPED 175)

190. Independent Study (1-3; max total 6)
See *Academic Placement — Independent Study*. Approved for ***SP*** grading. (Formerly 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, 2 lab hours) (Formerly 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, 2 lab hours) (Formerly A S 253)

205. Nature and Needs of Individuals with Serious Emotional Disturbance/Behavior Disorders (3)
Addresses the characteristics and needs of the child with emotional and behavioral disorders, and service delivery systems and agencies which exist to meet those needs. (2 seminar, 2 lab hours)

209. Application of Theory into Practice in Special Education Settings (3-12; max total 12)
Prerequisite: admission to Teachers in Inclusive Educational Settings (TIES) or Special Education Internship (SEI) program. Supervised field experiences working with special education students and their families with an emphasis on the integration of applied research and theory into practice in special education. (Minimum of 45 hours per unit)

211. Assessment of Learning Handicapped Students (3)
Prerequisites: ERF 153; SPED 160, 173. Review of testing techniques and instruments, and development of psychoeducational reports. Extensive independent child study and evaluation with appropriate diagnostic instruments. (2 seminar, 2 lab hours) (Course fee for assessment materials, $10) (Formerly A S 245)

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) (Formerly A S 248)

214. Trends and Issues in Special Education (3)
Provides discussion and analysis of current trends and issues in special education as it relates to legislation, litigation, at-risk student, medically involved student (e.g., HIV), multicultural considerations, consultative models, technology, and professional ethics. (Formerly SPED 280T section)

215. Seminar in Curriculum for Learning Handicapped Students (3)
Prerequisites: SPED 160, 173, 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, 2 lab hours) (Formerly 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. (Formerly A S 244)

217. Advanced Instruction of Individuals with Serious Emotional Disturbance/Behavior Disorders (3)
Designed to provide information relevant for planning, organizing, and managing instructional programs for students with emotional and behavioral disorders in a variety of settings. (2 seminar, 2 lab hours)

218. Practicum in Special Education: Learning Handicapped (5)
Prerequisites: ERF 153; SPED 160, 173, 211; prior and/or simultaneous enrollment in a maximum of 12 units in the following courses: SPED 201, 202, 213, 215; COUN 240 or SPED 219. 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. (Formerly 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) (Formerly SPED 280T section)

220. Assessment of Individuals with Severe Disabilities (3)
Prerequisites: SPED 160, 173. 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) (Formerly A S 250A; SPED 220A)

221. Instructional Methods for Students with Severe Disabilities (3)
Prerequisites: SPED 160, 173, 220. 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) (Formerly A S 251A; SPED 221A)

228. Advanced Practicum in Special Education for Individuals with Severe Disabilities (5)
Prerequisites: ERF 153; SPED 160, 173, 220, 221; prior or concurrent enrollment in SPED 201, 202; COUN 240 or SPED 219. 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. (Formerly A S 255)

238. Clinical Field Experience in Serious Emotional Disturbance/ Behavior Disorders (3)
Designed to provide clinical experience in diagnosis and evaluation of the serious emotionally and behaviorally disordered, prescriptive program development, prescriptive instruction, and program management. Experience to include data gathering, program planning and execution, evaluation, consultation, and collaboration. (2 seminar, 2 lab hours)

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. (Formerly A S 280T)

290. Independent Study (1-3; max total 6)
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. (Formerly 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. (Formerly A S 299)

IN-SERVICE COURSE

(See *Course Numbering System*.)

Special Education (SPED)

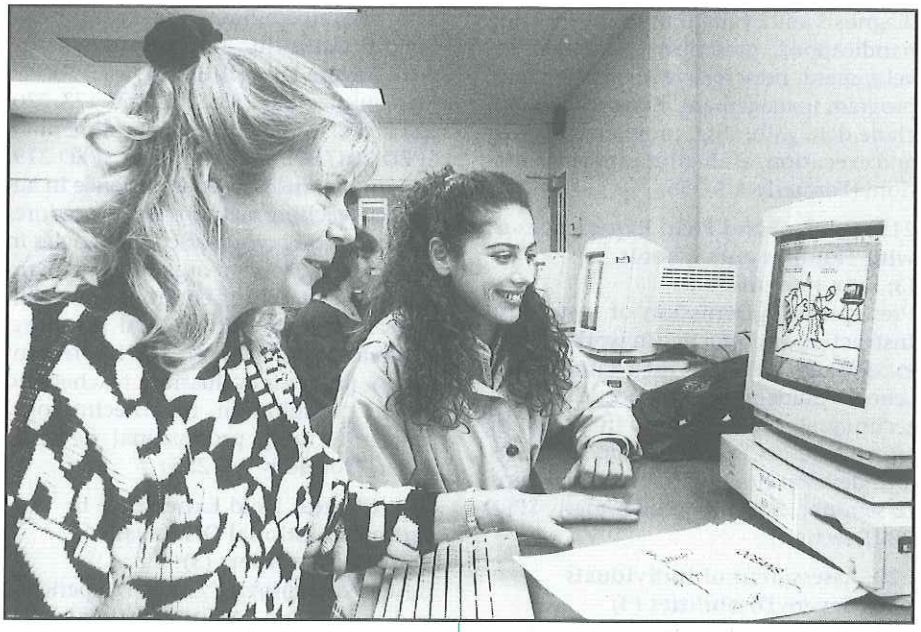
380T. Topics in Special Education (1-3; max total 12 if no topic repeated)
Selected areas in special education; identification of exceptional students, assessment of learning disabilities, focus on specific disabling conditions, instructional methods, parent involvement with handicapped students, federal and state legislation. Not applicable toward degree requirements.

EDUCATION Curriculum, Teaching, and Educational Technology

School of Education and Human Development
Department of Curriculum, Teaching, and Educational Technology
THERESA R. PEREZ, *Chair*
Education Building, Room 250
(209) 278-0240

Basic Teaching Credentials
Multiple Subject, General
Multiple Subject, CLAD/BCLAD
Multiple Subject, with emphasis in Early Childhood Education
Multiple Subject, Communicative Disorders
Multiple Subject Internship Program
Multiple Subject, Postbaccalaureate Block Program
Multiple Subject, Block A/Elementary and Middle School Block
Single Subject
Single Subject, CLAD
Single Subject Internship Program

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.

Faculty

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.

Career Opportunities

California State University, 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*
Coordinator of Single Subject Credential Program, Jody Daughtry, (209) 278-0300
Coordinator of Multiple Subject Credential Program, Theresa Perez, (209) 278-0240
Director of Professional Field Experiences, Joan Henderson-Sparks, (209) 278-0300
Adviser for Multiple Subject Credential Program, David Lopez, (209) 278-0300
Coordinator of Multiple Subject Postbaccalaureate Block Program, Susana Mata, (209) 278-0363

David M. Andrews
Mario L. M. Baca
Otto E. Benavides
Carol F. Bohlin
Roy M. Bohlin
Barbara G. Burch
Susan B. Harris
Nancy P. Hunt
Sandra J. LeSourd
Jose Lomeli
James E. Marshall
Arne J. Nixon
Kien T. Pham
Ivan H. Rowe
Bernice A. Stone

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 (See this section and the *Department of Literacy and Early Education.*)
- Multiple Subject Teacher in Preparation Internship Program (See this section.)

***Note:* Students are encouraged to complete the CLAD credential since many school districts require it for employment.**

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), home economics, industrial technology, mathematics, music, physical education, science, and social science.

For information about the professional preparation component of the Multiple and Single Subject Credential programs, including the Teacher in Preparation Internship Program, 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 Janell Perez in the School of Education and Human Development's Liberal Studies Office in ED 151.

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 Student Services Office in ED 100 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 Professional (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 Praxis Multiple Subject Assessment for Teachers (MSAT) tests for Content Knowledge and Area Exercises 1 and 2
   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, or meet other options (see *Plans B, C, and D*).

4. Complete an application to the credential program.
5. Verify admission to California State University, 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 Student Services Office in ED 100. 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's Student Services Office in ED 100.

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, Language and Literacy Development in the Elementary School (3 units) concurrently with EHD 110, Initial Student Teaching. 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 EHD 110 (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 (ED 100).

Timelines for admission to Initial Student Teaching (EHD 110) are listed below. Application forms are available in the school's Student Services Office in ED 100.

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 competence by:
   a. completing an approved Liberal Studies Waiver Program *or* passing the Praxis Multiple Subject Assessment for Teachers (MSAT) tests for Content Knowledge and Area Exercises 1 and 2
   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 (ED 151).
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 the EHD 160 assignment 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.
7. Provide evidence of passing the California Basic Educational Skills Test (CBEST) by presenting a CBEST Permanent Verification card.

Timelines for Admission to Final Student Teaching (EHD 160A, B, and C) are listed below. Application forms are available in the school's Student Services Office in ED 100.

Semester Enrolled	*Application Requirements Completed*
Fall	February 28
Spring	September 30

Basic Teaching Credentials

Preliminary Multiple Subject Credential programs include:

- Option I, General and 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
- Block A/Elementary and Middle School Block
- Teacher in Preparation (TIP) Internship — Postbaccalaureate Program: Multiple Subject Internship

Multiple Subject Credential programs as reported in this catalog are to be in effect through Summer 1996. Subject to faculty review, program content may change due to streamlining beginning as early as Fall 1996. For clarification pertaining to program content, contact the appropriate Multiple Subject program coordinator or the Student Services Office in ED 100 or call (209) 278-0300.

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). This program will eventually be phased out as the SOEHD moves to have all Multiple Subject credential candidates receive the CLAD or BCLAD emphasis along with a Multiple Subject Credential.

Program Requirements

1. **Subject Matter Competency.** Demonstrate subject matter competence through completion of the Liberal Studies Waiver Program *or* pass the Praxis Series Multiple Subject Assessment for Teachers (MSAT) tests for Content Knowledge and Area Exercises 1 and 2 and receive faculty certification of subject matter competence.

2. **Professional Preparation** *Units*

EHD 110	3
CTET 121	3
ERF 130	3
ERF 140	3
CTET 150	3
LEE 156M	3
EHD 160C	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 ED 100.

Preliminary Multiple Subject Credential with emphasis in Cross-Cultural Language and Academic Development and Bilingual Cross-Cultural Language and Academic Development (CLAD/BCLAD). This Multiple Subject Credential Program was first offered in Fall 1994 and is in addition to the traditional Multiple Subject Credential Program as the SOEHD moves to have all Multiple Subject Credential candidates receive the CLAD along with the basic credential. The emphasis of CLAD/BCLAD programs 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 specially designed academic instruction in English. The BCLAD (Spanish and Hmong) replaces the Bilingual/Cross-Cultural Credential and will authorize teachers to provide academic instruction to limited-English proficient students in their primary language.

Program Requirements

Requirements for a Preliminary Multiple Subject Credential with CLAD/BCLAD:

1. Demonstrate subject matter competence by:
   a. completing an approved Multiple Subject Waiver Program, the Liberal Studies degree, or passing the Praxis Series Multiple Subject Assessment for Teachers (MSAT) tests for Content Knowledge and Area Exercises 1 and 2.
   b. receiving written notice from the academic adviser that subject matter competence has been met.
   c. completing the following prerequisites: EHD 50; Ling 134; Ling 141; Ling 147 or CLS 143; Af Am 195 or CLS 195 or W S 195; the equivalent of 6 units of foreign language.

Preliminary Multiple Subject Credential, CLAD/BCLAD General Requirements for Initial Admission and Requirements for Admission to Student Teaching. Same as for Multiple Subject Credential. See Multiple Subject adviser in ED 100 or the CLAD/BCLAD coordinator in ED 250 for details.

Professional Preparation for CLAD/BCLAD

	Units
EHD 110	3
CTET 121	3
CTET 125	2
ERF 130	3
LEE 138	3
ERF 140	3
CTET 150	3
LEE 156	3
EHD 160	12
Total	**35***

*Additional course for BCLAD:

LEE 139	3

There may be changes in the above program. For more information see the Multiple Subject adviser in Ed 100 or the CLAD/BCLAD coordinator in ED 250.

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 the EHD 160 assignment 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 (CLAD certification in progress).

Program Requirements

1. **Subject Matter Competency.** Demonstrate subject matter competence through completion of the Liberal Studies Waiver Program *or* pass the Praxis Series Multiple Subject Assessment for Teachers (MSAT) tests for Content Knowledge and Area Exercises 1 and 2 and receive faculty certification of subject matter competence.

2. **Professional Preparation** *Units*

EHD 110	3
CTET 121	3
ERF 130A	1
ERF 130ECE	2
ERF 140A	1
ERF 140ECE	2
LEE 138	3
LEE 146	3
LEE 148	4
EHD 160C	12
Total	**34**

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 Praxis Series Multiple Subject Assessment for Teachers (MSAT) tests for Content Knowledge and Area Exercises 1 and 2, and receive faculty certification of subject matter 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 Deaf Education and the Special Education Specialist Credential in the *Department of Communicative Sciences and 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 Praxis Series Multiple Subject Assessment for Teachers (MSAT) tests for Content Knowledge and Area Exercises 1 and 2, and receive faculty certification of subject matter competence.

2. **Professional Preparation** *Units*

EHD 110	3
CTET 121	3
CTET 125	2
ERF 130	3
ERF 140	3
CTET 150	3
LEE 138	3
LEE 156M	3
EHD 160C	12
Total	**35**

3. **Completion of a bachelor's degree.** California law requires a bachelor's degree in a subject area other than professional education.

There may be changes in the Option IV program. For more information, contact the program coordinator at (209) 278-0363.

Multiple Subject, Block A/Elementary and Middle School Block. The Block A/Elementary and Middle School Block is designed to prepare Multiple Subject credential students for teaching in both elementary and middle school grades (K-8). Students in this program may do **all** of their student teaching in elementary grades (K-6) or have the **option** of doing half of their student teaching in middle school (7-8) and half in elementary school (K-6). The goal of this school-based, cohort program is to prepare students in practical applications as well as theoretical aspects of teaching by coordinating coursework with classroom practice and by providing additional training and support from classroom teachers. All coursework is offered on the Nelson School campus and taught by four professors who also supervise student teaching. Student teaching placements are in Clovis or Fresno Unified schools. Special training is provided for students with an interest in middle school. This block enables students to move through the program as a cohort in one year beginning in the fall semester and providing a CLAD credential. Program requirements are the same as Option I with CLAD. Information and applications are available in ED 255 or by contacting the coordinator at 278-0265.

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 CLAD/BCLAD Credential general requirements for initial admission. Candidates who have been successful long-term substitute teachers and holders of an emergency credential are good candidates for the internship program.

Interns have a year-long contract with a participating school district, earning a reduced salary. In addition, interns 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 Praxis Series Multiple Subject Assessment for Teachers (MSAT) tests for Content Knowledge and Area Exercises 1 and 2 and receive faculty certification of subject matter competence.

2. **Admission to Program.** Applicants must be admitted to California State University, Fresno 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:	EHD 110	3
(or prior	ERF 130	*3*
semester)	LEE 156M	3
Fall:	EHD 160A	6
	CTET 150	3
Spring:	EHD 160B	6
	ERF 140	3
	CTET 121	3
Summer II:	CTET 100	3
	SPED 160	3
	H S 120	2
Total		**38**

For CLAD certification, candidates must also take LEE 138 and CTET 125. For BCLAD certification, 6 units of the same foreign language (Hmong or Spanish) and LEE 138 are required. Contact Internship Program Coordinator Berta Gonzalez, ED 205, (209) 278-0209.

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 Sub-*

ject 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 Student Services Office in ED 100.

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.

Multiple Subject, Teachers in Inclusive Educational Settings (TIES) Block. The TIES block is designed to prepare preservice, multiple-subject, special education teachers to work collaboratively in serving the needs of an increasingly diverse student body. Students selecting this block register for courses taught onsite at elementary schools in the Fresno area. Fieldwork participation is extensive. Students may choose to complete the Multiple Subject Credential and/or complete the Multiple Subject and Special Education Specialist Credential. This three-semester program is for a Multiple Subject Credential. Students in this block complete the prerequisite coursework for all master's programs in the SOEHD. Twelve of the 50 hours (SPED 160, 173, 201, 280T) apply to an advanced credential in special education.

Program Requirements

1. **Subject Matter Competency.** Demonstrate subject matter competence through completion of the Liberal Studies Waiver Program *or* pass the Praxis Series Multiple Subject Assessment for Teachers (MSAT) tests for Content Knowledge and Area Exercises 1 and 2 and receive faculty certification of subject matter competence.
2. **Professional Preparation** *Units*

ERF 153	3
ERF 130	3
CTET 150	3
SPED 160	3
SPED 173	3
LEE 156M	3
LEE 138	3
CTET 125	2
CTET 121	3
EHD 110	3
ERF 140	3
SPED 201	3
SPED 280T	3
EHD 160C	12
Total	50

3. **Completion of a bachelor's degree.** California law requires a bachelor's degree in a subject area other than professional education.
4. **Special Education Credential Candidates** must meet the admission requirements and graduate requirements specified under the heading: **Special Education Specialist Credential** described in the Counseling and Special Education department listings.

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. Hansen/J. Hales
English (Theatre Arts): K. Morin
English (ESL): B. Birch
English (Speech): G. Sorenson
Foreign Languages: R. Freeman/R. Kuhn/D. Engle
Home Economics: N. Dilbeck
Industrial Technology: G. Winegar
Mathematics: A. Tuska
Music: W. March
Physical Education: G. Chadwick
Science — Biological Sciences, Chemistry, Physics: D. Andrews
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 Student Services Office in ED 100 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)

***Note:* A Single Subject CLAD program is being developed. Students seeking additional information should see the Single Subject coordinator in ED 100.**

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 Single Subject Assessments for Teachers (SSAT) and the Praxis II Subject Assessment(s), and
   b. receiving clearance from the academic adviser that subject matter competency has been met.
3. Complete a bachelor's degree.

Subject matter tests are being revised. For an update on required subject matter examinations or other information about the Single Subject Credential, contact the credential analyst or the Single Subject coordinator in ED 100, (209) 278-0300.

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, or meet other options (see *Plans B, C, and D*).
4. Complete an application to the credential program.
5. Verify admission to California State University, 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 Student Services Office in ED 100. 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's Student Services Office in ED 100.

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's Student Services Office in ED 100.

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 Single Subject Assessments for Teachers (SSAT) and the Praxis II Subject Assessment(s), 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.
7. Show evidence of passing the California Basic Educational Skills Test (CBEST) by presenting a CBEST Permanent Verification card.

Timelines for Admission to Final Student Teaching (EHD 155B) are listed below. Application forms are available in the school's Student Services Office in ED 100.

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 Single Subject Assessments for Teachers (SSAT) and the Praxis II Subject Assessment(s).
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 Profes-

sional (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 contract with a participating school district, earning a reduced salary. In addition, interns 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 California State University, Fresno and a basic teaching credential program in the School of Education and Human Development. They must participate in at least 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, ED 205.

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's Student Services Office in ED 100 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. Complete or receive a waiver for CTET 100 or 101.
2. Verify admission to California State University, Fresno and 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) 278-0246.

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)

2R. CBEST Math Development (3)
Designed to further the basic skills in math for applicants to teacher education credential programs. Students who pass the course will satisfy the CBEST math requirement for admission into teacher education credential studies. Students are still required to pass the CBEST to qualify for a teaching credential. ***CR/NC*** grading only; not applicable toward baccalaureate degree requirements.

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) (Computer lab fee, $15) (Formerly 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) (Computer lab fee, $15) (Formerly 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. (Formerly T Ed 135)

121. Mathematics in the Elementary School (3)
Not open to students with credit in CTET 121BC. Prerequisites: admission to the Multiple Subject Program and satisfy General Education quantitative analysis requirements (see *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) (Formerly T Ed 121)

122. Fieldwork in Outdoor Education (1-2; max total 2)
Prerequisites: 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. (Formerly T Ed 122F)

123. Classroom Management (2)
Classroom organization, management, and mainstreaming including focus on the culturally, linguistically diverse student. (Formerly T Ed 120CM)

124. Issues in Education (3)
In-depth study of various curriculum issues impacting education. (Formerly T Ed 120CU)

125. Teaching Elementary School Science (2)
Designed to assist teacher candidates in constructing the knowledge and skills necessary to effectively and equitably teach elementary school science in a culturally and linguistically diverse classroom. (1 lecture, 2 lab hours) (Instructional materials fee, $5) (Formerly T Ed 120SC; CTET 125BC)

126. Social Studies in the Elementary School (3)
In-depth study of the strategies and techniques of social studies instruction. (Formerly 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. (Formerly T Ed 136)

137. Creative Dramatics (3)
(See Drama 137.) (Formerly T Ed 137)

150. Curriculum and Instruction in the Elementary School (3)
Not open to students with credit in CTET 150BC. Prerequisites: admission to the Multiple Subject Credential Program, ERF 130 and 140 (or concurrent enrollment) and EHD 110 and LEE 156M taken concurrently. Examines integrated curricula in K-8 classrooms, purpose and use of the California Frameworks, curricular reform, trends, and assessment. Instructional strategies for diverse populations are examined. (2 lecture, 2 lab hours) (Formerly T Ed 150)

158. Communication and Learning (3)
(See Spch 114.) No credit will be given if the student has taken Spch 114. (Formerly T Ed 158)

159. Curriculum and Instruction in Secondary Schools (3)
Prerequisites: admission to the Single Subject Credential Program; ERF 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) (Formerly T Ed 159)

161. Methods and Materials in Secondary Teaching (3)
Prerequisites: ERF 152 and CTET 159 or concurrent enrollment; 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. (Instructional materials fee for Single Subject — Art Methods and Materials enrollees, $10) (Formerly 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. (Formerly T Ed 180T)

190. Independent Study (1-3; max total 6)
See *Academic Placement — Independent Study*. Approved for ***SP*** grading. (Formerly T Ed 190)

GRADUATE COURSES

(See *Course Numbering System.*)

Curriculum, Teaching, and Educational Technology (CTET)

225. Integration of Technology Across the Curriculum (3)
Prerequisite: CTET 100 or 101 or permission of instructor. 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. (2 lecture, 2 lab hours)

227. Current Issues and Trends in Educational Technology (3)
Prerequisite: CTET 100 or 101 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 or permission of instructor. 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 or permission of instructor. 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) (Formerly 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. (Formerly 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. (Formerly T Ed 275)

280T. Advanced Topics (1-3; max total 6)
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. (Formerly T Ed 280T)

290. Independent Study (1-3; max total 6)
See *Academic Placement — Independent Study*. Approved for ***SP*** grading. (Formerly T Ed 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 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. (Formerly A S 298B)

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. (Formerly 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
ATILANO A. VALENCIA, *Chair*
Education Building, Room 350
(209) 278-0350

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

Atilano A. Valencia, *Chair*

Kathryn J. Biacindo
Ric S. Brown
Donald G. Coleman
Alfredo Cuellar
Jolyne S. Daughtry
Rebecca J. Kopriva
Phyllis A. Kuehn
Rosemary Papalewis
J. Leonard Salazar
Robert D. Segura
David E. Tanner
Susan M. Tracz
Ronald P. Unruh
Diane M. Yerkes

Credential Programs

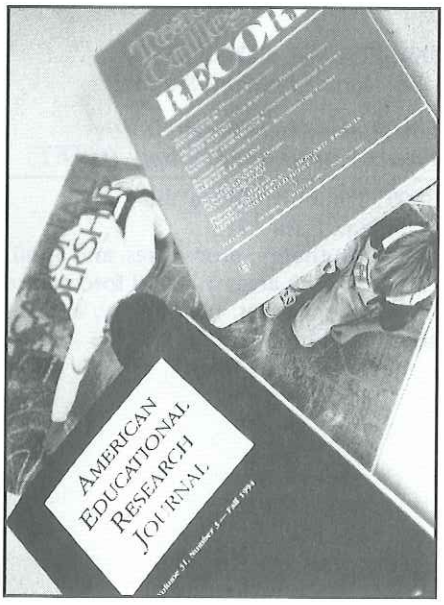
Administrative Services Credentials. Holders of the Preliminary Administrative Services Credential and the Professional Administrative Services Credential are authorized to serve in such positions as district superintendent, principal, program director and any related administrative assignments at all school levels.

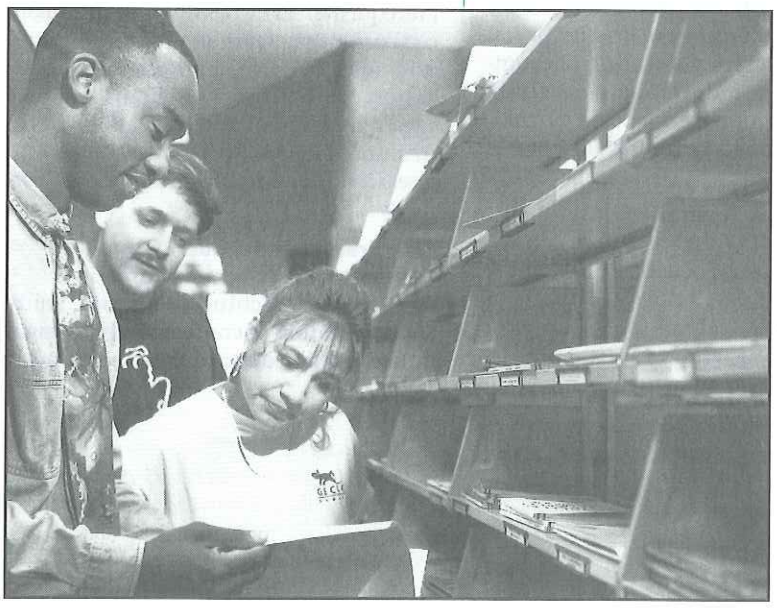
Individuals who wish to serve as educational administrators must complete preliminary and advanced levels of preparation. The preliminary level qualifies the candidate for the Preliminary Administrative Services Credential. The advanced level of preparation qualifies the candidate for the Professional 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 Fresno State.
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 administrative positions in education, including schools, colleges, universities, agencies, and other related educational organizations.

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)

2R. CBEST Writing Development
Designed to further the basic skills in writing for applicants who intend to teach education credential programs. Students who pass the course will satisfy the CBEST writing requirement for admission into teacher education studies. Students are still required to pass the CBEST to qualify for a teaching credential. *CR/NC* grading only; not applicable toward baccalaureate degree requirements.

130. Psychological Foundations of Education — Multiple Subject (3)
Not open to students with credit in ERF 130BC or 152. Prerequisites: 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. (Formerly T Ed 130)

130A. Psychological Foundations Fieldwork — ECE (1)
Prerequisite: 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)
Prerequisite: 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 140BC or 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. (Formerly T Ed 140)

140A. Cultural Foundations Seminar — ECE (1)
Prerequisites: concurrent enrollment 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 pro-

cesses related to collaboration among education, health, law, psychology, and social service professionals.

140ECE. Cultural Foundations of ECE (2)
Prerequisite: 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. (Formerly T Ed 151)

152. Psychological Foundations of Education — Single Subject (3)
Not open to students with credit in ERF 130. Prerequisites: 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. (Formerly 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) (Formerly 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. (Formerly T Ed 180T)

190. Independent Study (1-3; max total 6)
See *Academic Placement — Independent Study*. Approved for ***SP*** grading. (Formerly T Ed 190)

GRADUATE COURSES

(See *Course Numbering System*.)

Educational Research, Foundations (ERF)

220. Research in Education (3)
Prerequisites: 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) (Formerly A S 220)

260. Assessment as Learning (3)
Analyze interaction among assessment models, effective instruction, and learning in educational settings. Use educational theory to identify criteria for choosing and integrating alternative assessments including performance, observation/interview, portfolio, curriculum-embedded and self-assessment. Develop assessment items and protocols.

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. (Formerly 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) (Formerly T Ed 274)

280T. Advanced Topics in Education (1-3; max total 6)
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. (Formerly 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. (Formerly 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. (Formerly A S 285)

286. Social Issues in Education (3)
Prerequisites: ERF 140 or 151 or a 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. (Formerly T Ed 286)

287. Seminar in History of Educational Thought (3)
Prerequisites: 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. (Formerly 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) (Formerly A S 288)

289. Seminar in Advanced Educational Research (3)
Prerequisites: 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) (Formerly A S 289)

290. Independent Study (1-3; max total 6)
See *Academic Placement — Independent Study*. Approved for ***SP*** grading. (Formerly T Ed 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 graduate study in education. An approved proposal is required for enrollment. Approved for ***SP*** grading. (Formerly A S 298B)

299. Thesis (4)
Prerequisites: 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. (Formerly 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. (Formerly A S 261)

262. Education Leadership (3)
Prerequisites: 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. (Formerly A S 262)

Courses in the cultural and social foundations of education are fundamental to understanding contemporary education.

263. Seminar in Instructional Supervision (3)
Prerequisites: 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. (Formerly A S 263)

264. Seminar in the Legal Aspects of Education (2)
Prerequisites: 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. (Formerly 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; databased decision-making and analysis. (Formerly 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) (Formerly A S 266)

267. Fieldwork in Education Administration I (3)
Prerequisites: 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) (Formerly A S 267)

268. Fieldwork in Education Administration II (3)
Prerequisites: 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) (Formerly A S 268)

269. Site-based Leadership (3)
Prerequisites: 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) (Formerly A S 271)

272. Seminar in Advanced Curriculum Evaluation and Development (3)
Prerequisites: 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. (Formerly 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. (Formerly 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) (Formerly 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. (Formerly 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) (Formerly A S 277)

278T. Topics in Advanced Educational Administration (1-3; max total 8)
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. (Formerly A S 278T)

279. Advanced Administration Fieldwork (1-8; max total 8)
Prerequisites: 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) (Formerly A S 279)

280T. Topics in Professional Development (1-3; max total 4)
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 total 6)
See *Academic Placement — Independent Study*. Approved for ***SP*** grading. (Formerly A S 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 graduate study in education. An approved proposal is required for enrollment. Approved for ***SP*** grading. (Formerly A S 298B)

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. (Formerly 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.

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/language arts (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). At the graduate level, the department offers programs in early childhood education and reading/language arts.

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 (CLAD)
2. Multiple Subject Credential — Bilingual/Cross-Cultural Language and Academic Development (CLAD/BCLAD).

Specialist Teaching Credential. The specialist teaching credential represents a year of postbaccalaureate study and two years teaching experience 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/language arts.

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/language arts. 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*

Coordinator of Early Childhood Education Emphasis (Option II), Specialist Credential and Master's Programs, Adrienne L. Herrell, (209) 278-0266

Coordinator of Bilingual/Cross-Cultural Language and Academic Development Rose Lee Patrón, (209) 278-0261

Coordinator of Reading/Language Arts Specialist Credential and Master's Programs, Robert H. Pritchard, (209) 278-0278

Shareen Abramson
Bonnie L. Dutton
Judith C. Neal
Cecilio Orozco
Richard F. Osterberg
Marilyn R. Shelton
Gail E. Tompkins

School of Education and Human Development
Department of Literacy and Early Education
JACQUES S. BENNINGA, *Chair*
Education Building, Room 250
(209) 278-0250

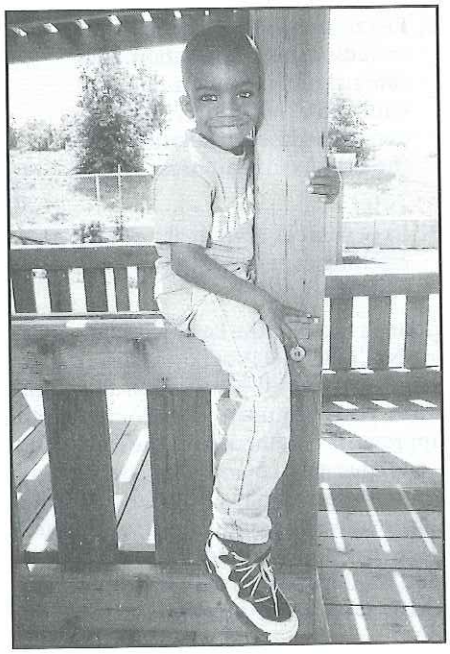
Credentials
Multiple Subject, Option II Early Childhood Education
Multiple Subject, CLAD/BCLAD
Early Childhood Specialist
Reading/Language Arts Specialist

M.A. in Education
Options:
Early Childhood Education
Reading/Language Arts

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).

Multiple Subject Credential programs as reported in this catalog are in effect through Summer 1996. Subject to faculty review, program content may change due to streamlining beginning as early as Fall 1996. For clarification pertaining to program content, see the appropriate



Multiple Subject program coordinator or contact the Student Services Office in ED 100, (209) 278-0300.

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 the EHD 160 assignment 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. **Prerequisite Requirements**
   a. Three units of child development or child psychology coursework.
   b. CLAD prerequisites include Ling 134; Ling 147 or Af Am 195 or CLS 195 or W S 195; the equivalent of 6 units of foreign language.
   c. EHD 50 or waiver.
3. **Professional Preparation**

	Units
EHD 110	3
CTET 121	3
ERF 130A	1
ERF 130ECE	2
ERF 140A	1
ERF 140ECE	2
LEE 138	3
LEE 146	3
LEE 148	4
EHD 160C	12
Total	**34**

There may be changes in the above program. For more information, see the Early Childhood Education coordinator in ED 257.

4. **Completion of a Bachelor's Degree.** California law requires a bachelor's degree in a subject area other than professional education.

Preliminary Multiple Subject Credential with emphasis in Cross-Cultural Language and Academic Development and Bilingual Cross-Cultural Language and Academic Development (CLAD/BCLAD). This Multiple Subject Credential Program was first offered in Fall 1994 and is in addition to the traditional Multiple Subject Credential Program as the SOEHD moves to have all Multiple Subject Credential candidates receive the CLAD along with the basic credential. The emphasis of CLAD/BCLAD programs 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 specially designed academic instruction in English. The BCLAD (Spanish and Hmong) replaces the Bilingual/Cross-Cultural Credential and will authorize teachers to provide academic instruction to limited-English proficient students in their primary language.

Program Requirements

Requirements for a Preliminary Multiple Subject Credential with CLAD/BCLAD:

1. Demonstrate subject matter competence by:
   a. completing an approved Multiple Subject Waiver Program, the Liberal Studies degree, or passing the Multiple Subject Assessment for Teachers (MSAT), tests for Content Knowledge and Area Exercises 1 and 2.
   b. receiving written notice from the academic adviser that subject matter competence has been met.
   c. completing the following prerequisites: EHD 50; Ling 134; Ling 141; Ling 147 or CLS 143; Af Am 195 or CLS 195 or W S 195; the equivalent of 6 units of foreign language.

Preliminary Multiple Subject Credential, CLAD/BCLAD General Requirements for Initial Admission and Requirements for Admission to Student Teaching. Same as for Multiple Subject Credential. See Multiple Subject adviser in ED 100 or the CLAD/BCLAD coordinator in ED 250 for more information.

Professional Preparation for CLAD/BCLAD

	Units
EHD 110	3
CTET 121	3
CTET 125	2
ERF 130	3
LEE 138	3
ERF 140	3
CTET 150	3
LEE 156	3
EHD 160	12
Total	**35***

*Additional course for BCLAD:
LEE 139 3

There may be changes in the CLAD/BCLAD program. For more information see the Multiple Subject adviser in ED 100 or the CLAD/BCLAD coordinator in ED 250.

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/Language Arts.

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	*Units*
1. Course Requirements Select 15 units with approval of ECE coordinator: LEE 171, 232, 233, 235, 241, 271	15
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 Student Services Office in ED 100 for admission information. For information about all early childhood programs, contact the early childhood education program coordinator at (209) 278-0266.

Reading/Language Arts Specialist Credential

Admission Requirements. 1) Complete application for postbaccalaureate standing at California State University, 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	*Units*
1. Course Requirements	
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/Language Arts Specialist Credential Program may be used to satisfy part or all of the clear credential (fifth year) requirements for either the 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 Student Services Office in ED 100 for admission information. For information about the Reading/Language Arts Specialist Credential, contact the reading/language arts program coordinator at (209) 278-0278.

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, LEE 171 and 9 additional units in education or child development and an adequate background for advanced work in the field as determined by the program faculty.

	Units
Course Requirements	
ERF 220; ERF 285 or 288; LEE 298B or 299	10
Select 15 units with approval of ECE coordinator: EHD 109; LEE 232, 233, 235, 241, 271	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) 278-0266.

Master of Arts Degree in Education

Reading/Language Arts

The Master of Arts degree program in Education with an option in reading/language arts 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.

	Units
Course Requirements	
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, Diagnostic/Clinic Experiences, and Reading Recovery.)	8
Total	30

For information on the M.A. in Reading/Language Arts, contact the reading/language arts coordinator at (209) 278-0278.

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; max total 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. (Formerly T Ed AR)

1R. Reading Application Skills (1-3; max total 3)
A combination of lecture, discussion, and direct application to improve skills, such as identifying main point, building vocabulary, and drawing inferences. *CR/NC* grading only; not applicable toward baccalaureate degree requirements.

2R. Basic Skills Reading Development (3)
Designed to further the basic skills in reading for applicants to teacher education credential programs. Students who pass the course will satisfy the CBEST reading requirement for admission into teacher education. Students are still required to pass the CBEST to qualify for a teaching credential. *CR/NC* grading only; not applicable toward baccalaureate degree requirements.

101. Practicum in Tutoring (1-3; max total 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. (Formerly T Ed 101)

120. Problems in Education (2-3; repeatable with different topics; maximum of 3 units per code, e.g., CL, KG, etc.)
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. (Formerly T Ed 120)

122L. Fieldwork in Language Development (3)
Prerequisites: 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. (Formerly T Ed 122L)

138. Teaching the Linguistically Different (3)
Not open to students with credit in LEE 138BC. Studies and methods used in English Language Development (ELD) classrooms, including multimedia instruction, SDAIE methodology, development and adaptation in materials. Parent involvement and working with paraprofessionals in an ELD classroom. (Formerly T Ed 138)

139. Teaching Content in L1 (3)
Not open to students with credit in LEE 139BC. Prerequisites: Spanish or Hmong language fluency or permission of instructor. Teaches L1 methods and materials used to teach content in bilingual classrooms. Designed for BCLAD candidates. Students will deliver lessons in bilingual classrooms in local schools under university supervision. (Formerly T Ed 139)

141. Spanish Storytelling (3)
Prerequisites: 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. (Formerly T Ed 141)

146. Language and 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. Sociopsycholinguistic 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) (Formerly T Ed 147)

148. Integrated Curriculum (4)
Prerequisites: 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) (Formerly T Ed 148)

156M. Language and Literacy Development in the Elementary School (3)
Not open to students with credit in LEE 156BC. Prerequisites: admission to the Multiple Subject Credential Program; ERF 130 and 140 (or concurrent enrollment); EHD 110; CTET 150 to be taken concurrently. Oral and written language development, literature-based reading instruction consistent with the California English/Language Arts Framework, teaching methods utilized to foster literacy in culturally and linguistically diverse classrooms. (Formerly T Ed 156M)

156S. Literacy and Content Area Instruction (3)
Prerequisites: admission to the Single Subject Credential Program; concurrent enrollment in EHD 155A or 155B. Language and literacy development as it relates to content area teaching and learning, including techniques for culturally/linguistically diverse learners. (Grades 7-12). (Formerly 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) (Formerly 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) (Formerly T Ed 164B)

166. Reading Improvement (2)
A course to improve reading abilities. Emphasis placed on improving vocabulary, comprehension, and flexibility in reading skills. (Formerly 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. (Formerly 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. Emphasis on SDAIE, Specially Designed Academic Instruction in English. (Formerly 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. (Formerly T Ed 180T)

190. Independent Study (1-3; max total 6)
See *Academic Placement — Independent Study*. Approved for ***SP*** grading. (Formerly 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. (Formerly 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. (Formerly T Ed 214)

215. Language Issues in Reading (3)
Prerequisite: LEE 156M or 156S or permission of instructor. Seminar exploring issues related to language acquisition and literacy development with special emphasis on culturally and linguistically diverse learners. (Formerly 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. (Formerly 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. (Formerly T Ed 224)

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. (Formerly T Ed 232)

233. Play, Observation and Assessment in Early Childhood Education (3)
Prerequisites: LEE 171; admission to Early Childhood Emphasis or Specialist program. Play theory and research and its relationship to growth and development in young children. Observation-based assessment, developmental profiles, rubrics and portfolios to document development. Structuring environments that facilitate play and development in early childhood settings, infants through grade three. (2 lecture, 2 lab hours)

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) (Formerly T Ed 234A; LEE 234A)

235. Concept Development in Early Childhood Education (3)
Prerequisite: LEE 233 or permission of instructor. Study of how young children develop concepts, analysis of existing curriculum and design of relevant curriculum. (2 lecture, 2 lab hours)

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) (Formerly T Ed 241)

244. Research for Reading Professionals (3)
Prerequisites: 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. (Formerly T Ed 244)

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. (Formerly 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) (Formerly 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. (Formerly T Ed 278)

280T. Advanced Topics in Literacy and Early Education (1-3; max total 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. (Formerly T Ed 280T)

290. Independent Study (1-3; max total 6)
See Academic Placement — Independent Study. Approved for ***SP*** grading. (Formerly 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. (Formerly 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. (Formerly 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. (Formerly 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. (Formerly T Ed 380T)

383. Problems in Child Study (2; max total 12 if no topic repeated)
Methods of studying children; relationship of child study groups, reviews of research findings in child development, and adolescent behavior. (Formerly T Ed 383)

EDUCATION Graduate Programs

School of Education and Human Development
BARBARA G. BURCH, *Dean*
Education Building, Room 210
(209) 278-0210

ROBERT H. MONKE, *Associate Dean and Graduate Programs Coordinator*
Education Building, Room 205
(209) 278-0205

M.A. in Education
M.A. in Special Education
M.S. in Counseling
M.S. in Rehabilitation Counseling

Advanced Credential Programs
Administrative Services
Preliminary
Professional

Early Childhood Education Specialist

Pupil Personnel Services
School Counseling

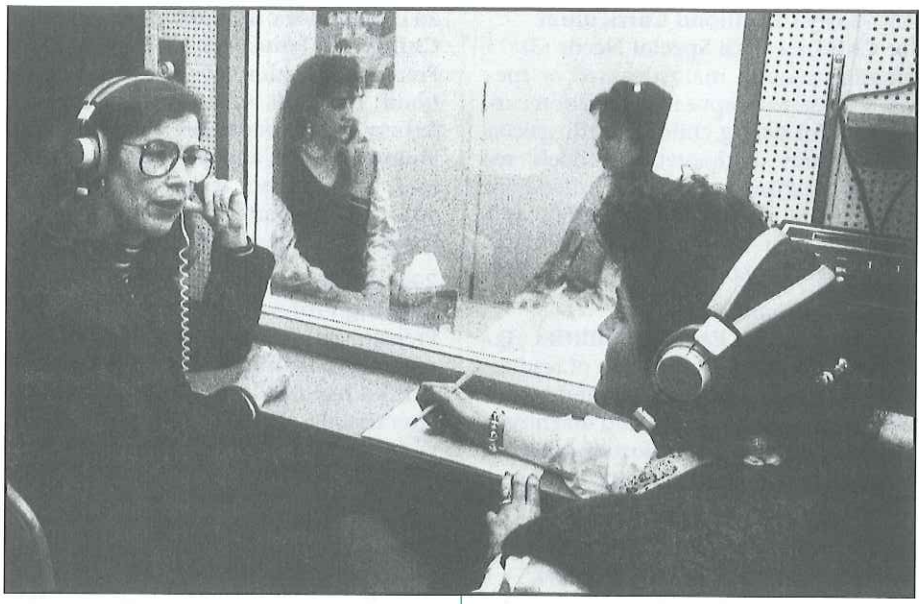
Reading/Language Arts Specialist

Special Education Specialist
Learning Handicapped
Severely Handicapped

Special Education Specialist Internship
Learning Handicapped
Severely Handicapped

Graduate Education programs in the School of Education and Human Development are focused on *"Making a Difference" in central California's diverse society by preparing reflective, collaborative leaders.* Postbaccalaureate advanced credential and master's degree programs are primarily focused on: 1) preparation and enhancement of teachers and other educational leaders and 2) preparation of human service leaders who function in a variety of human development roles in both public and private sectors.

The need for quality teachers, administrators, curriculum and instruction specialists, and human development professionals is particularly important for the enhancement of human potential and productivity in the richly varied ethnic, cultural, and social milieu of the region.



Model of Instruction

Instruction in all graduate education programs in the School of Education and Human Development emphasizes the development and refinement of the *"Reflective, Collaborative Leader"* who will *make a difference* in our increasingly diverse society. Consistent with this theme and the major components of the Knowledge Base in basic programs; instruction is focused on four major concepts:

Philosophical and Ideological Dimension. Program emphasis is directed to an understanding of the salient theories related to the selected discipline acquired through lecture, discussion, and related research. The long-term goal is to personalize and continue to refine and to modify philosophy and theory through ongoing reflection and self-evaluation.

Cognitive and Reflective Dimension. Program emphasis is focused on planning, implementation, and analysis with emphasis on continual professional growth and development. Leaders are expected to be knowledgeable about current research related to their fields, to be able to think analytically, and to be actively involved in research and contribute to their areas of professional expertise.

Integration and Application of the Knowledge Base. Program emphasis is focused on providing opportunities for development of competence through structured laboratory and field-based experiences where advanced students apply knowledge and techniques with full support of university faculty and field site supervisors.

Addressing Diversity. Program emphasis is focused on enabling students to acquire knowledge and skills needed to function effectively as reflective, collaborative leaders in a multicultural and increasingly diverse society.

The School of Education and Human Development offers advanced and specialized preparation required for awarding 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/language arts, 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 Professional (clear) teaching credential program, contact Multiple and Single Subject fifth-year advisers in the Student Services Office in ED 100. Elective units needed to complete the 30-unit post-baccalaureate requirement may be included as part of a master's degree and/or an advanced credential program (excludes basic credential core courses and other fifth-year requirements: health, computer applications, and mainstreaming).

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/Language Arts. (See *Department of Literacy and Early Education*/coordinator of reading/language arts.)
- 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

Admission Requirements. Enrollment in an SOEHD master's degree program requires that separate applications for admission be completed for the university ***and*** the SOEHD.

University Admission Requirements. Applicants are required to complete the California State University Application for Graduate Admission Parts A and B. In addition to this form, and among other requirements, the applicant is expected to provide evidence of an appropriate four-year B.A. or B.S. degree, scores on the Graduate Record Examination (GRE) or the Miller Analogies Test (MAT), and a minimum GPA of 2.5 on the last 60 (90 quarter) units attempted. University applications are available in the university Admissions Office (Joyal Administration Public Contact Window), the Graduate Office (Thomas Administration 132) and the SOEHD Student Services Office (ED 100).

SOEHD Admission Requirements. In addition to making application for admission to the university Admissions Office, consult the SOEHD Student Services Office in ED 100 for:

1. program information
2. SOEHD graduate programs admission packet
3. any specific program application forms, and
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 Student Services Office, ED 100, by the application closing date. A completed admissions packet will include:

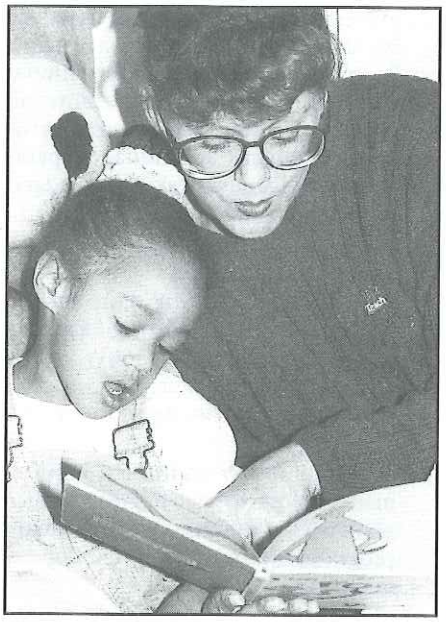
1. verification of admission to California State University, Fresno
2. an application to the SOEHD graduate programs
3. a complete set of transcripts of all prior college or university work
4. evidence of a minimum GPA of 2.75 overall or on the last 60 undergraduate units. Continuing postbaccalaureate 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
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; and
11. evidence of any additional requirements unique to each degree and program within the degree. 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 Student Services Office, ED 100.

Application Deadlines

University Admission. University deadlines for graduate admission applications normally are set during the semester prior to anticipated program enrollment. (Deadlines occur during April or May for fall enrollment and October or November for spring enrollment.) The university may extend admission deadlines if anticipated enrollment targets are not met. For specific deadlines, applicants need to check with the Admissions Office at the Joyal Administration Public Contact Window or call 278-6283.

SOEHD Admission Deadlines. All school admission materials required for full admission (classified standing) are to be submitted to the graduate technician in the Student Services Office, ED 100, no later than 30 days following the deadline for university admission. Students submitting all application material within these timelines will receive priority consideration for admission. General deadlines for program admission are: April 1 for summer/fall enrollment and November 1 for spring enrollment. For specific SOEHD admission deadlines, contact the Student Services Office, ED 100, or call 278-0300.



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 Student Services Office in ED 100.

The SOEHD Student Services 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. Most specialist and services credentials require successful completion of a basic Multiple Subject or Single Subject credential. Exceptions to this are in Pupil Personnel Services and in some cases Administrative Services (see program coordinator for details).

Specialist Credential Programs offered at California State University, Fresno include:

1. Agriculture. (See *Department of Animal Sciences and Agricultural Education*/adviser for the agriculture specialist credential.)
2. Early Childhood Education. (See *Department of Literacy and Early Education*/coordinator of early childhood education.)
3. Reading/Language Arts. (See *Department of Literacy and Early Education*/coordinator of reading/language arts.)
4. Special Education:
   - Communication Handicapped. (See *Department of Communicative Sciences and Disorders*/coordinator of communication handicapped.)
   - Learning Handicapped
   - Severely Handicapped

   (See *Department of Counseling and Special Education*/coordinator of special education.)
5. Special Education Internship:
   - Learning Handicapped
   - Severely Handicapped

   (See *Department of Counseling and Special Education*/coordinator of special education.)

Services Credential Programs offered at Fresno State 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 Sciences and Disorders*/coordinator of clinical — rehabilitative program.)

3. Health (School Nurse). (See *Department of Nursing*/coordinator of health services.)
4. Pupil Personnel — School Counseling. (See *Department of Counseling and Special Education*/coordinator of counselor education.)
5. Pupil Personnel — School Psychology. (See *Department of Psychology*.)
6. Pupil Personnel — School Social Work, and Child Welfare and Attendance. (See *Department Social Work Education*.)

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. Elective units needed to complete the 30-unit postbaccalaureate requirement may be included as part of a specialist credential, services credential, and/or master's degree (excludes basic credential core courses and fifth-year requirements: health, computer applications, and mainstreaming). For information regarding the fifth-year Professional (clear) teaching credential program, contact a fifth-year adviser in the SOEHD Student Services Office, ED 100.

For information pertaining to the master's degree programs, consult with the appropriate program coordinator or the SOEHD Student Services Office, ED 100.

Specialist and Services Credentials

Admission Requirements. Enrollment in an SOEHD Advanced Credential program requires that separate applications for admission be completed for the university ***and*** the SOEHD.

University Admission Requirements. Applicants are required to complete the California State University Application for Graduate Admission Parts A and B. In addition to this form, and among other requirements, the applicant is expected to provide evidence of an appropriate four-year B.A. or B.S. degree, scores on the Graduate Record Examination (GRE) or the Miller Analogies Test (MAT), and a minimum GPA of 2.5 on the last 60 (90 quarter) units attempted. University applications are available in the university Admissions Office (Joyal Administration Public Contact Window), the Graduate Office (Thomas Administration 132) and the SOEHD Student Services Office (ED 100).

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 Student Services Office, ED 100. Admission requirements for advanced credential programs are to be completed along with required forms and submitted **in one complete packet** to the SOEHD Student Services Office, ED 100.

Application Deadlines

University Admission. University deadlines for graduate admission applications normally are set during the semester prior to anticipated program enrollment. (Deadlines occur during April or May for fall enrollment and October or November for spring enrollment.) The university may extend admission deadlines if anticipated enrollment targets are not met. For specific deadlines, applicants need to check with the Admissions Office at the Joyal Administration Public Contact Window or call 278-6283.

SOEHD Admission Deadlines. All school admission materials required for full admission (classified standing) are to be submitted to the graduate technician in the Student Services Office, ED 100, no later than 30 days following the deadline for university admission. Students submitting all application material within these timelines will receive priority consideration for admission. General deadlines for program admission are: April 1 for summer/fall enrollment and November 1 for spring enrollment. For specific SOEHD admission deadlines, contact the Student Services Office, ED 100, or call 278-0300.

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 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.

EDUCATIONAL LEADERSHIP Joint Doctoral Program

Division of Graduate Studies
Joint Doctoral Program in Educational Leadership
KAREN T. CAREY, *Co-Director*
California State University, Fresno
ROBERT A. DeVILLAR, *Co-Director*
California State University, Davis
Education Building, Room 310
(209) 278-0427
(209) 278-0457 FAX

Doctorate in Educational Leadership (Ed.D.)
Organizational Studies
Supervision, Curriculum, and Instruction
Assessment and Evaluation
Sociocultural Contexts

The purpose of the Doctoral Program in Educational Leadership is to enhance the talents and skills of individuals who plan to devote their lives to the implementation of educational practices informed by research. Offered jointly by California State University, Fresno and the University of California, this Ed.D. program provides students with a broad view of educational problems and a strong background in social science theory. In addition, the program prepares students to conduct and interpret inquiries on which sound educational policy and practice can be anchored.

Students in the program benefit from the teaching and research expertise of established scholars from seven universities, including: California State University, Fresno and the University of California campuses at Davis, Los Angeles, Riverside, Santa Barbara, and Santa Cruz. The faculty hail from a number of academic disciplines: educational administration, education, anthropology, sociology, business, psychology, linguistics, Chicano and Latin American studies, and economics.

All courses are taught in Fresno and are held during the evenings and on the weekends to accommodate full-time working professionals.

Interdisciplinary/ Intercampus Faculty

California State University, Fresno

Ric Brown — Research, Statistics, and Measurement, Educational Psychology, Student Rating of Instruction
Karen Carey — Ethnographic Research Methods, School Psychology
Janice Chavez — Special Education
Donald Coleman — Program Development, Management, Leadership and Organization Development
Alfredo Cuellar — Educational Leadership, Organizational Cultures, Mentoring Processes
Manuel Figueroa-Unda — Methodological Explorations on Schooling, Higher Education in Latin America
Alexander Gonzalez — Social Psychology of Cooperative Teaching and Learning, Issues in Assessment of Minorities
Harold Haak — Higher Education, Public Administration
Harry Harris — Management, Government Relations, Administration
Lynn Hemink — Higher Education, Administration
Nancy Hunt — Teacher Education, Use of Computer-Based Technologies
Rebecca Kopriva — Research Methods, Statistics and Measurement
Phyllis Kuehn — Research, Measurement, Statistics, Language Acquisition
Finian McGinn — Linguistics, Literacy, Multicultural Education
Rosemary Papalewis — Educational Leadership, Administration/Higher Education, Women Leaders
Theresa Perez — School Change, Curriculum, Innovations, New Teacher Induction
Bernice Stone — Curriculum, Teacher Preparation, Mainstreaming
Gail Tompkins — Reading, Language Arts
Diane Yerkes — Pre-service Preparation of Instructional Leaders, Preparation of Administrators, Women in Educational Administration

University of California

Lynn Beck (UC Los Angeles) — Leadership, Administration, Principalship
James Catterall (UC Los Angeles) — Administration and Policy Analysis, Organization and Leadership
Concha Delgado-Gaitan (UC Davis) — Sociocultural Education, Education and Anthropology
Robert A. DeVillar (UC Davis) — Education Language, Literacy and Culture
Donald Erickson (UC Los Angeles) — Principalship, Organizational Theory
Patricia Gandara (UC Davis) — Educational Psychology, Social Foundations, Educational Policy
Tuli Glasman (UC Santa Barbara) — Principalship/Superintendent, Personnel Evaluation
John McNeil (UC Los Angeles) — Curriculum, School Administration
Barbara Merino (UC Davis) — Bilingual Schooling, Multilingual Contexts
Douglas Minnis (UC Davis) — Non-formal Education, Mentoring, Teacher Effectiveness
Theodore Mitchell (UC Los Angeles) — Public Policy, Philosophy of Education
Sandra Murphy (UC Davis) — Teaching and Assessing Writing, Reading Comprehension
Rodney T. Ogawa (UC Riverside) — Organizations Theory, Leadership Theory, Qualitative Research
Russell W. Rumberger (UC Santa Barbara) — Educational Reform, Education Policy, Education and Labor Markets, Survey Design
Trish Stoddart (UC Santa Cruz) — Educational Psychology, Science Education/Curriculum
Jon Wagner (UC Davis) — Educational Reform, Social Organization of Educational Research
Karen Watson-Gegeo (UC Davis) — Ethnographic Research Methods, Sociolinguistics, Bilingual Education, International Education
George Yonge (UC Davis) — Educational Psychology, Educational Philosophy, Teacher Preparation

Admission Requirements

Applicants must meet the general admission requirements for both California State University, Fresno and UC Davis. These include a master's degree or equivalent from an accredited institution and a grade point average of at least 3.2 in upper-division undergraduate and master's degree coursework. Applicants must also demonstrate high potential for educational leadership and scholarly achievement through professional experience, academic accomplishment, and professional recommendations. Applicants whose graduate degrees are in subjects other than education/educational administration and who plan to pursue a Professional Administrative Services Credential must complete the required 24 credential units (Preliminary level) prior to admittance.

The deadline for application to the program is in early March. Finalists are interviewed by the Joint Doctoral Program Admissions Committee.

Residency Requirements

Students must spend a minimum of one year in academic residence at each campus. To establish residence at UCD, doctoral students in their second year of coursework will register at UCD in the Winter and Spring Quarters and also in two summer sessions.

Program Requirements

Students in the program move through three phases of study, comprising 60 units. Phase one comprises eight core courses, phase two comprises specialization courses and field case study, and phase three comprises the dissertation. All students move through phase one as a cohort. Students may choose to specialize in one of four areas: organizational studies; supervision, curriculum, and instruction; assessment and evaluation; and sociocultural contexts.

	Units
Phase 1 — Core	24
EDL 201, 202, 203, 204, 205, 206, 207, 208	
Phase 2 — Specialization	24
EDL 210, 280T, 290, EDU 299, 299D	
Phase 3 — Dissertation	12
EDL 299	
Total	60

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; max total 8)
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.

280T. Topics in Educational Leadership (1-3; max total 15)
Prerequisites: admission to the program, EdL 201-208, and permission of the co-directors. Topics and issues in educational leadership in the areas of organizational studies, curriculum, instruction and supervision, assessment and evaluation, and sociocultural studies. Analysis of research findings and an emphasis on the relationship of theory to practice.

290. Individual Study (1-18; max total 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; max total 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.

UC DAVIS COURSES

Education (EdU)

299. Individual Study (1-6; max total 40 quarter units)
Independent study, 3-18 hours. Individual study under the direction of a faculty member. *Satisfactory/Unsatisfactory* grading only.

299D. Research (1-6; max total 30 quarter units)
Independent study, 3-18 hours. Research for individual graduate students. *Satisfactory/Unsatisfactory* grading only.

ENGINEERING Civil and Surveying Engineering and Construction

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

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. 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.

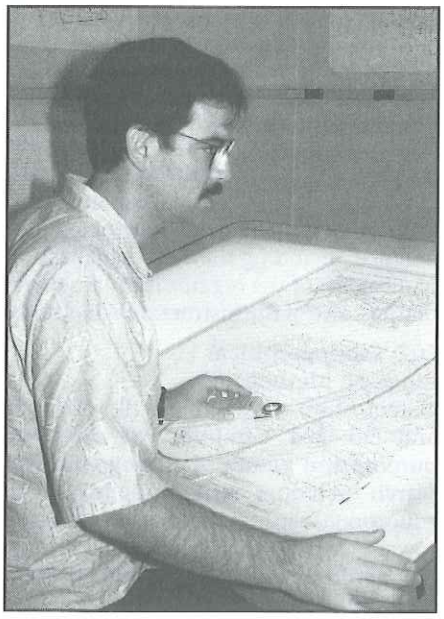
The graduate curriculum leading to an M.S. degree in Civil Engineering provides specialized training in the fields of structural engineering and applied mechanics, soil mechanics and foundation engineering, environmental engineering, water resources engineering, highway engineering, and surveying engineering.

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.



Excellent laboratory facilities exist for testing of soils and construction materials, hydraulics testing, and water quality analysis.

Administrative Academic Probation

A minimum GPA of 2.0 must be maintained in all courses taken in the School of Engineering. Students who fail to maintain a 2.0 GPA in courses within their major may be placed on administrative academic probation. Failure to eliminate the grade point deficiency could result in disqualification from the School of Engineering.

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*

Howard C. Biddlecome
Chandra S. Brahma
James K. Crossfield
Wayne P. Dominick
Frank H. Goishi
R. Louis Gysler
Mushtaq Hussain
John R. Johnston
Joseph Kao
Jesus S. Larralde-Muro
Riadh Munjy
Fareed W. Nader
C. Dennis Spring
Mohamad Yousef

Bachelor of Science Degree Requirements

Civil Engineering Major ***Units***

Major requirements 68

C E 20, 85, 121, 121L, 123, 123L, 124, 128, 129, 130, 132, 133, 142, 142L, 150, 180, 185 ..... (36)
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 140, 141, 143, 144
General Professional: C E 110, 161, 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, 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 133

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	Light and Modern Physics	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
I E 160	Engineering Economy	2
Phil 120	Contemporary Conflicts of Morals	3
		16

Seventh Semester		
C E 124	Concrete Laboratory	1
C E 132	Reinforced Concrete Design	3
ECE 90	Principles of Electrical Circuits	3
M E 136	Thermodynamics	3
Technical Area Courses		6
		16

Eighth Semester		
C E 133	Design of Steel Structures	3
C E 180	Senior Project	2
C E 185	Civil Engineering Practice	1
Pl Si 120	International Politics	3
Technical Area Courses		6
		15

[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.

A student must satisfactorily complete a written examination administered by the department before being eligible for Advancement to Candidacy. The purpose of the examination is to satisfy both the university's graduate writing requirement and to demonstrate the student has sufficient technical proficiency to continue in the program.

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 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 and Construction — 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 and Construction — 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 and Construction — 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 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 152 Real Property Descriptions (3)
S E 153 Advanced Boundary Law (3)
S E 161 Data Interface Design (3)
S E 174 GIS Applications (3)
S E 175 GIS Design Problems (3)
S E 177 GIS Database Design (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)
Prerequisites: Math 77 or concurrently; Phys 4A. Analysis of force systems, equilibrium problems, section properties; graphic, algebraic, and vector methods of problem solution. (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)
Prerequisites: 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. (Computer lab fee, $15)

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)
Prerequisites: 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. (Instructional materials fee, $15)

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)
Prerequisites: 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. (2 lecture, 3 lab hours)

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. (Instructional materials fee, $15)

131. Intermediate Theory of Structures (3)
Prerequisite: C E 130. Analysis of statically indeterminate beams, trusses, and frames; 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)
Prerequisites: 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)
Prerequisites: 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. (Formerly C E 191T section)

140. Hydrology (3)
Prerequisites: 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) (Instructional materials fee, $15)

141. Water Resources Engineering (3)
Prerequisites: C E 128, 142 (or concurrently), I E 160 (or concurrently), M E 26. Hydraulic design of water distribution, sewerage, and drainage systems, using computer-assisted network analysis and spreadsheet software. (2 lecture, 3 lab hours; field trips required)

142. Environmental Engineering (3)
Prerequisites: C E 128, Chem 1A and Bio 10. Introduction to the principles and practices of environmental quality management, including water and air quality, waste management, and the environmental effects of engineered systems.

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)
Prerequisites: C E 142 or (permission of instructor); I E 160 (or concurrently). Analysis and design of selected physical, chemical, and biological facilities for water purification and wastewater treatment with an emphasis on small-scale facilities. (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.

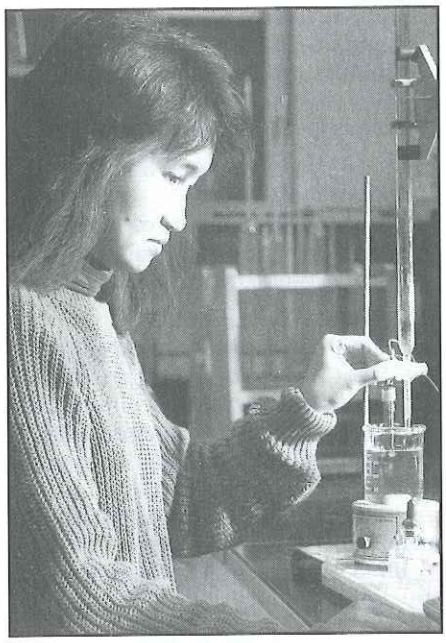
170. Pollution and Society (3)
Prerequisite: Pl Si 2 or 101. Not open to civil engineering majors. Descriptive analysis of natural and human environments. Effects of pollution and related human activities. Pollution control strategies and technology. Rational environmental decision-making. General Education CAPSTONE Cluster course. (Field trips required)

180. Senior Project (2)
Prerequisites: 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)
Prerequisites: 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 total 6)
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)
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.

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.

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.

230. Advanced Theory of Structures (3)
Prerequisite: graduate standing in engineering or permission of instructor. Analysis of indeterminate structures by force (flexibility) methods and by displacement (stiffness) methods; Matrix methods suitable for digital computer solutions. Virtual work, real and complementary energy. Classical structural theorems. Introduction to the finite element method.

232. Prestressed Concrete (3)
Prerequisite: graduate standing in engineering or permission of instructor. Properties of hardened concrete. Failure mechanisms, influence of load, and environment history. Structural behavior and design of prestressed concrete elements and systems: continuous beams, frames, slabs. Partial prestress. (Field trips required)

233. Advanced Steel and Timber Design (3)
Prerequisite: graduate standing. Material behavior and design of basic structural units. Topics in steel: inelastic buckling, lateral-torsion buckling, plate girders, composite design, plastic design. Topics in wood: glulam structural units, pole-type structures, structural diaphragms.

234. Theory of Plates and Shells (3)
Prerequisite: graduate standing in engineering or permission of instructor. Methods of calculating stresses and deformations in plates and shells used in engineering structures. Bending of circular and rectangular plates under various conditions. Membrane and flexural analysis of shells of revolution.

235. Finite Element Analysis (3)
Prerequisite: graduate standing in engineering or permission of instructor. Theoretical and conceptual bases for formulation of finite element representations in solid mechanics. Development of element stiffness matrices for plane stress and plane strain problems, bending of plates and deformation of shells.

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.

240. Engineering Hydrology (3)
Prerequisites: 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.

242. Water Resources Planning and Management (3)
Prerequisite: graduate standing in engineering or permission of instructor. A study of the interrelations of engineering, economic, legal, political, administrative, ecological, and social factors involved in the planning and management of water resources.

245. Advanced Unit Operations and Processes (3)
Prerequisites: 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)

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)
Prerequisites: 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.

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.

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.

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)

280. Surveying Engineering Seminar (1; max total 3)
Prerequisite: graduate standing. Current California State University, Fresno surveying engineering research presented and discussed by faculty and graduate students. Oral presentation and written report documenting ongoing research activities required.

281. Civil Engineering Seminar (1; max total 3)
Prerequisite: graduate standing. Current California State University, Fresno civil engineering research presented and discussed by faculty and graduate students. Oral presentation and written report documenting ongoing research activities required.

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.

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.

291T. Topics in Engineering (1-3; max total 6)
Prerequisite: permission of instructor. Investigation of selected engineering topics. May be offered with a lab.

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. (Instructional materials fee, $15)

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. (Instructional materials fee, $15)

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 73

S E 1, 15, 15L, 16, 16L, 34, 50, 61, 66, 102, 108, 123, 125, 126, 135, 141, 148, 151, 159, 173, 180, 181 ..... (56)

I E 160 ..... (2)

Engineering Science ..... (3)
Select one course from the following: C E 20, 29, 150; M E 29, 31; ECE 90

Technical Courses ..... (12)
Select mandatory technical courses from the following list subject to the *Design Courses* statement listed below: S E 100, 101, 105, 109, 114, 129, 140, 145, 152, 153, 161, 174, 175, 177, 190, 191T; C E 121, 150, 161; C Sci 115, 124, 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 6 units of technical courses must be selected from the following design courses: S E 145, 153, 161, 175

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 133

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 4½ 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	Composition	3
		15

Second Semester		
S E 16, L	Municipal Surveying	2
S E 66	Computer-Aided Mapping	2
Math 76	Mathematical Analysis II	4
Phys 4A, L	Mechanics and Wave Motion/Lab	4
Spch 3, 7, or 8		3
		15

Third Semester		
S E 34	Survey Computations	3
Chem 3A	Intro General Chemistry	4
Hist 11/12	American History	3
Math 77	Mathematical Analysis III	4
Phys 4B	Electricity and Magnetism	3
		17

Fourth Semester		
S E 50	Land Surveying	3
Engineering Science		3
Bot 10	Plant Biology	3
Phys 4C	Light and Modern Physics	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 141	Route and Construction Surveying	3
S E 151	Boundary Control and Legal Principles	3
S E 173	Introduction to GIS	3
Pl Si 2/101	American Constitution	3
		18

Sixth Semester		
S E 102	Geodetic Surveying	3
S E 108	Geodesy	3
S E 125	Analytical Photogrammetry	3
S E 126	Digital Mapping	3
I E 182W	Engineering Writing	3
Pl Si 120	International Politics	3
		18

Seventh Semester		
S E 148	Satellite Geodesy	3
I E 160	Engineering Economy	2
Geol 1	Physical Geology	4
Technical Courses		6
		15

Eighth Semester		
S E 159	Subdivision Design	3
S E 180	Senior Project	2
S E 181	Project Design	3
Phil 120	Contemporary Conflicts of Morals	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. (Formerly 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 (1)
Prerequisites: S E 15, 61. Instrumentation; automated electronic survey data collection; local plane control survey, land survey, GIS overlay mapping and astronomy for azimuth applications.

16L. Municipal Surveying Laboratory (1)
Prerequisite: S E 16 or concurrently. Field and office practice in instrumentation; automated electronic survey data collection; local plane control survey, land survey, GIS overlay mapping and astronomy for azimuth applications. (3 lab hours; field trips required)

23L. Measurement Statistics Lab (1)
Concepts of measurements and error; reliability of measurements, probability theory, preanalysis of survey measurements, statistical analysis of measurements, hypothesis testing, analysis of variance, error ellipses, experimental design. (3 lab hours; field trips required)

34. Survey Computations (3)
Prerequisites: 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.

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. (Computer lab fee, $15)

66. Computer-Aided Mapping (2)
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. (Computer lab fee, $15)

73. Geomatics (1)
Introduction to Geographic and Land Information Systems; software and hardware issues; practical exercises. (Formerly 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)
Prerequisites: 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)
Prerequisites: S E 16, 16L, 34. Horizontal and vertical geodetic networks for deformation, industrial tooling and local area applications; theory and application of State Plane Coordinate systems. (2 lecture, 3 lab hours; field trips required)

105. Futuristics (3)
Prerequisites: 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)
Prerequisites: Math 77, Phys 4A, 4AL, S E 34. 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)

114. Navigation Systems (3)
Prerequisite: S E 108 or permission of instructor. Theory and concepts of navigation systems LORAN, SHORAN, real-time GPS. Design of air, sea, and land navigation applications, including automatic vehicle location and navigation (AVLN). (2 lecture, 3 lab hours; field trips required) (Formerly S E 41L)

123. Stereo-Photogrammetry (3)
Prerequisites: S E 15, 34 or concurrently. Imaging systems; image quality. 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)
Prerequisites: S E 123, 135. Introduction to analytical photogrammetry; strip and block aerial triangulation. Design and operating principles of analytical plotters. Introduction to soft-copy photogrammetry. (2 lecture, 3 lab hours; field trips required)

126. Digital Mapping (3)
Prerequisites: 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)

129. Industrial Photogrammetry (3)
Prerequisites: S E 108, 125. Photogrammetric principles applied to close range applications; calibration of non-metric imaging systems; simultaneous bundle adjustment of a photo block; use of additional camera and block parameters in adjustment; design of photogrammetric systems for industrial process monitoring; case studies. (Field trips required) (Formerly S E 23)

135. Advanced Survey Computations (3)
Prerequisites: 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. (Computer lab fee, $15)

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.

141. Route and Construction Surveying (3)
Prerequisites: S E 15, 15L or permission of instructor. Computations and theory covering surveys for highway, irrigation, rail, pipeline, construction, and other engineering projects. Includes computer solutions and applications. (2 lecture, 3 lab hours; field trips required) (Formerly S E 41)

145. Geopositioning (3)
Prerequisites: S E 148, 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)

148. Satellite Geodesy (3)
Prerequisites: S E 102, 108, 135. Motion of a satellite, orbit geometry and perturbations; time measuring systems; global geodesy model; reduction and adjustment of satellite observation data; differential equations of orbit relaxation; network optimization; data transformation. (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)

159. Subdivision Design (3)
Prerequisites: S E 141, 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)
Prerequisites: 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)

Surveying engineering includes the science of making measurements to determine the relative positions of points on or near the earth's surface and the science of making accurate measurements from photographs or other types of imagery.

173. Introduction to GIS (3)
Prerequisites: 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) (Computer lab fee, $15)

174. GIS Applications (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) (Formerly S E 191T section)

175. 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) (Formerly S E 147)

177. GIS Database Design (3)
Prerequisites: 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 (Formerly S E 121)

180. Senior Project (2)
Prerequisites: senior standing in surveying engineering required, final semester preferred; 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. Taken concurrently, S E 180 and S E 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) (Formerly S E 171)

190. Independent Study (1-3; max total 6)
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)
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. A report will be required of the student at the termination of each implemented experience. This course cannot be used to meet graduation requirements. ***CR/NC*** grading only.

Bachelor of Science Degree Requirements

Construction Management Major

	Units
Major requirements	75
Construction Core	(42)
Const 5, 10, 42, 50, 105, 107, 114, 116, 120, 122, 124, 142, 162, 164	
C E 127; S E 11, 11L; Acct 3; C Sci 5; Mgt 104, 106	(18)
Technical Specialty	(15)
Select one:	
Architecture	
Const 31, 32, 131, 132, 134	
Management	
Const 144, 150, 151, 166; Fin 180	
Additional requirement	4
Select one from Chem 3A, Geol 1, Math 76, or Phys 2B	
General Education	53
CORE: Category 3, Math 75 (required)	
BREADTH: Division 1, Phys 2A (required); Division 8: Econ 40 or 50 (required)	
CAPSTONE: Pollution, Health, and Society Cluster, C E 170 and H S 170	
Remaining degree requirements	0
(See *Degree Requirements*); upper-division writing skills by examination	
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 $4\,^1/_2$ or more years to graduate rather than the traditional 4 years. Students not fully prepared in mathematics should consider taking Math 71 and 72 in lieu of Math 75. 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 no sooner than the term in which 60 units of coursework 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 75 Mathematical Analysis I	4
GE CORE	History	3
GE CORE	Political Science	3
Const 5	Construction Materials	3
		19

Second Semester		
GE CORE	Critical Thinking	3
Division 1	Phys 2A	4
GE BREADTH	Division 2	3
GE BREADTH	Division 3	3
Const 42	Architectural Drawing	3
		16

Third Semester		
GE BREADTH	Division 4	3
Acct 3	Essentials of Accounting	3
C Sci 5	Computer and Applications	3
Const 50	Basic Building Systems	3
Chem 3A, Geol 1, Math 76, or Phys 2B		4
		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		
Division 8	Econ 40 or 50	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 (upper-division course)	3
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
		15

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
Mgt 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
Mgt 106	Behavior Principles of Management	3
		15

Recommended Program for Management Specialty

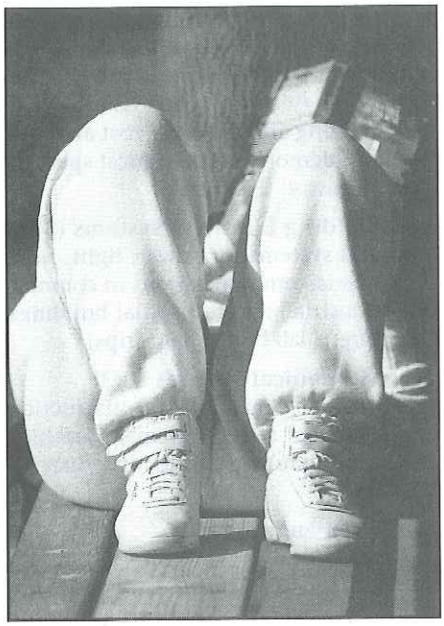
First Semester		***Units***
GE CORE	English	3
GE CORE	Speech	3
GE CORE	Math 75 Mathematical Analysis I	4
GE CORE	History	3
GE CORE	Political Science	3
Const 5	Construction Materials	3
		19

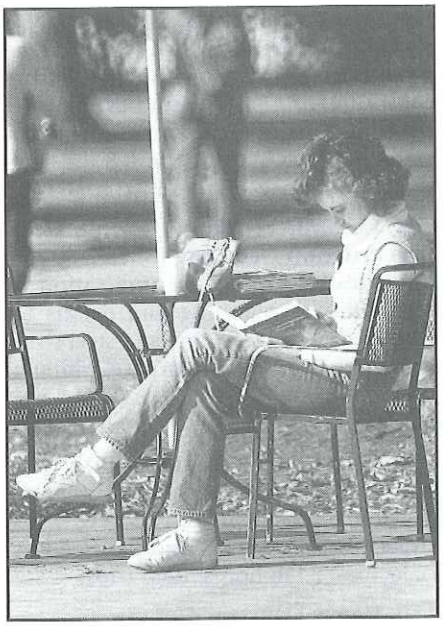
Second Semester		
GE CORE	Critical Thinking	3
Division 1	Phys 2A	4
GE BREADTH	Division 2	3
GE BREADTH	Division 3	3
Const 42	Architectural Drawing	3
		16

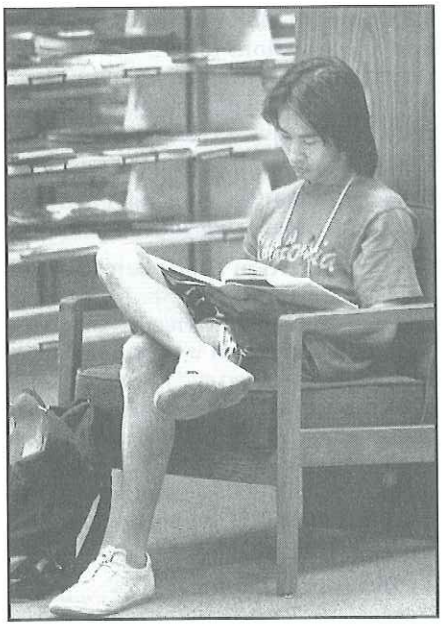
Third Semester		
GE BREADTH	Division 4	3
Acct 3	Essentials of Accounting	3
C Sci 5	Computer and Applications	3
Const 50	Basic Building Systems	3
Chem 3A, Geol 1, Math 76, or Phys 2B		4
		16

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		
Division 8	Econ 40 or 50	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 (upper-division course) 3
Const 107 Adv Const Structures 3
Const 114 Construction Management... 3
Const 120 Construction Contract and Specifications 3
Const 162 Mechanical Systems I 3
15

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
Mgt 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
Mgt 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)
Prerequisites: 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) (Computer lab fee, $15)

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)
Prerequisites: Const 5, 50; Phys 2A; Math 71 and 72 or 75. 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. (2 lecture, 2 lab hours)

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)
Prerequisites: 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. (2 lecture, 2 lab hours) (Computer 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)
Prerequisites: 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) (Computer 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. (2 lecture, 2 lab hours; field trips)

150. Heavy Construction (3)
Prerequisites: 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)
Prerequisites: 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)

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)

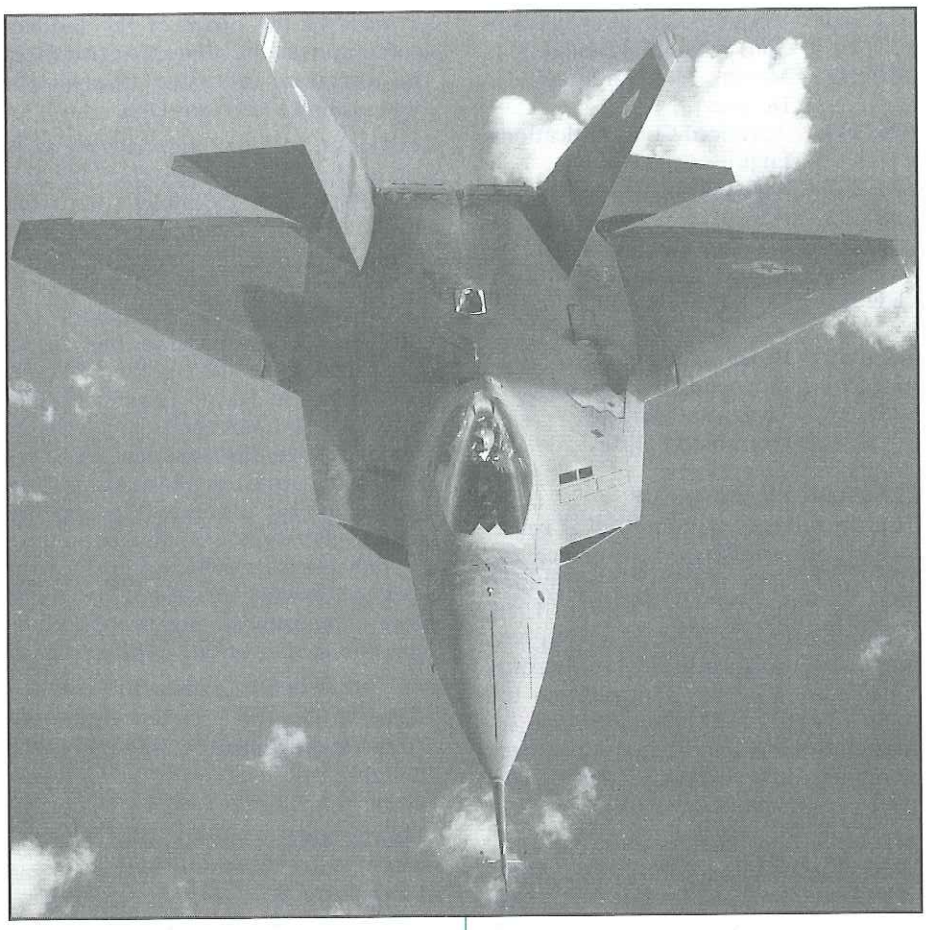
164. Building Electrical Systems (3)
Electrical systems for power, light, heat, signals, and communications in commercial, industrial, and residential buildings. (2 lecture, 2 lab hours; field trips)

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 total 6)
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. Prerequisites: junior standing and permission of instructor. Supervised work experience in construction related industries. Periodic consultations with instructor. ***CR/NC*** grading only.



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*
Edwards A.F.B., Building 2453
(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 regular degree credit and may be transferred to universities where regular degree credit is accepted, including CSU campuses. 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 major courses (6 units), and approved elective courses (12 units), for a total of 30 units (semester hours) of coursework. In addition, a comprehensive examination is required. 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 candidacy 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 will stress the material in the required major courses.

Faculty. All faculty are selected from the Fresno campus, from other CSU campuses, and from among qualified engineers on the Base.

Admission to the 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 to 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 a degree in physical science or mathematics or a different engineering discipline, and who have not met the requirements of category 1, will be given conditionally classified graduate standing. Upon satisfactorily meeting any specified requirements, students 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 California State University, 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 in all upper-division and graduate coursework from the date of commencing the first course of the proposed master's degree program.
4. Departmental recommendation for advancement to candidacy.
5. Satisfactory completion of the Graduate Writing Skills Requirement.

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 206	Probability Theory and Statistical 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 232	Advanced Aircraft Stability and Control (3)
M E 241	Structural Analysis (3)
M E 243	Structural Dynamics (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 and Lasers (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 $175* per semester hour or $525* 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 $55* for admission to the program and a $30* graduation fee. Tuition and fees should be paid by check or money order made out to "California State University, 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 noncumulative 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 personnel 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. The forms are processed through the Fresno campus Veterans Office.

Textbooks. Textbooks normally are available 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 California State University, Fresno Edwards resident coordinator. It is not necessary to visit the Fresno campus. Students desiring to enroll should contact the Edwards resident 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 fliers and in the various EAFB media.

For further details, contact:

James W. Smolka
Fresno State Resident Coordinator
Building 2453
Edwards A.F.B., CA 93523

Mailing address from on Base:
650 ABW/MSUE/Fresno State
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.

*Fees subject to change upon approval.

GRADUATE COURSES

(See *Course Numbering System.*)

Engineering (Engr)

205. Computing in Engineering Analysis (3)
Prerequisite: graduate status in engineering. Solution of engineering problems using digital computation. Modeling of engineering systems for numerical analysis.

206. Probability Theory and Statistical Analysis (3)
A first course in probability theory and statistical analysis at the graduate level. Finite sample spaces, conditional probability and independence, one-dimensional random variables, functions of random variables, two- and higher-dimensional random variables, poisson and other discrete random variables, continuous random variables, moment-generating function, reliability theory, sums of random variables, samples and sampling distributions, estimation of parameters, testing hypothesis.

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 and Lasers (3)
Quantum measure of light, linear, elliptical, and circular polarization; optical waveguide equations, ray and mode theory; source and detector characteristics; attenuation, 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)
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.

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.

241. 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. (Formerly M E 233)

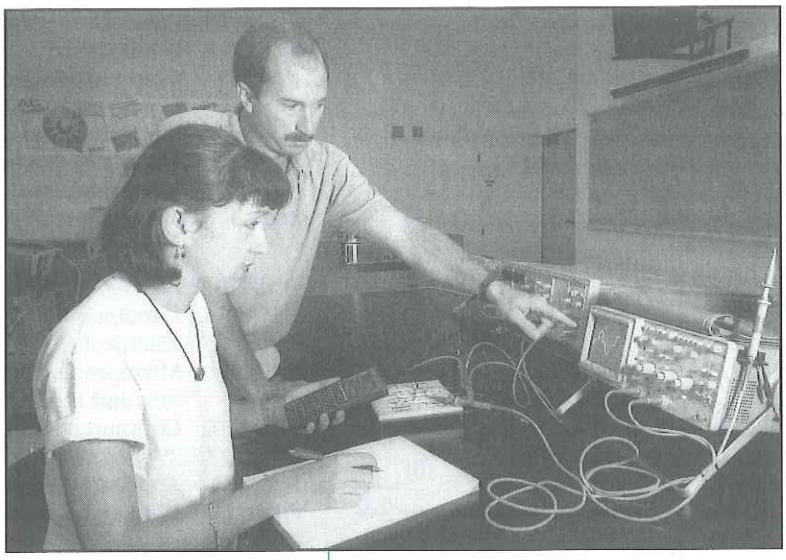
243. Structural Dynamics (3)
Prerequisite: M E 241 or permission of instructor. Continuation of M E 241. Von Karman theory, shear deformation, geometry and equilibrium of shells, theory of vibrations, vibrations of aircraft structures, coupling with the aerodynamic equations, flutter, ground and flight structural test techniques. (Formerly M E 231)

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
DANIEL C. BUKOFZER, *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. Although many courses are common to both programs, there are significant differences between the graduation requirements for electrical engineering and computer engineering. Students are advised to decide early in their programs of study which major they intend to pursue.

Electrical Engineering

The Electrical Engineering Program is accredited by the Engineering Accreditation Commission of the Accreditation Board for Engineering and Technology (ABET). The electrical engineering course of study broadly prepares the graduate for professional practice or graduate studies while offering 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 energy conversion and control systems

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.

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 chair of the Department of Electrical and Computer Engineering and the campus co-op coordinator.

Administrative Academic Probation

A minimum GPA of 2.0 must be maintained in all courses taken in the School of Engineering. Students who fail to maintain a 2.0 GPA in courses within their major may be placed on administrative academic probation. Failure to eliminate the grade point deficiency can result in disqualification from the School of Engineering.

Career Opportunities

According to a report by the American Electronics Association, a shortage of electrical and computer engineers is projected for the next several years. The 1996 edition of *Money Magazine's Money Guide* forecasted a 112 percent increase in computer engineering positions by 2005, the highest increase in any major profession. 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.

Faculty

Daniel C. Bukofzer, *Chair*

Albert A. Heaney
Robert W. Hecht
Medhat A. H. Ibrahim
John M. Johnson
Chung K. Liu
Larry D. Owens
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. A 52,000 square-foot engineering building addition provides additional classroom space, faculty offices, and expanded modern laboratories that include: a microcomputer laboratory, a new CAD/CAM laboratory, and laboratories for microprocessors and digital systems, electronics, computer development, optical communications, digital control/robotics, special projects, and power systems.

In addition, students have access to several minicomputers, the campus mainframe computer, and recently installed engineering graphics workstations. 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 69
- ECE 1, 70, 85, 85L, 90, 90L, 114, 115, 118, 120L, 121, 121L, 124, 125, 126, 128, 128L, 138, 138L, 155, 185A or 185B or 185C ..... (49)
- C E 29 or M E 29 ..... (3)
- I E 160 ..... (2)
- M E 136 ..... (3)
- **Technical Area Courses** ..... (12)
  - Select mandatory technical area courses from no more than two of the following groups.
  - ***Electronics and Communications:*** ECE 134, 135, 136, 136L, 140, 144, 162, 166, 168, 171, 176
  - ***Computers and Digital Systems:*** ECE 106, 107, 132, 146, 148, 172, 173, 174
  - ***Power and Control Systems and Energy Conversion:*** ECE 151, 152, 153, 173; 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: 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 133

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 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	Engineering Comps Using C and Fortran	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
Hist 11 or 12		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	3
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
		17

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 114	Physical Electronics	3
ECE 124	Linear Electric Circuit and Sys Analysis	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 138, L	Electronics II	4
I E 182W	Engineering Writing	3
Phil 120	Contemporary Conflicts of Morals	3
Technical Area Courses		3
		17

Seventh Semester

ECE 125	Random Signals and Stochastic Sys Analysis	3
ECE 155	Control Systems	3
Pl Si 2 or 101		3
Technical Area Courses		6
		15

Eighth Semester

ECE 185A or 185B or 185C	Senior Design	3
M E 136	Thermodynamics	3
Div. 4 Elective[2]		3
Technical Area Courses		3
Pl Si 120	International Politics	3
		15

[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 51
- ECE 1, 85, 85L, 114, 115, 118, 120L, 124, 128, 185A or 185B or 185C ..... (24)
- **Computer Design Option**
  - ECE 174 ..... (3)
  - C Sci 144, 150 ..... (6)
- **Technical Area Design Courses** ..... (9)
  - ECE 106, 107, 132, 138, 138L, 140, 148
- **Technical Area Courses** ..... (9)
  - ECE 134, 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 23
- C Sci 40, 41 ..... (8)
- Math 76, 77, 81 ..... (12)
- ECE 125 ..... (3)

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 132

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 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 76	Mathematical Analysis II	4
Phil 10	Self, Religion, and Society	3
Phys 4A	Mechanics and Wave Motion	3
Pl Si 2	American Government and Institutions	3
		17

Third Semester

ECE 115	Principles of Computer Architecture	3
C Sci 41	Intro to Data Structures	4
Math 77	Mathematical Analysis III	4
Phys 4B, L	Electricity, Magnetism and Heat	4
		15

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 114	Physical Electronics	3
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
ECE 125	Random Signals and Stochastic Sys Analysis	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

I E 182W	Engineering Writing	3
Phil 120	Contemporary Conflicts of Morals	3
Spch 3, 7, or 8		3
Technical Area Courses[2]		3
Technical Area Design Courses[1]		3
		15

Eighth Semester

ECE 185A or 185B or 185C	Senior Design	3
Pl Si 120	International Politics	3
Div. 4 Elective[3]		3
Technical Area Courses[2]		6
		15

[1]Select at least 9 units from the list of Technical Area Design Courses.
[2]Select at least 9 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.

70. Engineering Computations Using C and Fortran (3)
Prerequisites: 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. (Computer lab fee, $15)

71. Engineering Computations (3)
Prerequisites: 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, documen-

tation, testing, and debugging. Cannot be taken for credit if ECE 70 has been taken previously. General Education CORE, Quantitative Reasoning. (Computer lab fee, $15)

85. Digital Logic Design (3)
Discrete mathematics, logic, and Boolean algebra. Number systems and binary arithmetic, logic gates, combinatorial logic, minimization techniques. Analysis and design of combinatorial circuits. Flipflops, multivibrators, registers, and counters. Introduction to sequential circuits and state machines. Synchronous state machine design.

85L. Digital Logic Design Laboratory (1)
Prerequisite: ECE 85 or concurrently. Usage, design, and implementation techniques for combinatorial and sequential circuits. Experiments utilizing logic gates, Karnaugh maps, multiplexers, decoders, programmable logic devices, latches, flipflops, counters and shift registers. Combinatorial and state machine design projects. Computer Assisted Engineering (CAE).

90. Principles of Electrical Circuits (3)
Prerequisites: 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. (CAN ENGR 6 and 12)

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) (CAN ENGR 6)

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.

107. Digital Signal Processing (3)
Prerequisites: 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.

114. Physical Electronics (3)
Prerequisites: Phys 4C, ECE 128 or concurrently. Semiconductor fundamentals: the valence bond and energy band models of solids, carrier densities and current components. Discrete devices: the pn junction diode, BJT, MOS FET, and JFET; the Schottky barrier diode and GaAs MESFET. Integrated circuits and VLSI Systems. Modern fabrication techniques for discrete and integrated devices.

115. Principles of Computer Architecture (3)
Prerequisites: ECE 85 and either C Sci 40 or ECE 70. 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. Introduction to RISC architecture and memory organization. (Formerly 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, macros. (Computer lab fee, $15) (Formerly 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. Design projects. (Formerly ECE 119L)

121. Electromechanical Systems and Energy Conversion (3)
Prerequisites: ECE 90, 90L. Principles of direct- and alternating-current machinery and other energy-conversion devices and associated apparatus.

121L. Electromechanical Systems and Energy Conversion Laboratory (1)
Prerequisite: ECE 121 or concurrently. Experiments and computations on direct- and alternating-current machinery and on other energy-conversion devices and associated apparatus. (3 lab hours)

124. Linear Electric Circuit and Systems Analysis (3)
Prerequisites: ECE 90, 90L. Operational analysis of discrete and continuous linear circuits and systems: Z-transforms, Fourier transforms; Fourier series; state-space representations, computer-aided solutions.

125. Random Signals and Stochastic System Analysis (3)
Prerequisites: Math 81, ECE 124. Probability theory and statistical principles, random variables and their characterization, transformations of random variables, random processes, correlations and power spectral densities, noise characterization and noise figure, systems' response to stochastic inputs, matched filters, applications to communication and control systems.

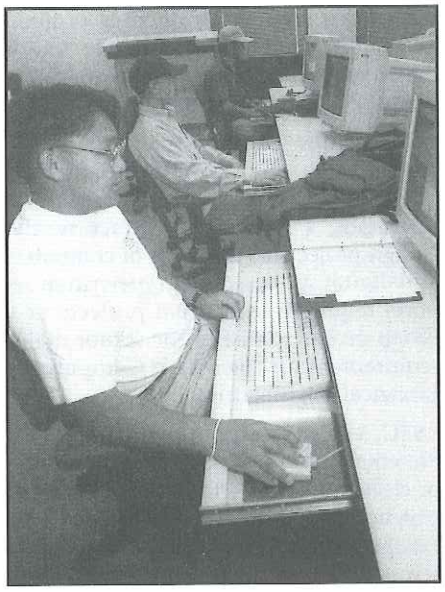
126. Electromagnetic Theory and Applications I (3)
Prerequisite: ECE 90 or concurrently. Electrostatics; boundary value problems; magnetostatics; time-varying fields; Maxwell's equations. Transmission of electromagnetic energy.

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 multistage amplifier analysis and design; feedback amplifiers; computer solutions as appropriate.

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)

132. Design of Digital Systems (3)
Prerequisites: 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.

134. Communication Engineering (3)
Prerequisite: ECE 124. Mathematical modeling of signals; spectral density; linear and nonlinear modulation theory; demodulators; phase lock loops; link analysis; sampling theory; PCM and DM; digital communications; effect of noise on systems; link design; computer simulations.



135. Digital Communications (3)
Prerequisite: ECE 125. Principles, analysis methodology, statistical performance characteristics and design considerations of digital communication systems. Source and channel coding, Viterbi decoding, binary and M-ary digital AM, FM, PM, and hybrid modulation schemes. Noise performance of receivers, modem design. Computer simulations. (Formerly ECE 191T section)

136. Electromagnetic Theory and Applications II (3)
Prerequisite: ECE 126. Plane wave propagation and reflection; waveguides; striplines and microstrip impedance matching, microwave circuits and S-parameters; amplifier power gain and stability, amplifier design, antenna analysis and design; methods for computer solution.

136L. Electromagnetic Theory and Applications Laboratory (1)
Prerequisite: ECE 136. Experiments on the transmission of electromagnetic energy through wires, waveguides, and space; filters and antennas; impedance matching; cross-over networks; location of faults on lines. (3 lab hours)

138. Electronics II (3)
Prerequisites: ECE 124, 128, 128L. Analysis and design of high frequency amplifiers; high frequency models of transistors; operational amplifiers and applications to comparators, instrumentation and active filters; oscillators, modulators, bandpass amplifiers, and demodulators for communications. Emphasis on modern design methods.

138L. Electronics II Laboratory (1)
Prerequisite: ECE 138 or concurrently. 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 preestablished specifications. Design project included; computer solutions as appropriate. (3 lab hours)

140. VLSI System Design (3)
Prerequisites: ECE 114, 115, 128. Emphasis on the design of a substantial, full custom VLSI system. Digital circuit design, fabrication principles, physical and electrical design rules, control and data path design techniques, system timing, design verification, simulation and testing. Project design requires utilization of engineering workstations running an industry standard CAD framework and incorporating a complete suite of IC design tools. Fabrication is available for potentially successful student design projects. (Computer lab fee, $15)

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.

146. Computer Networking and Distributed Processing (3)
Prerequisites: ECE 115, 125. Analysis and design of modern computer networks: layered protocols, routing; flow and congestion control; packet, message, and circuit switching; error control and recovery; performance analysis. Local area networks, asynchronous transfer mode and ISDN.

148. Analysis and Design of Digital Circuits (3)
Prerequisites: ECE 85, 114, 128. Analysis and design of solid state digital circuits utilizing various logic families suitable for integration: TTL, ECL, NMOS, CMOS; logic gates; multivibrators; ROM, PROM, EPROM, and EEPROM; SRAM and DRAM; PLDs, Gate Arrays, and other digital ASICs.

151. Electrical Power Systems (3)
Prerequisites: 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.

152. Symmetrical Components and Short Circuit Analysis (3)
Prerequisites: 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.

153. Power Electronics (3)
Prerequisites: 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.

155. Control Systems (3)
Prerequisites: Math 81, ECE 124. Analysis, design, and synthesis of linear control systems; modeling, performance evaluation, frequency response, and stability.

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.

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 such as klystrons, reflex klystrons, traveling-wave tubes, magnetrons and gyrotrons.

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.

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.

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.

173. Digital Controls and Robotics (3)
Prerequisites: 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.

174. Advanced Computer Architecture (3)
Prerequisites: ECE 115, Math 107 or ECE 125. Advanced computing architecture concepts: pipelining; multiprocessing and multiprogramming; cache and virtual memory; direct memory access, local and system bus architectures; instruction set design and coding; CPU and system performance analysis.

176. Computer-Aided Circuit Design (3)
Prerequisites: 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.

185A. Senior Design (3)
Prerequisites: senior standing in computer or electrical engineering or permission of instructor; I E 182W or concurrently. Design projects in the areas of electronics and/or communications; final typewritten reports required. Individual projects or a group project. Satisfies the senior major requirement for the B.S. in Computer or Electrical Engineering.

185B. Senior Design (3)
Prerequisites: senior standing in computer or electrical engineering or permission of instructor; I E 182W or concurrently. Design projects in the areas of computers and digital systems; final typewritten reports required. Individual projects or a group project. Satisfies the senior major requirement for the B.S. in Computer or Electrical Engineering.

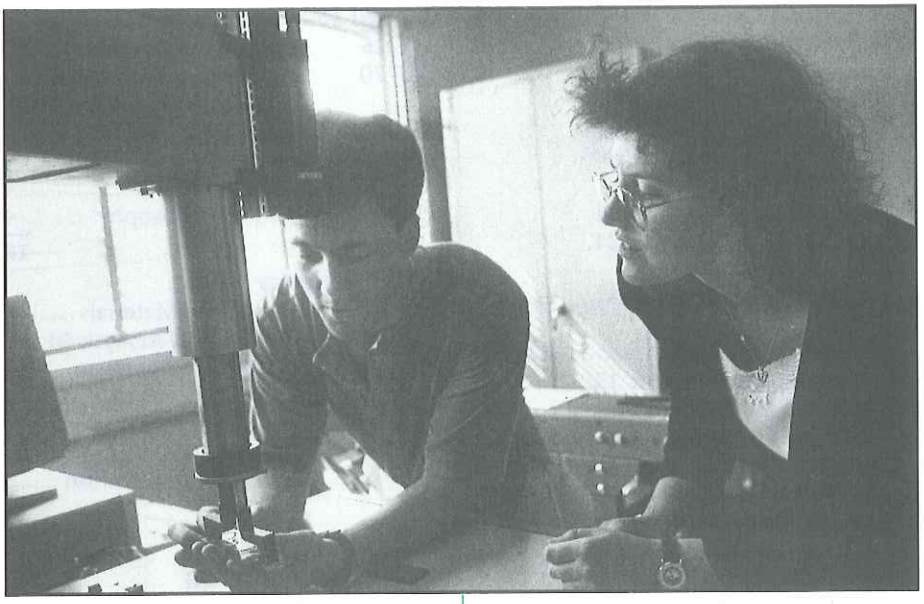
185C. Senior Design (3)
Prerequisites: senior standing in computer or electrical engineering or permission of instructor; I E 182W or concurrently. Design projects in the areas power systems and/or control systems and robotics; final typewritten reports required. Individual projects or a group project. Satisfies the senior major requirement for the B.S. in Computer or Electrical Engineering.

190. Independent Study (1-3; max total 6)
See *Academic Placement — Independent Study*. Approved for ***SP*** grading.

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.

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.

ENGINEERING Mechanical and Industrial Engineering



School of Engineering
Department of Mechanical
and Industrial Engineering
SATYA D. MAHANTY, *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, digital 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.

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.

Administrative Academic Probation

A minimum GPA of 2.0 must be maintained in all courses taken in the School of Engineering. Students who fail to maintain a 2.0 GPA in courses within their major may be placed on administrative academic probation. Failure to eliminate the grade point deficiency could result in disqualification from the School of Engineering.

Career Opportunities

Rapid technological advances 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, computers, energy, manufacturing and fabrication, machine and tool design, public transportation, electronics, and a host of other industries.

Faculty

Satya D. Mahanty, *Chair*

Joseph R. Battenburg
Shyhming Chang
Zbigniew J. Czajkiewicz
Dennis C. Kuzma
Hamo Lalehzarian
Walter V. Loscutoff
Prakash T. Mahajan
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 thermal and fluid 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 thermal and fluid 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 71
M E 1, 26, 31, 32, 112, 116, 118, 134, 136, 140, 144, 145, 154, 155, 156 ..... (39)
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, B *or* C. Selected courses must include at least 2 units of Engineering Design (see adviser).
Group A (Energy): M E 137, 146
Group B (Machine Design): M E 141, 142, 162
Group C (General): M E 131, 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 133

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 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
Hist 11/12	American History	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[1]	Amer Gov't and Instit	3
Spch 3[2]	Fundamentals of Public Communication	3
		16

Fourth Semester

C E 20	Engineering Mechanics: Statics	3
M E 32	Engineering Materials Lab	1
ECE 90, L	Principles of Electrical Circuits	4
I E 90	Manufacturing Processes	3
Math 81	Applied Analysis	4
Phys 4C	Light and Modern Physics	3
		18

Fifth Semester

I E 110	Statistical Analysis in Engineering	3
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
		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
Technical Area Course[3]		3
		16

Seventh Semester

M E 145	Heat and Mass Transfer	3
M E 154	Design of Machine Elements	3
M E 155	Elements of Systems Design	3
M E 156	Adv Thermodynamics — Fluid Mechanics	3
Technical Area Course[3]		3
		15

See footnotes on next page.

Eighth Semester

I E 125[4]	Human Factors in Engineering and Design	3
Phil 120	Cont Conflicts in Morals	3
Pl Si 120	International Politics	3
Div. 2[5]	Biological Processes	3
Required Design Application Courses[6]		5
		17

[1]or Pl Si 101, American Constitution, Institutions and Ideals.
[2]or Spch 7, Persuasion, or Spch 8, Group Discussion.
[3]Depending on application area,[6] select from either Group A, B or C. Selected courses must include at least 2 units of Engineering Design (see adviser). Group A (Energy): M E 137, 146; Group B (Machine Design): M E 141, 142, 162; Group C (General): M E 131, 180, 190; I E 161; ECE 121, 121L, 155.
[4]or Art 13, Design.
[5]Biol 10 or 15 or Bot 10 or Zool 10.
[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.

26. Engineering Graphics (3)
Prerequisites: 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) (Computer lab fee, $15) (CAN ENGR 2)

29. Engineering Mechanics (3)
(Same as C E 29.) Prerequisites: 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)
Prerequisites: 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)

32. Engineering Materials Laboratory (1)
Prerequisite: M E 31. Application of experimental methods to engineering materials. Study of stress and strain in metals; fatigue; hardness; toughness. (3 lab hours) (Formerly M E 131L; M E 31L)

112. Engineering Mechanics: Dynamics (3)
Prerequisite: C E 20. Development of principles of kinematics and kinetics in engineering.

116. Fluid Mechanics (3)
Prerequisites: Chem 1A, M E 112 (or concurrently). Fundamentals of fluid mechanics as applied to engineering problems.

118. Fluid Mechanics Laboratory (1)
Prerequisites: 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)
Prerequisites: 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.

134. Dynamics in Machine Design (3)
Prerequisites: 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)
Prerequisites: Chem 1A, M E 112 (or concurrently). Fundamentals of thermodynamics and heat transfer as applied to engineering problems.

137. Turbomachinery (3)
Prerequisites: M E 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)
Prerequisites: 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. 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)
Prerequisites: 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)
Prerequisites: 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)
Prerequisites: C E 121, ECE 70, Math 81. Advanced topics in mechanics of materials.

145. Heat and Mass Transfer (3)
Prerequisites: 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)
Prerequisites: M E 116, 136. Theory and practice in air conditioning including psychrometrics, load estimating, heating and cooling systems, fluid design and controls.

154. Design of Machine Elements (3)
Prerequisites: 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) (Computer lab fee, $15)

155. Elements of Systems Design (3)
Prerequisites: M E 154 (concurrently), 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.

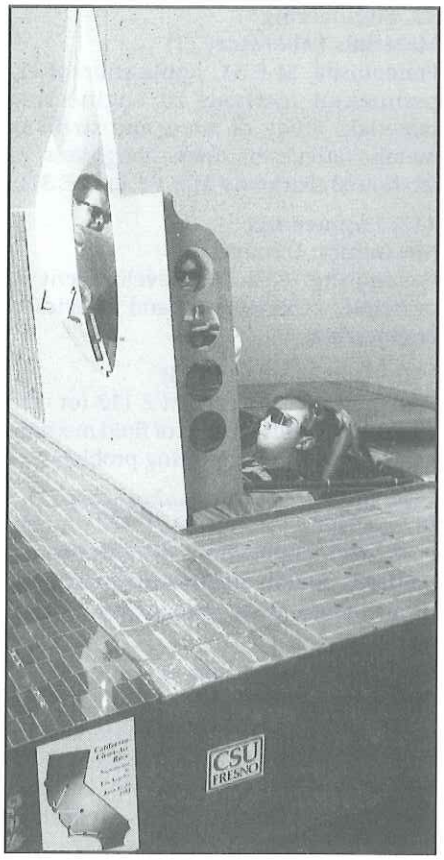
156. Advanced Thermodynamics — Fluid Mechanics (3)
Prerequisites: M E 116, 136. Advanced topics in thermodynamics and fluid mechanics including analysis of solar and nuclear systems as applied to engineering problems.

158. Energy Systems Laboratory (2)
Prerequisites: M E 118, 145 (or concurrently), 156 (or concurrently); I E 182W. 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) (Formerly 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. (Computer lab fee, $15)

164. Machine Design (3)
Prerequisites: 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) (Computer lab fee, $15)

166. Energy Systems Design (3)
Prerequisites: 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)
Prerequisites: 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 total 6)
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), robotics, computer integrated manufacturing (CIM), quality engineering, and ergonomic (human factors) engineering.

Bachelor of Science Degree Requirements

Industrial Engineering Major ***Units***

Major requirements 70
- I E 75, 85, 90, 110, 111, 113, 114, 115, 127, 130, 160, 163, 165, 180 ..... (35)
- C E 29 or M E 29 ..... (3)
- ECE 70, 90, 90L ..... (7)
- M E 26, 31, 116, 118, 136 ..... (13)

Select at least one course from each of the following groups .... (12)
- ***Group A (Quality Engineering Science):*** I E 112, 120
- ***Group B (Design):*** I E 145, 148, 155
- ***Group C (Engineering Science):*** C E 121, 142; ECE 121
- ***Group D (Administrative Science):*** I E 170; Mgt 104, 106; Psych 176

Additional requirements 12
- 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: 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 131

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 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 111	Work Measurements	3
Math 81	Applied Analysis	4
Phys 4C	Light and Modern Physics	3
Spch 3[1]	Fundamentals of Public Communication	3
		16

Fifth Semester		
I E 113	Operations Analysis	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 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
I E 130	Production and Inventory Control	3
I E 163	Adv Topics in Engr Econ Analysis	1
M E 116	Fluid Mechanics	3
M E 118	Fluid Mechanics Lab	1
M E 136	Thermodynamics	3
		18

Seventh Semester		
I E 114	Facilities Engineering	3
I E 165	Computer Integrated Manufacturing	3
Phil 10	Self, Religion, and Society	3
Pl Si 2	American Gov't and Institutions	3
Additional Requirements[3]		6
		18

Eighth Semester		
I E 180	Senior Design Project and Seminar	3
Phil 120	Cont Conflicts of Morals	3
Pl Si 120	International Politics	3
Additional Requirements[3]		6
		15

[1]or Spch 7, Persuasion, or Spch 8, Group Discussion.

[2]Biol 10 or 15 or Bot 10 or Zool 10.

[3]Additional Requirements. Select a course from each group: Group A (Quality Engineering Science): I E 112, 120. Group B (Design): I E 145, 148, 155. Group C (Engineering Science): C E 121, 142; ECE 121. Group D (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) (Computer lab fee, $15)

90. Manufacturing Processes (3)
Prerequisites: 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)
Prerequisites: 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)
Prerequisites: I E 85, 110, Math 81. Application of quantitative and numerical techniques for analysis of complex operational problems.

114. Facilities Engineering (3)
Prerequisite: I E 90, 111 or permission of instructor. Feasibility study, process planning, material flow system design, materials handling system planning, facilities layout, location of facilities, economic analysis, implementation planning. (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)
Prerequisites: I E 125, 182W (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 113 or permission of instructor. 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)
Prerequisites: 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.

163. Advanced Topics in Engineering Economic Analysis (1)
Prerequisite: I E 160. Process selection cost analysis, quantitative factors analysis, probabilistic models, inflation modeling and economical modeling of engineering decision problems.

165. Computer-Integrated Manufacturing (3)
Prerequisite: I E 145 or permission of instructor. 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) (Formerly 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.

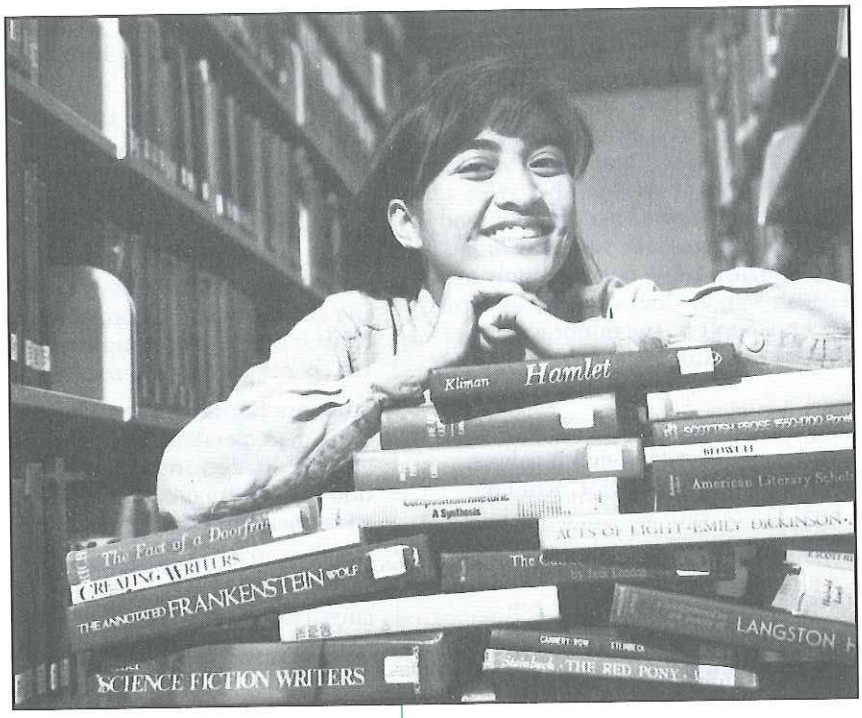
180. Senior Design Project and Seminar (3)
Prerequisites: senior standing in industrial engineering or permission of instructor; approved subject; I E 182W or concurrently. A meaningful major design project which focuses on engineering practice and draws on past coursework, under the supervision of a 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)
Prerequisites: satisfactory completion (*C* or better) of the Engl 1 graduation requirement; 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 total 6)
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.



School of Arts and Humanities
Department of English
William H. Cowling, *Chair*
Peters Business Building, Room 382
(209) 278-2553

B.A. in English

M.A. in English
Options:
Composition Theory
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 an 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 6 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 30 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

William H. Cowling, *Chair*
Credential Coordinator: Richard T. Hansen
Chair, Major Advising Committee: Andrew M. Simmons

Linnea M. Alexander
Craig Bernthal
Cheng Lok Chua
Lillian Faderman
Magdalena Gilewicz
Corrinne Hales
John R. 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
Judith A. Rosenthal
Reuben M. Sanchez Jr.
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)
Upper-division requirements
Engl 105 ..... (4)
Two English courses before 1865* ..... (8)
Engl 193T and/or 194T ..... (8)
Approved upper-division English electives (see adviser) ... (12)
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.
The English Department requires two college-level courses in a foreign language for the English major.

Total **124**

* Definition of a course before 1865 — Engl 112, 113, 115W, 116, 146, 147, 150, 151, 153, 184, 187, 189, or any "T" course with all course material before 1865.

** 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 105, 112, 113, 114, 115W, 116, 146, 147, 150, 151, 152, 153, 154, 155, 156, 167, 168T, 169T, 181, 183T, 184, 187, 193T, 194T, 195 ..... (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 105, 112, 113, 114, 115W, 116, 146, 147, 150, 151, 152, 153, 154, 155, 156, 161, 163, 164, 167, 168T, 169T, 181, 183T, 184, 187, 193T, 194T, 195, 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 submit GRE scores. (Foreign students must also submit TOEFL scores.) In the Literature, Composition Theory and Nonfiction Prose 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 within 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*

*No more than 8 upper-division units will count toward the graduate degree.

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, completion of at least one Engl 250T or 280T course with a grade of *B* or above, 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

No more than 8 upper-division units will count toward the graduate degree.

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, completion of at least one Engl 250T or 280T course with a grade of *B* or above, and a review by the graduate committee of the work already completed.

Composition Theory 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 or 280T	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

No more than 8 upper-division units will count toward the graduate degree.

Teaching Requirement. At some period before the completion of the M.A. degree composition option, the candidate must be engaged in teaching or co-teaching 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. Enrollment in Engl 282 should take place in the same semester that the student is fulfilling the teaching requirement.

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, completion of at least one Engl 250T or 280T course with a grade of *B* or above, 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. Enrollment in Engl 282 should take place in the same semester that the student is fulfilling the teaching requirement.

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 Center (1-2; max total 2)
May be taken concurrently with English A. Writing tutorial for students who need individualized help with their writing. *CR/NC* grading only; not applicable toward baccalaureate degree requirements. (2-4 hours)

1. Composition (3)
Prerequisites: Any one of the following test scores or successful performance in English A; CSU English Placement Test, T151 or E8 or above; SAT I-Verbal, through

March 1995: 470, April 1995 and later: 550; CSU English Equivalency Examination, satisfactory score; English Composition Examination of College Board Advanced Placement Program, 4 or 5; ACT English Usage Test, 22 or above (taken prior to October 1989); enhanced ACT English, 25 or above (taken October 1989 or later); 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. A grade of *C* or better is required to satisfy the university's English composition requirement. General Education CORE. (CAN ENGL 2)

(See *Credit by Examination* section for information on challenge to English 1.)

1L. Writing Center (1)
May be taken concurrently with Engl 1. Writing tutorial for students who wish to receive individualized help with their writing. ***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, e.g., Shakespeare, The Poem, Literature of Protest, Women in Novels. Appropriate readings and analyses.

100W. Writing Skills (1)
Credit obtained only by passing the 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. Required 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 the 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: satisfactory completion (*C* or better) of the Engl 1 graduation requirement. 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; max total 8 if no topic repeated) (Same as W S 168T.) Prerequisite: Engl 20. Discussion and written analysis of literature by and about women. Special emphasis on 19th and 20th Century authors including the Brontes, George Eliot, Emily Dickinson, Edith Wharton, Virginia Woolf, and contemporary writers.

169T. Forms of Literature (1-4; max total 8 if no topic repeated)
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. (Formerly 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. (Formerly 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 rhe-

torical 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. (Formerly 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 total 6)
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; max total 8 if no topic repeated)
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; max total 8 if no topic repeated)
(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)
Prerequisites: 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. (Formerly Engl 193T section)

GRADUATE COURSES

(See *Course Numbering System*.)

English (Engl)

250T. Seminar in Literature (4; repeatable with different topics)
Prerequisites: 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 16)
Prerequisite: permission of instructor. Advanced individual projects in the writing of poetry.

263. Seminar: Writing Fiction (4; max total 16)
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)
Prerequisites: 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)
Prerequisites: major or minor in English; permission of instructor. Seminar in literary criticism (for example, Literary Critics).

281. Current Writing Theory (4)
Prerequisites: 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 total 6)
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.

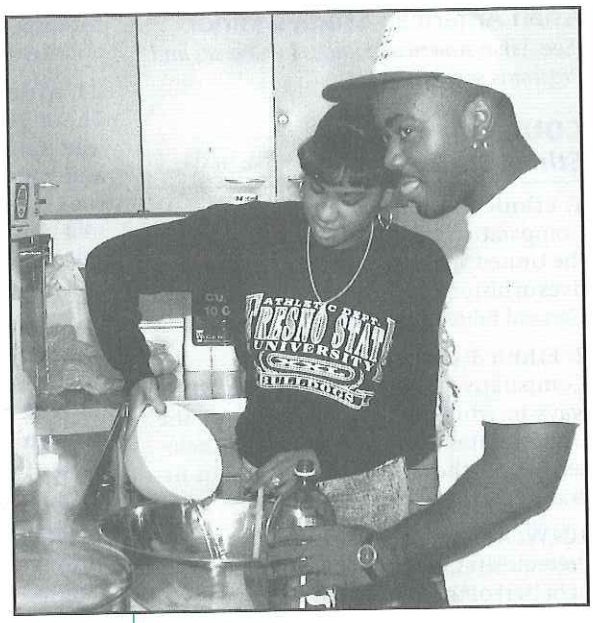
299. Thesis (2-6; max total 6)
Prerequisite: See *Criteria for Thesis and Project*. Preparation, completion, and submission of an acceptable thesis for the master's degree. Approved for *SP* grading.

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.



Students in Professor Robert Mikell's African American Cuisine class learn about the relationship between food and culture.

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 Fresno State. 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 university's 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
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 and 189	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 and 189	6
Approved African American Studies career-oriented courses (upper division)	9
Approved African American Studies electives	6
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, 135, 137, 140, 145

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; Eth S 189
Business: Af Am 38, 130T, 135, 136, 190; Eth S 189
Preprofessional (nursing, criminology, prelaw, etc.): Af Am 56, 130T, 135, 142, 144, 146, 190; Eth S 189
Writing: Af Am 15, 25, 127, 190
Social Sciences: Af Am 27, 38, 135, 140, 178; Eth S 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)
Prerequisites: satisfactory completion (*C* or better) of the Engl 1 graduation requirement, 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. (Formerly 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.

189. Fieldwork in Community Relations (3; max total 6)
Supervised field observation, participation, and documentation in the operation of minority communities. (Formerly Af Am 189)

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.

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.

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.

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.

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.

35. Art and Music of Africa (3)
Comprehensive study of African artistry and music.

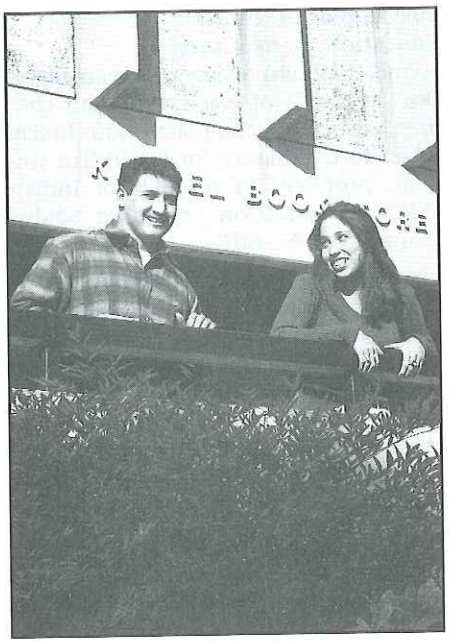
36. Contemporary African Societies (3)
Analysis of the cultural and political structure of some Black African nations; understanding the impact of colonialism in Africa; realizing the relationship of African Americans to Africa.

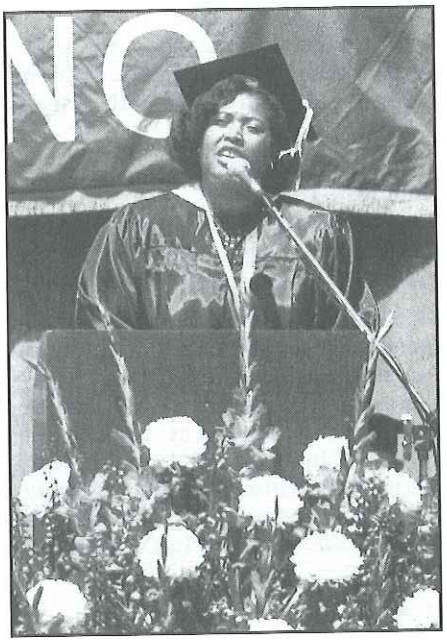
38. African American Sociology (3)
Basic principles sociology from the perspective of the African American experience. General Education BREADTH, Division 9.

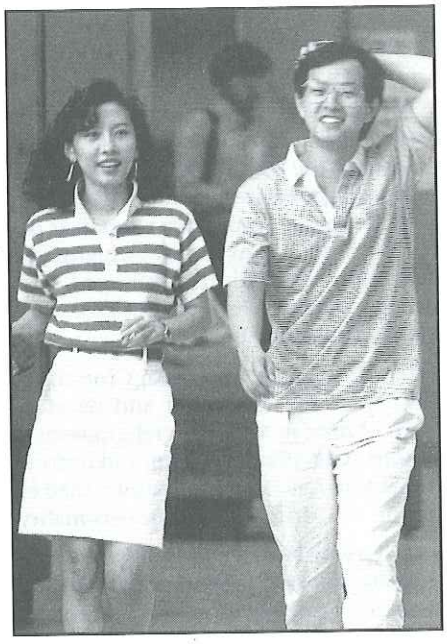
40. Freshman Seminar for Minority Students (3)
Open to freshmen and transfer students. Designed to further student development in such areas as study skills, writing, oral presentations, and interaction with other students and faculty. Students are assigned a faculty mentor. (Formerly Af Am 50T section)

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.

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.

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.

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, $15) (Formerly 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. (Formerly 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) (Formerly 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.

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.

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.

129. African American Literary Classics (3)
An intensive analysis of selected classical narratives in African American literature and culture.

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.

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.

136. African American Business Economic Development in the United States (3)
Introduction to African American entrepreneurship and employment with special emphasis on the analysis and development of business ventures. Relationship of economic forces to historical,

political, and social change. Step by step on how to start your own business.

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.

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.

141. African American Health Care (3)
Investigation and analysis of major health problems and delivery services in the African American Community.

142. African American Child Rearing (3)
Specific and unique issues facing African American parents as their children journey through the development process.

144. Race Relations (3)
Critical examination of contemporary race relations issues such as affirmative action, hate crimes, interracial relationships, religion, criminal justice system, media images/stereotyping, and more. Analysis of theoretical frameworks and their application to racial ethnic groups. General Education BREADTH, Division 9.

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.

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.

150. South Africa (3)
An introductory analysis of the social, racial, political, and economic problems of people of South Africa, both past and present.

165. Advanced African American Theatre (3)
For students previously enrolled in Af Am 60. Advanced production and performance in the African American Theatre.

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.

190. Independent Study (1-3; max total 6)
See *Academic Placement — Independent Study*. Approved for ***SP*** grading.

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. (Formerly Af Am 130T section)

195. Diversity in the United States: Race and Gender Issues (3)
(See CLS 195.) (Formerly 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. (Formerly 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. (Formerly 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. (Formerly 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. (Formerly 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. (Formerly 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. (Formerly 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. (Formerly 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. (Formerly N A S 60T section)

170. Experience in American Indian Community (3; max total 6)
Offers students supervised field experience working for a tribe, tribal/Indian organization, tribal school or Indian education program, public agency, or the university's Indian organizations.

190. Independent Study (1-3; max total 6)
See *Academic Placement — Independent Study*. Approved for ***SP*** grading. (Formerly N A S 190)

195. Diversity in the United States: Race and Gender Issues (3)
(See CLS 195.) (Formerly Eth S 195)

Foreign Languages and Literatures

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

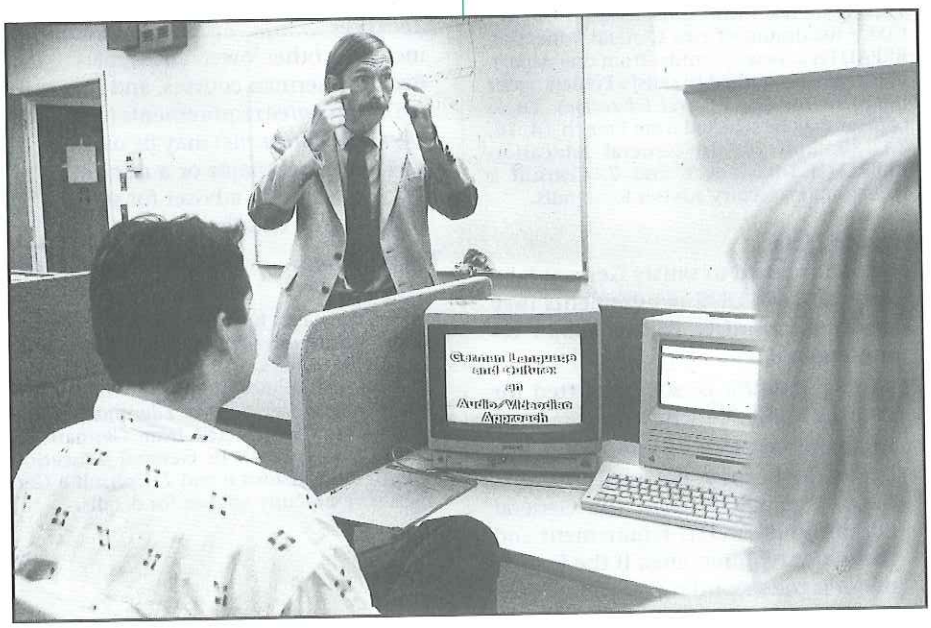
Since a foreign language degree increases your ability to communicate with people, it provides a wide variety of career opportunities. In today's world of international markets and international professional exchange, the knowledge of another language and culture can be a great asset for success in any 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.



School of Arts and Humanities
Department of Foreign Languages and Literatures
BRUCE S. THORNTON, *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

Faculty

Bruce S. Thornton, *Chair*

Graduate Adviser, Jacinta R. Amaral
Graduate Adviser, Margarita López-Urrutia
Graduate Adviser, Keith E. Sauer

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)
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 who have ***completed*** the equivalent of the "secundaria," i.e. grades 7-9 or more, in the native country may not enroll in or challenge lower-division courses. 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 48, 109; Greek 148; German 48; Italian 48; Latin 148; Russian 148; Spanish 48, 140, 142. 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	30-44
(see *Advising Notes 1, 2,* and *3*)	
Lower division	(14)
Fren 1A, 1B; select two from Fren 2A, 2B, 4, 5, 48 (see *Advising Notes 3* and *4*)	
Upper division	(30)
Fren 103 (3-6 units); select four from Fren 109, 110, 111, 112, 113	(18)
Select four from Fren 120T (3-6 units), 132 (3-6 units), 149, 150, 160T (see *Advising Notes 4* and *5*)	(12)
General Education	51
(see *Advising Notes 2* and *5*)	
Electives	29-49*
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 *Advising Notes 1, 2,* and *3*)	
Lower division	(14)
Germ 1A, 1B, 2A, 2B (see *Advising Note 2*)	
Upper division	(32)
Language and Culture	
Germ 101 (twice), 103T, 150	(12)
Literature	
Select four from Germ 112, 114, 116, 118A, 118B	(12)
German electives	
Select two from Germ 103T, 137, 150, 160T, 190 (see *Advising 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 48 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 103, 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 addi-

tional 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)
Prerequisites: 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.

190. Independent Study (1-3; max total 6)
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 total 6)
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. (CAN FREN 2)

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. (CAN FREN 4)

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. (CAN FREN 8)

2B. French for Communication (3)
Prerequisite: Fren 2A or equivalent. Second year course that emphasizes speaking and reading skills. General Education BREADTH, Division 7. (CAN FREN 10)

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

103. Advanced Grammar and Composition (3; max total 6)
Prerequisite: two semesters of Intermediate French. To be taken twice for the major. Written assignments in French on varied topics with emphasis on composition. Written exercises in French on specific points of grammar. (Fall semester) (Formerly Fren 101; Fren 102)

120T. Topics in French Civilization (3; max total 6 if no topic repeated)
Prerequisite: Fren 103 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; max total 6)
Prerequisite: completion of one semester of Fren 103. 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

48. 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. (Formerly Fren 148)

109. Introduction to French Literature (3)
Prerequisite: two semesters of Intermediate French. Intellectual background of major literary movements and representative authors from the earliest period to the present. Selected readings. Taught in French. 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").

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 103 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)
Prerequisites: 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 total 6)
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

48. 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. (Formerly Germ 148)

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.

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)
Prerequisites: 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 total 6)
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; max total 6)
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.

48. 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. (Formerly Grk 148)

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.

190. Independent Study (1-3; max total 6)
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.

The Department of Foreign Languages and Literatures prepares you for communication with other peoples, so you may move about with greater ease in an ever-changing world.

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.

48. 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. General Education BREADTH, Division 6. (Formerly Ital 148)

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 total 6)
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 total 6)
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 audiovisual 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. (Formerly Russ 148A-B)

170. Senior Seminar in Russian Studies (2)
Prerequisites: 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 total 6)
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. (CAN SPAN 2)

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. (CAN SPAN 4)

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. (CAN SPAN 8)

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. (CAN SPAN 10)

3. Reading and Writing (3)
Prerequisites: 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; max total 6)
Prerequisites: 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)
Prerequisites: 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)
Prerequisites: 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

48. 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. (Formerly Span 146)

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 an 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.

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.

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.

170. Senior Seminar in Spanish Studies (3)
Prerequisites: 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 total 6)
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. (Formerly 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 total 6)
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

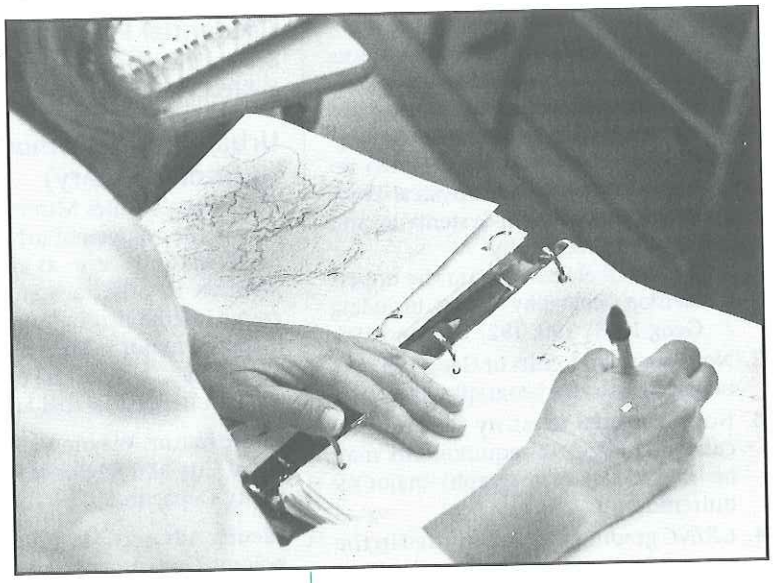
(See *Course Numbering System*.)

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 audiolingual 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
STANLEY F. NORSWORTHY, *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 and to provide applied specializations and technical skills that can address economic, social, and environmental problems at scales that range from local to global.

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 depth 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 — Geographic Information Systems (GIS), 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

Stanley F. Norsworthy, *Chair*
Graduate Adviser, Jerry C. Towle
Graduate Adviser, Planning, Wayne V. Merchen
Undergraduate Adviser, Robert E. Lee

Lawrence E. Estaville Jr.
James S. Kus
Chi Kin Leung
Aribilola S. Omolayo
Joyce A. Quinn
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
   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 from Geographic Techniques
   b. 12 units from one of the categories: Physical-Environmental, Human-Systematic, or Regional Geography
   c. 6 units from each of the two remaining categories: Physical-Environmental, Human-Systematic, and Regional Geography
   d. 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 Programs* 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 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 110T, 135, 190, 192; CLS 3; Crim 2; 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 (1-3 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 the Master of Arts degree in Geography. Students may select thesis or nonthesis options, both of which require the completion of 30 units of graduate work. Electives may be chosen that emphasize skills necessary to compete successfully for private or public employment opportunities or that will prepare graduates to teach geography at the community college level. All graduates will be well prepared for entry into doctoral programs in geography or related fields.

The department and the School of Education and Human Development cooperate in providing a Master of Arts in Education Curriculum and Instruction. The department supports an emphasis in Geographic Education for elementary and secondary teachers with a sequence of 12 units of graduate geography coursework.

The department recognizes the growing demand for new and rapidly expanding technical dimensions in geography and its allied disciplines and thus offers graduate courses in Geographic Information Systems (GIS) and city and regional planning. The department also works closely with the on-campus, state-of-the-art GeoInformation Processing Systems (GeoIPS) Laboratory in offering graduate courses in remote sensing and image processing. Special program needs of individual students may be met through cooperative agreements with other departments in the School of Social Sciences.

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 have a bachelor's degree in a related discipline, have completed 12 semester units of upper-division geography with a minimum GPA of 3.0, and have competence in computer applications, statistics, or cartography. All entering graduate students should be well prepared in geographic techniques at the undergraduate level.

(See also *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 departmental graduate adviser, each student develops and submits a proposed program of study for approval by the department's Graduate Committee and chair. This 30-unit degree program must include a minimum of 21 units taken from 200-series courses. In addition, programs must include the following elements:

	Units
Graduate Core Seminars	9
Geog 200, 230, and Geog 206T or 260T	
Electives	15-18
Select from 100- and 200-level geography and other related courses*	
Thesis or Project	3-6
Total	30

*Courses must be selected in consultation with the departmental graduate adviser. A maximum of 9 units may be selected from related disciplines.

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) (Computer 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) (Computer lab fee, $15) (Formerly 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) (Computer lab fee, $15)

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)
Prerequisites: 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) (Computer 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) (Computer 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) (Computer lab fee, $15) (Formerly 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) (Computer lab fee, $15) (Formerly 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) (Computer 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.

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. Geography of World Economy (3)
An examination of the organization of world economy and human economic activities from a geographical perspective. Discussion of contemporary economic issues may include industrial restructuring, technological innovation, foreign trade and investment, Pacific Asia dynamism, Third World crisis, new international economic order, regional inequality, and local area development. (Formerly Geog 3)

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, endangered 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.

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.

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.

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.

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.

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.

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 related to city and regional planning. (Formerly C R P 191)

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. (Computer 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)
Prerequisites: 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)
Prerequisites: 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. (Computer 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)
Prerequisites: 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)
Prerequisites: 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 (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.

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. (Computer 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 Planning (3)
Prerequisite: permission of instructor. Selected urban planning topics to serve student needs not met by other university courses.

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.

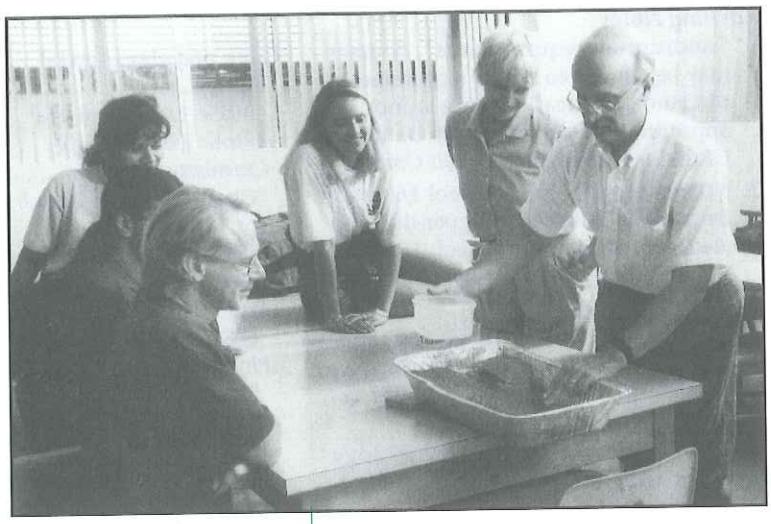
230. Seminar in Planning for the Region (3)
Prerequisite: C R P 200. Regional planning — approaches and methods; goal and policy implications of resource development, utilization and conservation; strategies for planning; case studies.

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 total 6)
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



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

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, environmental investigation, 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

Faculty

Robert D. Merrill, *Chair*

Undergraduate Advisers: All full-time faculty
Graduate Adviser: Frederika J.M. Harmsen

Jon C. Avent
Arthur H. Barabas
Bruce A. Blackerby
Roland H. Brady
C. John Suen

Undergraduate Program

Geology Major. The bachelor's degree with a major in geology consists of a total of 125-133 units including 44-45 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, physics or biology, and English (4 years).

Bachelor of Science Degree Requirements

Geology Major	***Units***
Major requirements	**44-45**
Lower-division requirements	
Geol 1 or 15, 12 and 13 concurrently, 30	(10-11)
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, 40 or 101; Phys 2A, 2B	
General Education	**45***
Electives and remaining degree requirements (see *Degree Requirements*); may be used toward a minor	**7-11**
Total	**125-133**

* 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 3, 30, and 160.
5. No more than 1 unit of Geol 3 will be permitted.
6. 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 coursework approved by a departmental faculty member and must include 6 upper-division units.

Bachelor of Arts in Natural Sciences

Earth Science Emphasis

The B.A. in Natural Sciences is designed primarily to meet the needs of students interested in pursuing a teaching career in the sciences at the secondary level. Students interested in satisfying the waiver program in the natural sciences should consult an appropriate adviser in their academic program. Contact either the Department of Geology or the Office of the Dean, School of Natural Sciences.

The degree is also a suitable choice for students with a general interest in earth science and interest in pursuing a career in environmental science, law, medicine, dentistry, optometry, and other areas for which the breadth of scientific coverage of this degree is advantageous.

For a full description of the degree, including all of the emphases, see the *Natural Science Interdisciplinary Courses* section in this catalog. The B.A. in Natural Sciences with the Earth Science Emphasis is as follows:

	Units
Core requirements[1]	**45-49**
Biology	(12-13)
BioSc 1A or Biol 15,[2] BioSc 1B and 130	
Chemistry	(13)
Chem 1A, 1B; Chem 8 or 128A[1]	
Geology	(5)
Geol 1 and 3 (or 15)[2]	
Natural Science	(3)
N Sci 106	
Physics	(8)
Phys 2A, 2B[3]	
Physical Science	(7)
P Sci 21, 168[1]	
Earth Science Emphasis[4]	**33**
Geol 2, 12, 30, 100, 101, 102, 105, 106, 155	(27)
Plus 6 units from the following: Geol 110, 114, 117, 124; Geog 111	(6)
Additional requirements	**4**
Math 75	
General Education	**42**[5]
6-unit CAPSTONE requirement to be met by Geol/Geog 168	
Electives and remaining degree requirements[6] (see *Degree Requirements*)	**0**
Total	**124-128**

Advising Notes

1. Earth Science Emphasis students will select one course from the following: Chem 8, Chem 128A, P Sci 168.
2. Biol 15 and Geol 15 are part of the Man/Woman and the Natural Environment Cluster. See the *Natural Science Interdisciplinary Courses* section in this catalog. Geol 15 is equivalent to Geol 1 and 3.
3. Substitutions may be made with the permission of the appropriate department chair. Phys 4A, 4B, and 4C (with labs) is recommended instead of Phys 2A and 2B for those students well prepared for physics.
4. Consult your faculty adviser regarding the selection of your elective units to have this emphasis used as the Science Waiver Program.
5. This figure takes into account that 9 units in the major and additional requirements may also be applied to satisfy General Education requirements as follows: CORE, Quantitative Reasoning — Math 75 (3 units); BREADTH, Division 1 — Chem 1A or Geol 1 or 15 or Phys 2A (3 units); and Division 2 —

BioSc 1A or Biol 15 (3 units). Consult your major academic adviser for details. (See *General Education*.)

6. Students should be sure to take sufficient upper-division units in their General Education courses and electives to satisfy the university requirement of 40 upper-division units for graduation.

Graduate Program

The Department of Geology offers graduate courses of instruction and research leading to the Master of Science degree. The graduate courses at California State University, 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 (2-6 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 California State University, Fresno. Twenty of the 30 units required for the degree must be in geology, and at least 21 of the 30 units must be 200-series courses. 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 21 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)
Prerequisite: Math 4R or second-year high school algebra. 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)
Prerequisite: Math 4R or second-year high school algebra. 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. (MNE program field trip fee, $300)

30. Introductory Field Methods (2)
Prerequisites: 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, $30)

100. Optical Mineralogy (2)
Prerequisites: Geol 12, 13. Optical properties of minerals; identification of miner-

als by optical methods. Theory and use of petrographic microscope. (1 lecture, 3 lab hours)

101. Igneous and Metamorphic Petrology (4)
Prerequisites: Geol 30, 100; Chem 1B (or concurrently). Origin classification, textures, structures, and geologic setting of igneous and metamorphic rocks; examination of samples in outcrop, hand specimen, and thin section. Weekend field trips required. (3 lecture, 3 lab hours)

102. Sedimentology (3)
Prerequisites: Geol 30, 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)

105. Geomorphology (3)
Prerequisite: Geol 1 or 15. Landforms, 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 required. (2 lecture, 3 lab hours)

106. Structural Geology (3)
Prerequisites: upper-division writing skills requirement must be satisfied; Geol 30, trigonometry, Phys 2A (or 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)
Prerequisites: 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, $80)

108A. Field Geology (4)
Prerequisites: 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, $100)

108B. Field Geology — Reports (1)
Prerequisites: 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)
Prerequisites: 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)
Prerequisites: 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)
Prerequisites: 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)
Prerequisites: Geol 1 or 15; Math 72 or 75; and Geol 124 and Math 76 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)
Prerequisites: Geol 30, 102. Stratigraphic principles and recognition of stratigraphic units. Emphasis on tectonostratigraphic concepts. (2 lecture, 3 lab/field hours)

124. Geochemistry (3)
Prerequisites: Chem 1A and 1B 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; max total 6)
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)

155. Demonstrating Earth Science (3)
Prerequisites: Geol 1, 2 or 15. Teaching K-12 earth science with activity-based discovery of scientific concepts through observation and deductive reasoning. Innovative classroom and field activi-

ties emphasize strategies for integration of earth sciences with other sciences and disciplines such as history, social sciences, and economics.

160. Field Studies (1-4; max total 4)
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)
Prerequisites: 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)
Prerequisites: 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)

180. Computer Applications in Geology (3)
Use of computers in geology, focusing on such applications as multi-dimensional graphics, desktop mapping, communications, on-line resources, modeling. (2 lecture, 3 lab hours) (Formerly Geol 130T section)

190. Independent Study (1-3; max total 6)
See *Academic Placement — Independent Study*. Approved for ***SP*** grading.

GRADUATE COURSES

(See *Course Numbering System.*)

Geology

201. Seminar in Geology (2)
Prerequisite: graduate standing. Seminar covering advanced and evolving topics in geology and/or faculty research projects. Faculty will lead discussion at start of semester and graduate students will lead the second part of semester. Requirements include active discussion participation, oral presentation, and written research paper. (1 lecture, 3 hours arranged)

206. Depositional Systems (3)
Prerequisites: Geol 102 and 105. Investigation of modern and ancient depositional systems. Field trip required. (2 lecture, 3 lab hours)

210. Analysis of Faults and Earthquakes (3)
Prerequisites: 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; max total 6)
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)
Prerequisites: 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) (Formerly Geol 250T section)

250T. Topics in Geology (1-3;)
Prerequisite: major in geology and/or permission of instructor. Advanced studies of such areas as petrology, marine geology, regional stratigraphy, and basin analysis. Some topics may have labs and field trips.

251T. Topics in Engineering Geology (1-3)
Prerequisites: 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)
Prerequisites: 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)

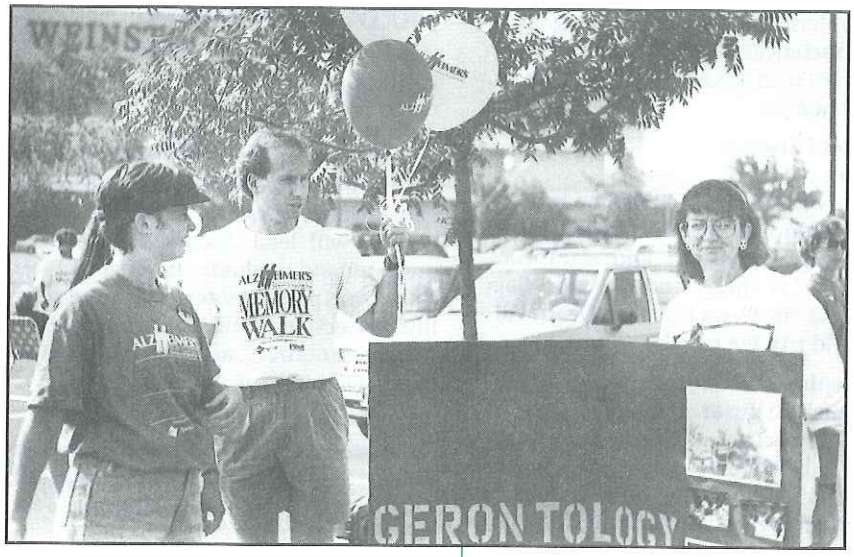
290. Independent Study (1-3; max total 6)
See *Academic Placement — Independent Study*. Approved for ***SP*** grading.

299. Thesis (2-6; 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.

Gerontology

School of Health and Social Work
Interdisciplinary Gerontology Program
GLEN C. DOYLE, *Director*
San Ramon 2, Room 45
(209) 278-5484

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.

Program Responsibilities

The Gerontology Program is responsible for the Gerontology Minor, Gerontology Certificate, interdisciplinary cross-referenced courses, and the Summer Institute on Aging.

Other programs housed within the office of the Gerontology Program include the Elderhostel Program, Friendly Visitor Services, Geriatric Nursing Resource Center, and the Gerontology Education and Resource Center.

It also cosponsors the Central California Alzheimer's Diagnostic Disease Center and the Rohlfing Medical Lectureship Series, and sponsors the Gerontology Club, Elderfest, and continuing education for health professionals.

Career Opportunities

The development of employment opportunities in the field of gerontology has emerged 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.

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 Agricultural Sciences and Technology, Arts and Humanities, the Sid Craig School of Business, 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), William Fasse (Child, Family, and Consumer Sciences), John Franz (Employee Assistance Program), Glen C. Doyle (Gerontology), Celeste Roseberry-McKibbin (Communicative Sciences and Disorders), 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 Sciences and Disorders), and Lily B. Small (Ethnic Studies).

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; 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 or IntD 160*	
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.

*Upper-division students with permission of director.

Certificate in Gerontology

The Certificate in Gerontology is an interdisciplinary program of study awarded to students who complete 12 units of carefully selected upper-division 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
2325 E. San Ramon
Fresno, CA 93740-0102
(209) 278-5484

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.) (Formerly 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)
Prerequisites: 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 total 6)
See *Academic Placement — Independent Study*. Approved for *SP* grading.

HEALTH AND SOCIAL WORK Interdisciplinary Courses

School of Health and Social Work
BENJAMIN CUELLAR, *Acting Dean*
McLane Hall, Room 191
(209) 278-4004

Certificate in Alcohol/Drug Studies

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 is 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.

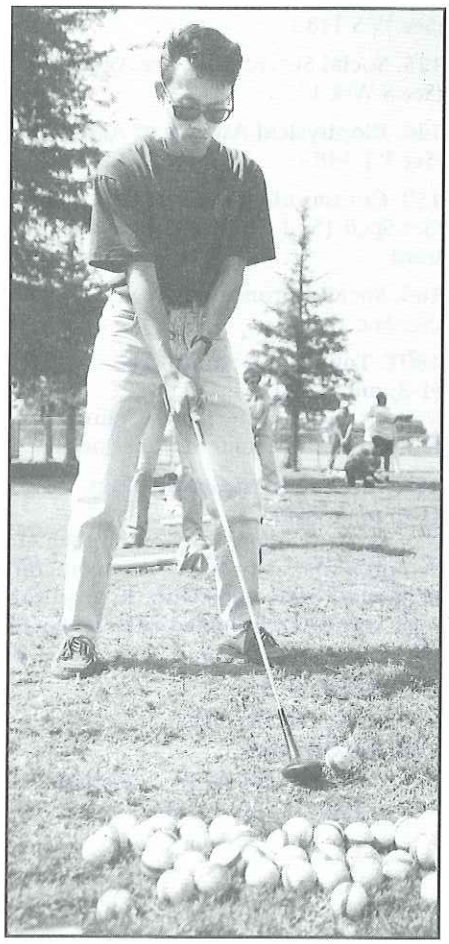
All coursework must be completed with a grade of *C* or better in each of the 9 required units and the 3 units of electives. The following list includes the course requirements for the certificate:

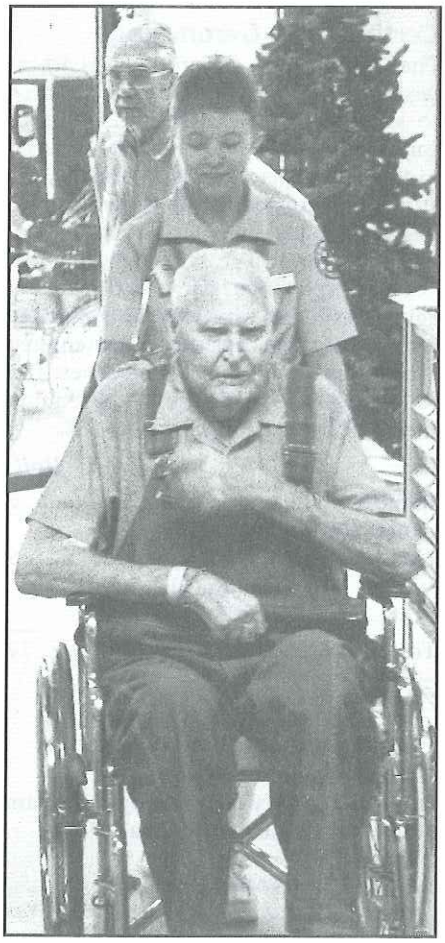
	Units
Requirements	9
H S 110: Habit Forming Substances	
H S 111: Alcohol and Alcoholism	
S Wrk 129: Treatment of Chemical Dependency	
Elective(s)	3
Crim 141: Alcohol, Drugs, and Criminality	(3)
S Wrk 122T: Counseling the Family of the Alcohol/Drug Abuser	(3)
W S 150T: Women, Children, and Alcohol	(1)
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

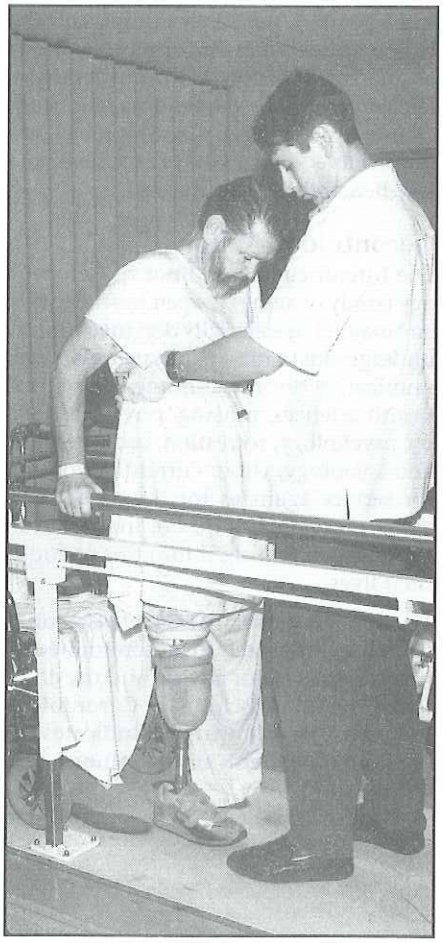
For further information you may contact the Department of Health Science at (209) 278-4014.

COURSE
Interdisciplinary Health and Social Work (HSW)

100T. Selected Topics in the Health Professions (1-3; max total 6 if no topic repeated)
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.







School of Health and Social Work
Department of Health Science
ANTHONY M. ALCOCER, *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

Master of Public Health (MPH)
Options:
Environmental and Occupational
Health
Health Administration
Health Promotion

Minor in Health Science

The Bachelor of Science in Health Science and the Master of Public Health 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.

The Master of Public Health degree is designed for individuals seeking a professional degree in public health. This degree is recognized throughout the world.

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.

Master's Program

The primary goals of the health science master's program are 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 MPH 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.

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.

Faculty

Anthony M. Alcocer, *Chair*

Community Health Advisers: Vickie D. Krenz, Sherman K. Sowby, Terri A. Hamilton
Environmental Health Science/Industrial Hygiene Advisers: Sanford M. Brown, Wayne N. Clark, Ronald C. Schultz, Christopher J. Tennant
Health Services Adviser: Donald L. Matlosz
Occupational Safety and Health Adviser: Michael J. Waite
Credential Adviser: Sherman K. Sowby
MPH Adviser: Sanford Brown

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. However, university policy allows only one option to appear on the transcript and diploma.

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 (24-28), 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.

Health science students are advised to obtain the advising booklet from the department office. The booklet includes the list of required courses and a recommended four-year program for every option. It is strongly recommended that students follow the progression of coursework shown in the booklet. Students need to consult with their advisers for decisions regarding major and minor 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 (24-28 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 (27-28 units)*
H S 105, 160, 162, 165, 167, 168, 175 (3-4 units); 6 units approved electives

Additional requirements (37-39 units)
BioSc 1A, 1B; Chem 3A, 4, 105 or Chem 1A, 1B or Chem 1B, 3A, 4; Micro 20; Chem 8; Math 6 or 70; Phys 2A, 2B.

The Environmental Health Science/Industrial Hygiene Option is approved by the State of California Department of Health Services and accredited by the National Environmental Health Association. Individuals who wish to become registered must meet state requirements.

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.

* 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 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; 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.

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.)

* H S 92 may also be applied to satisfy the General Education CORE mathematics requirement if intermediate algebra was completed in high school.

** See department for substitutions.

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 and Occupational Health, Health Promotion, or Health Administration. Each option includes an internship and a culminating experience.

Each fall, 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. Applicants are required to complete the application booklet available in the department office.

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. satisfactory 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 intent, 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
Thesis or Project	4
Total	41

For additional information, please contact the Health Science Department at California State University, Fresno; 2345 E. San Ramon Ave.; Fresno, CA 93740-0030; (209) 278-4014.

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)

Prerequisites: 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) (Computer lab fee, $15)

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 multifaceted 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. (Formerly H S 152T section)

135. Introduction to Human Disease (3)
Prerequisites: 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 nonionizing 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)
Prerequisites: 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)
Prerequisites: 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) (Lab fee, $25)

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)
Prerequisites: 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) (Computer lab fee, $15)

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 university's 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 total 6)
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)
Prerequisites: 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 total 6)
See *Academic Placement — Independent Study*. Approved for *SP* grading.

298. Project (2-4; max total 4)
Prerequisite: advancement to candidacy for MPH degree in Health Science. See *Criteria for Thesis and Project.* A significant endeavor in health science that may include an educational booklet, audiovisual 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.

Master of Public Health (PH)

202. Advanced Public Health Statistics (3)
Prerequisite: H S 92 or equivalent. Theories and limitations of parametric testing: ANOVA, MANOVA, and regression. Focus on nonparametric testing and small samples including Kruskal Wallis, Median and Fischer tests. Preparation of data for computer analysis and interpretation of results. Resource issues related to data collection.

206. Environment and Occupational Health (3)
Application and evaluation of environmental health principles to air, land, water, waste, and occupational health with emphasis on contemporary issues.

208. Health Promotion (3)
Focuses on behavioral change techniques derived from many areas of applied research including behavior modification and social interaction theory. Information emphasizes the health relevant principles in each domain and shows how they can be used to understand or change public health problems. (Formerly H S 222T section)

209. Advanced Concepts in Epidemiology (3)
Prerequisites: H S 92, 109 or equivalents; computer statistics program competency. Advanced principles and methods of epidemiology. Includes methods of organizing surveillance data, defining cases, testing hypotheses, analyzing effectiveness of methods, summarizing studies. Advanced statistical methods will be utilized with emphasis on interpretation of results. (Formerly H S 262T section)

221. Health and Disease of the Body Systems (3)
General principles of health and disease in the human body. Emphasis will focus on each organ system and the disease process. Preventive lifestyles will also be studied. Undergraduate preparation in anatomy and physiology is expected for each student. (Formerly H S 222T section)

225. Foundation in Health Promotion (3)
Prerequisite: PH 208. History and philosophy of health education. Psychological, sociological, economic, and political theories relevant to the mission and process of health education with special reference to schools and colleges.

251. Health Care Economics (3)
Prerequisites: Econ 131 or Fin 120 or equivalent. Topics include demand and supply in health services sector; implications of public and private financing alternatives; constraints on manpower training and entry; equity and distribution competition and regulation; issues of productivity measurements and utilization; and political economy of health care. (Formerly H S 222T section)

253. Human Resources Management in Health Care (3)
The study of staffing, classification of labor, performance appraisal and other issues that apply to the diverse care providers within the health care milieu. (Formerly H S 222T section)

263. Air Quality Management (3)
Prerequisites: PH 202, 206, 209. Study of the concepts of air pollution including the analysis of relationships among sources, meteorology, health effects, monitoring, sampling, and emissions control systems. Current regulations will be reviewed with emphasis on interpretation and application of the regulations to industry. (Formerly H S 262T section)

264. Management of Water Pollution (3)
Prerequisites: PH 202, 206, 209. Analysis of the principles of water treatment and technical aspects of water pollution control, including cause and effect of water pollution. (Formerly H S 262T section)

265. Hazardous Materials Management (3)
Prerequisites: PH 202, 206, 209. Analysis and evolution of operations and processes for solid and hazardous materials generation, storage, processing and disposal, including the review of regulations and industrial applications. (Formerly H S 262T section)

266. Industrial Hygiene Principles (3)
Prerequisites: PH 202, 206, 209. Theory and practice of industrial hygiene with application of regulations to the recognition, evaluation and control of workplace hazards. Evaluation of industrial hygiene techniques and instrumentation in the solution of workplace hazards. (Formerly H S 262T section)

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 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 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

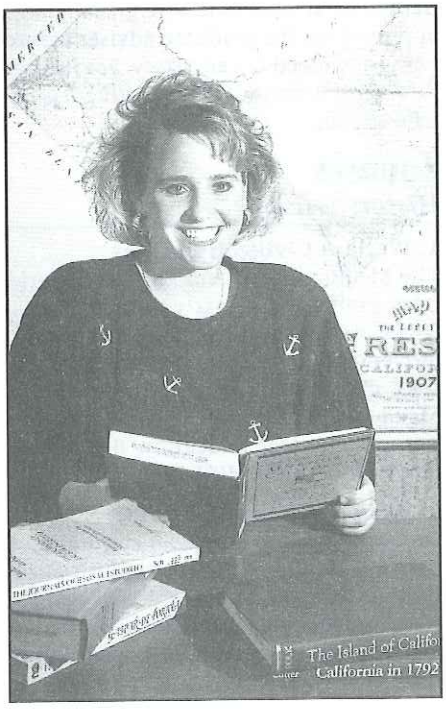
History majors are trained to read with comprehension and to compare and analyze both written and oral material. In addition they must know how to evaluate evidence and sources, how to critique the writing of others, and how to do research and writing on their own. These are highly valued skills in many occupations and professions today,

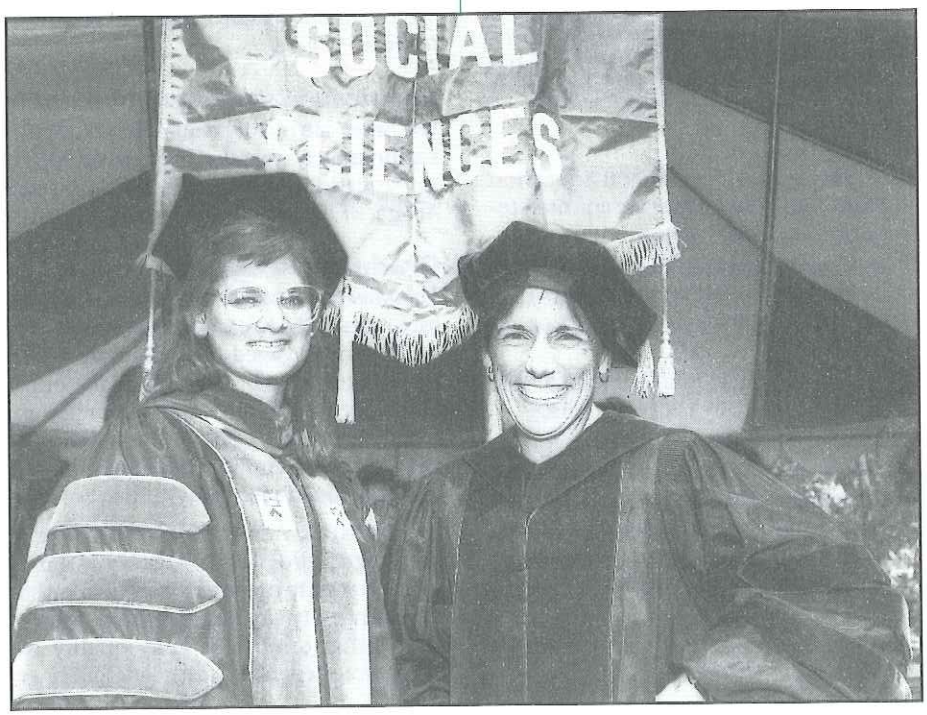
School of Social Sciences
Department of History
JERONIMA L. ECHEVERRIA, *Chair*
Social Science Building, Room 101
(209) 278-2153

B.A. in History
M.A. in History
Minor in History
Single Subject Teaching Credential in Social Science

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

Jeronima L. Echeverria, *Chair*

Undergraduate Adviser:
Jeronima L. Echeverria

Graduate Adviser: Robert J. Dinkin

Social Science Credential Adviser:
Jeronima L. Echeverria

D. Loy Bilderback
John W. Bohnstedt
James M. Brouwer
Sidney H. H. Chang
Warren E. Gade
H. Marshall Goodwin Jr.
David C. Hudson
David N. Jones
John C. Kendall
W. Hudson Kensel
Peter J. Klassen
Jesus Luna
Malik Simba
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	(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, 171, 172, 173, 174, 175, 177, 178, 179T, 180, 181, 182, 183, 184, 185, 186, 188, 189, 190, 198.

European: Hist 103, 111, 112, 116, 119T, 120, 121, 122, 124T, 125, 126, 129T, 130, 131, 132, 133, 134, 135, 136, 138, 140, 141, 142, 143, 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 the *Social Science Credential Adviser Jeronima Echeverria.*

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 this university's 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. The basic requirements 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** Hist 210, 220, 230, 235, 242, 245, 250, 260, and 270. With the approval of the departmental graduate adviser, the student may substitute up to 6 units of related courses in other departments or 6 units of 100-level history courses (except Hist 100, 190, 198) which appear especially appropriate to the student's area of research. Selected Topics courses and Senior Seminars may also be used upon consultation with and the approval of the graduate adviser.

C. **Three units from among** Hist 290 and 292.

Thesis: 6 units of Hist 299A-B.

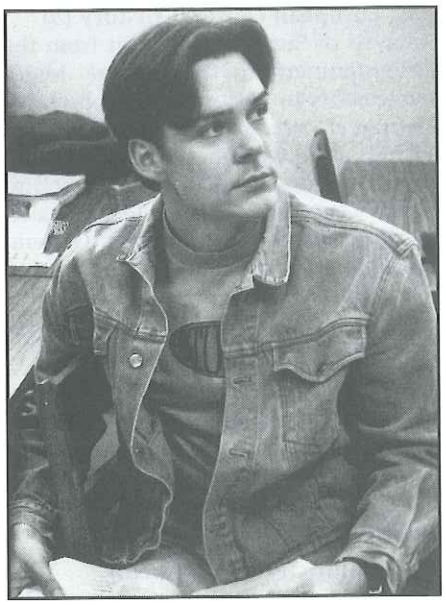
Foreign Language Requirement. All graduate students of the Department of History must pass a reading competency examination in at least one foreign language approved by the graduate adviser before being advanced to candidacy. For further information, consult the department graduate adviser.

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 impe-



rialism; 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. Prerequisites: Engl 1, upper-division standing; pass UDWS requirement. 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. (Formerly 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)
Early Christianity from the first century to eve of Reformation. General Education CAPSTONE Cluster course. (Formerly 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.

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.

117. CoSMOS:
Course of Study for the
Multicultural Origins of Society (3)
Prerequisite: Hist 1 or Art 10 or Hum 10 or permission of instructor. Investigates inventions and ideas derived from ancient cultures around the globe which have shaped the modern world.

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.

121. The Middle Ages (3)
Prerequisite: Hist 1 or permission of instructor. Medieval Europe from the fall of the Roman Empire in the West to the Renaissance. (Formerly Hist 121A)

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.

132. Europe in the 19th Century (3)
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. (Formerly Hist 132A)

133. Europe in the 20th Century (3)
Narrative and interpretive account of 20th century Europe. Stress on the impact of World War I, the Communist and Fascist Revolutions, the economic recovery of Europe, and the loss of European significance in the world after World War II.

134. Europe Today (3)
An examination of recent European history, emphasizing the trauma of decolonization, adjustment to the reality of a divided Europe, the twisting path to European unification, and the revolution in European lifestyles caused by economic prosperity.

135. European Cultural History (3)
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. General Education CAPSTONE Cluster course. (Formerly Hist 135A)

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.

143. The Soviet Union (3)
The political, economic, and social history of the Soviet Union since 1917. General Education CAPSTONE Cluster course. (Formerly Hist 143A)

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.

152. British History in Film (3-4; max total 4)
Discussion and written historical analysis of selected cinematic masterpieces in British history, from Henry II to the modern era. (Formerly Hist 149T section)

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.

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.

166. United States — Latin American Diplomacy (3)
History of the relations between the United States and Latin America, ranging from the Monroe Doctrine through the Good Neighbor Policy, Alliance for Progress, and the Caribbean Basin Initiative.

169T. Studies in Latin American History (1-3; max total 6 if no topic repeated)
Intensive study of special topics.

171. Early American History, 1607-1789 (3)
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. (Formerly Hist 171A)

172. United States History, 1789-1865 (3)
Prerequisite: Hist 11 or permission of instructor. Political, economic, social, and cultural developments from the beginning of the Republic through the Civil War. (Formerly Hist 172A)

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)
The United States in world affairs; political, economic, social, and cultural developments and problems from 1914 to 1945.

175. United States History, 1945-Present (3)
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. (Formerly Hist 175A)

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)
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. (Formerly Hist 181A)

182. Westward Movement Since 1848 (3)
Patterns of exploitation; role of the federal government in the West: land policy, Indian policy; problems of communication; economic growth. (Formerly 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. (Formerly 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. (Formerly 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 total 6)
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. (Formerly 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. (Formerly 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. (Formerly 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)
See *Academic Placement — Independent Study*. Approved for ***SP*** grading.

292. Directed Readings (1-3; max total 3)
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.

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
Bruce S. Thornton, *Coordinator*
George E. Diestel
Victor Hanson
Ralph Hennings
David T. Natharius

Humanities Interdisciplinary Minor

	Units
Hum 10, 11, 12, or 14	3
IntD 104, 108, 110, 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; variable; max total 12 if no topic repeated)
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 total 6)
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.

School of Arts and Humanities
Office of the Dean
Music, Room 186A
(209) 278-3056

Humanities Interdisciplinary Minor

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

School of Education and Human Development
JACQUES S. BENNINGA, *Coordinator*
JANELL PEREZ, *Adviser*
Education Building, Room 151
(209) 278-0270

B.A. in Liberal Studies

The aim of a liberal studies education program is 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 non-credential Liberal Arts Option is available for students not pursuing a career in elementary school teaching (see *Liberal Studies Major Core*, next page).

Students completing the credential option requirements with a minimum grade point average of 2.89 will satisfy the California requirements for the Multiple Subject Waiver and will not be required to take and pass the Multiple Subject Assessment for Teachers (MSAT) exam. Students can proceed directly into the Multiple Subject Credential Program after passing the California Basic Educational Skills Test (CBEST) and meeting other credential program admission requirements. Consult the Multiple Subject program adviser in ED 100. The Liberal Studies major is the only approved Multiple Subject Waiver program at California State University, Fresno.

Faculty

The Liberal Studies 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 in ED 151.

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 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 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.

Scholarship Requirement

Liberal studies majors who plan to obtain a Multiple Subject Credential (elementary teaching) must earn 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 2.89 is required for admission to the Multiple Subject CLAD/BCLAD Credential Program. This figure is subject to periodic change. For additional information regarding admission to the Multiple Subject CLAD/BCLAD Credential Program, contact the SOEHD Student Services Office in ED 100.

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 with emphasis in Cross-Cultural Language and Academic Development and Bilingual Cross-Cultural Language and Academic Development (CLAD/BCLAD). This Multiple Subject Credential Program was first offered in Fall 1994 and is the professional preparation program required for teaching in self-contained educational settings (typically found in the elementary school). The emphasis of the CLAD/BCLAD Multiple Subject Credential is to prepare teachers to work in classrooms with all children, including children whose primary language is not English. The CLAD authorization will certify teachers to provide instruction for English language development and specially designed academic instruction in English. The BCLAD (Spanish and Hmong) replaces the Bilingual/Cross-Cultural Credential and will authorize teachers to provide academic instruction to limited-English proficient students in their primary language.

To ensure preparation for admission to the CLAD/BCLAD Multiple Subject Credential Program, students should complete the following prerequisites: EHD 50; Ling 134; Ling 141; Ling 147 or CLS 143; Af Am 195 or CLS 195 or W S 195; and the equivalent of 6 units of the same foreign language. Students seeking the BCLAD should in addition complete the BCLAD concentration. For more information see the Multiple Subject adviser in Ed 100 or the CLAD/BCLAD coordinator in ED 250.

Preliminary Multiple Subject Credential — Early Childhood Education Emphasis (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 students to obtain a Multiple Subject Credential in a specific emphasis area. Students who elect to complete the EHD 160 assignment 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.

This credential option also results in the Preliminary CLAD Multiple Subject Credential for students who complete the required prerequisites.

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. This program should be planned in consultation with the liberal studies adviser.

Program Advisement

Liberal studies majors are expected to attend a group orientation describing the program during their first semester on campus. Dates for orientation sessions are posted outside ED 151 or can be obtained by calling 278-0270. 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) can call the Liberal Studies Office. It is helpful to bring the official evaluation form when meeting with an adviser. All students should request a senior evaluation from the Evaluations Office upon completion of 90 units (cumulative) of coursework.

In addition, all students should purchase the Liberal Studies Handbook, available for purchase in the Kennel Bookstore.

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.

Bachelor of Arts Degree Requirements

Liberal Studies Major ***Units***

Major requirements **58**

Core ..... (15)
C Sci 5, 7, or IS 50 ..... (3)

Options (select one) ..... (12)

Multiple Subject Teaching Credential

P E 152 ..... (3)
CFS 39 or Psych 101 ... (3)
CFS 133, Psych 169, or RLS 125 ..... (3)
Art 179, Dance 160, Drama 136, Ling 146, Music 153, or Spch 114 ..... (3)

or

Non-Credential Liberal Arts

Department approved coursework ..... (6)
Independent Study ... (6)

Content ..... (28)

Arts/Humanities ..... (7)
Engl 101, 102, or 103 .. (4)
Select one from Art 179; Art H 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 ..... (9)
Geog 4 ..... (3)
Hist 11 (if not taken in GE CORE) ..... (0-3)
Econ 165; Hist 1, 2, 12 ..... (3-6)

Mathematics/Science ..... (6)
Math 5, 41, 43 or 61; or higher level ..... (3)
Biol 100, 110; Chem 1; Geog 5; Geol 1; or Phys 10 or higher level ..... (3)

Ethnic/Gender/Culture ..... (6)
Af Am 195, AsAm 195, CLS 195, A I S 195, or W S 195 ..... (3)
Select one ..... (3)
Credential Students
CLS 143 or Ling 147 .. (3)

or

Non-credential students
Af Am 144; AsAm 110; CLS 116, 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)

General Education **51**
CORE ..... (18)
BREADTH ..... (27)
CAPSTONE (upper division) ... (6)

Electives and remaining degree requirements[1,2] **15-21**
(See *Degree Requirements*); may be used toward a dual major or minor.

Total **124**

Advising Notes

1. Engl 101, 102, or 103 double-count for Division 6 of General Education and the Major. This requirement will also satisfy part of the university upper-division units for General Education.
2. Geog 4 double counts for Division 8 and the major.
3. Courses used to satisfy CAPSTONE may not be used to satisfy requirements for the major.
4. The upper-division writing skills requirement must be taken no sooner than the term in which 60 units of coursework are completed. See *Degree Requirements*.
5. Students in the Non-Credential Liberal Arts Option of the major, or students with a degree other than Liberal Studies, who desire to pursue the Multiple Subject Credential **must** either complete additional coursework in the major or receive a passing score on the Multiple Subject Assessment for Teachers (MSAT) along with passing scores on Content Area Exercise No. 1 and Content Area Exercise No. 2.
6. Liberal Studies majors who plan to obtain a Multiple Subject Credential (elementary teaching) should attend a Multiple Subject orientation by signing up in ED 100 during the semester prior to entering the credential program.
7. *CR/NC* coursework is not allowed in the major.

Linguistics

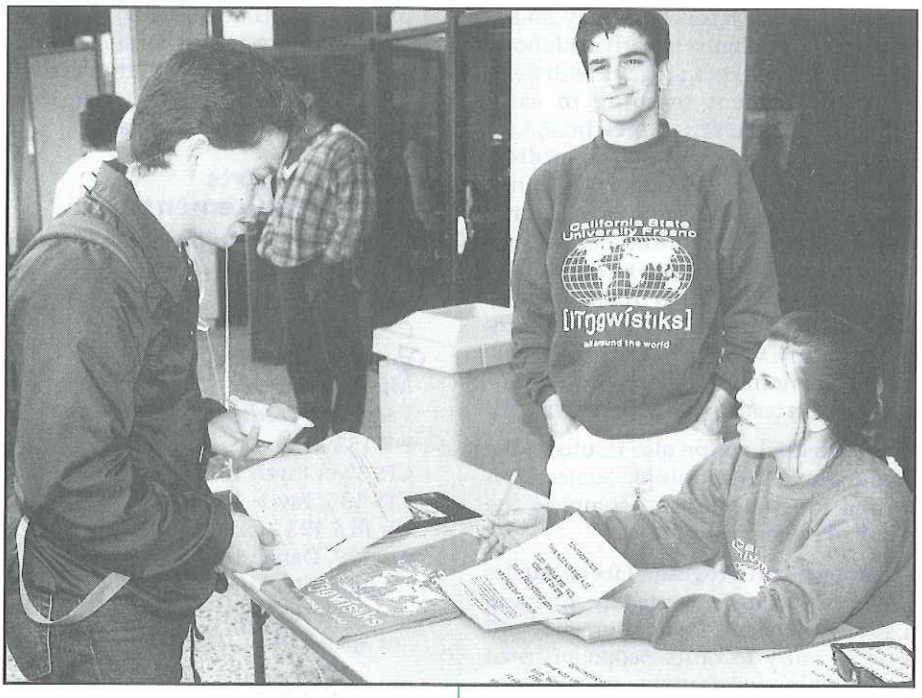
School of Arts and Humanities
Department of Linguistics
GERALD R. McMENAMIN, *Chair*
Peters Business Building, Room 383
(209) 278-2441

B.A. in Linguistics
Options:
English as a Second Language
Spanish-English Bilingualism

M.A. in Linguistics

Minor in Japanese

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 sound, word, and sentence patterns in language; they write grammars and dictionaries; they investigate the ways in which language changes across space and through time; and they study what it means to know a language and its uses, how languages are taught and acquired, 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 California State University, 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 anthropology, communicative disorders, English, foreign languages, philosophy, psychology, and other areas with a language component.

A Japanese Minor is also available for students with an interest in Japanese language and culture and/or plans to pursue careers in various areas, such as international business, marketing, economics, art and literature, etc., where a knowledge of the Japanese language and culture would be useful.

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 acquainted with general linguistics and are prepared to begin work as teachers or consultants and to continue advanced studies.

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, Graham W. Thurgood

Armando Baltra
Ellen Lipp
Peter A. Master
Shigeko Okamoto
George W. Raney
Vida Samiian
Raymond S. Weitzman
Jack B. Zeldis

Bachelor of Arts Degree Requirements

Linguistics Major

A B.A. degree with a major in linguistics requires 30 units completed 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)
Electives (see *Note 1*)	(12)
Spanish-English Bilingualism	
Ling 10 or 100, 134 or 146, 141	(9)
Select from Ling 132, 147, 148, 150	(6-9)
Electives from CLS, Span, and Ling	(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

	Units
Ling 10 or 100, 134 or 146	6
Approved electives (*see Note 1*)	15
Total	21

Japanese Minor

	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 or approved courses offered by other departments.	
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*.

CLAD/BCLAD

The Cross-Cultural Language and Academic Development and Bilingual Cross-Cultural Language and Academic Development (CLAD/BCLAD) program was first offered in Fall 1994 and will eventually replace the existing Multiple Subject Credential Program. (See *Literacy and Early Education*.)

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, 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 *Degree Requirements* on the next page; 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 21 units of graduate level courses, 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.

It is university policy that students select approved electives in such a way that at least 70 percent of their graduate program consists of 200-series courses.

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.

Certificate of Advanced Study in Teaching English to Speakers of Other Languages. This certificate is designed to train participants in the theory and practice of TESOL, with application to a wide variety of teaching circumstances. In addition to prerequisite courses that may be needed, the 12-unit course of study will include Ling 237, 241, 244, and 231T or 232T (or an approved graduate elective). Students must maintain a GPA of 3.0 or better in the program.

COURSES

Linguistics (Ling)

10. Introduction to Language (3)
The study of language — including its nature, structure, use, history, and acquisition — with the goal of imparting (1) an understanding of the importance of language in human affairs, including social and cultural instructions and (2) an appreciation of its complexity and diversity. General Education BREADTH, Division 7.

20. Language and Culture (3)
Helps students learn to understand and critically evaluate the influence of language and culture in their decisions and choices. Also helps students to respect the linguistic and cultural differences of ethnic groups in the United States 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. (Formerly 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. (Formerly 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.

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 teacher. Format designed to be compatible with classroom needs of language arts and ESL teachers. By analyzing English structures, students gain confidence in their ability to teach English grammar to ethnically diverse students.

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. (Formerly 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) (Formerly Ling 140T section)

171. Practicum in TESOL (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 total 6)
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. (Formerly 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. (Formerly 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 Second Language (ESL)

(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. (Formerly Ling 140T section)

290. Independent Study (1-3; max total 6)
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

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.

Graduates with this major enter such fields as advertising, journalism, broadcast and corporate video production, photocommunications, and public relations. They also develop the academic background to enter an M.A. degree program and to pursue doctoral studies.

The primary attributes the program fosters in its majors are critical and analytical thinking and clarity of oral, written, and visual expression. Both sets of intellectual abilities are taught and cultivated in an atmosphere of professionalism and in environments designed to prepare students for the career worlds available in the mass communication and journalism industries of today and those projected for tomorrow.

The department also supports a graduate degree, the Master of Arts in Mass Communication. Some students move directly into graduate study in anticipation of careers in teaching, in higher-level media management, or in policy-making positions. Some have earned doctorates and are employed in research organizations or have become college and university faculty members.

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 Dayle H. Molen chapter of Kappa Tau Alpha; 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*

Philip J. Lane, *Graduate Director*

Paul D. Adams
Roberta R. Asahina
Rita A. Atwood
George A. Flynn
Russell A. Hart
Muriel Jackson
D. Gregory Lewis
William N. Monson
Donald M. Priest
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 33 (minimum) to 34 (maximum) units of MCJ courses for the major. They include 10 units of core courses, taken by all majors, and 23-24 units of MCJ electives, chosen with the advice of an MCJ faculty member, from each of four areas: Skills, Management, Enrichment, and Media Practices (see *Major Requirements for the Degree.*)
3. The department requires 15 units to be taken in a "Liberal Arts and Sciences" block. Selections should be made with the advice 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	33-34
Major courses in the department (See 2, above.)	
Liberal Arts and Sciences block	15
(See 3, above.)	
General Education	51
Electives	25-26
(See 4, above.)	
Total	124

Advising Notes

1. Only MCJ courses with a grade of *C* or higher will apply to the major in Mass Communication and Journalism.
2. MCJ majors are expected, in consultation with a member of the faculty, to plan their degree program and to maintain a record of progress toward its completion. The department supplies a checklist for this purpose.
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 and 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 taking MCJ 188 are expected to have taken B A 120.
7. For majors, MCJ 1 and 10 are prerequisite to all upper-division courses.
8. Enrollment in MCJ 10 and other writing and editing courses (see *course prerequisites*) presumes a passing score, 70 or higher, on the Department Qualification Exam (DQE). Also, no equivalent course will be accepted in lieu of MCJ 10 unless the student passes the DQE. Students who do not pass the DQE may take it again but not more than three times total.
9. Seniors applying for graduation must complete a departmental Degree Requirements form, available in the office, and have it approved by a member of the faculty and signed by the department chair.

Major Requirements for the Degree

All students majoring in mass communication and journalism are required to complete a 10-unit core that includes:

	Units
MCJ 1, 10, and 101	10

All majors are also required to select at least one course from each of the following four areas:

Skills	4
MCJ 17, 102W, 104, 106, 107W, 108, 112, 113, 115, 116, 118, 124, 126, 128, 132, 134, 138, and 144	
Management	3-4
MCJ 142, 146, 148, 152, 158, 164, 172, 182, and 188	
Enrichment	1-3
MCJ 163, 166, 168, 173, 174, 175, 176, 177T, 178, and 190	
Media Practice (7 units max)	1-3
MCJ 105, 114, 119, 143, 186, and 191	
Additional MCJ Courses	10-15
Total	33-34

Notice

The formal options in Advertising, Broadcast Journalism, Broadcast Management, Broadcast Production, Media Studies, News-Editorial, Photocommunications, and Public Relations that have appeared in prior catalogs are no longer separately identified in the major. To prepare for a career in these and other fields, work with our faculty to select courses and structure your program.

Mass Communication and Journalism Minor

	Units
Required	7
MCJ 1, 10	
Minimum Electives	11
Any three or more courses selected with the advice and consent of a member of the departmental faculty	
Minimum 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 director, **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)
Surveys 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. (Formerly 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 Department Qualification Exam. Application of basic language skills to media writing and editing. (Formerly Jour 5)

10. Media Writing (4)
Prerequisites: pass Department Qualification Exam, Engl 1. Study and practice in the basics of good writing. Emphases will be placed upon grammar, factual accuracy, clarity, conciseness, media styles, fairness, human interest, and writing to length and deadline. (2 lecture, 4 lab hours) (Computer lab fee, $15) (Formerly Jour 8; TCOM 120) (CAN JOUR 2)

17. Beginning Photojournalism (4)
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; arranged hours) (Formerly Jour 17)

101. Investigating Media Issues (3)
Explores current issues in mass communication, emphasizing independent collection, analysis, and critical interpretation of available information. Papers required.

102W. Reporting (4)
Prerequisites: pass Department Qualification Exam, satisfactory completion (*C* or better) of the Engl 1 graduation requirement, to be taken no sooner than the term in which 60 units of coursework are completed. 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, 3 lab hours; arranged hours) (Computer lab fee, $15) (Formerly Jour 100W)

104. Editing of Publications (4)
Prerequisites: pass Department Qualification Exam, 70 units completed or permission of instructor. 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, 3 lab hours; arranged hours) (Computer lab fee, $15) (Formerly 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) (Formerly Jour 120)

106. Desktop Publishing (4)
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, 3 lab hours; arranged hours) (Computer lab fee, $15) (Formerly Jour 106)

107W. Magazine Feature Writing (4)
Prerequisites: pass Department Qualification Exam, satisfactory completion (*C* or better) of the Engl 1 graduation requirement, to be taken no sooner than the term in which 60 units of coursework are completed. Writing and marketing feature material for magazines, newspaper supplements, and syndicates. Meets the upper-division writing skills requirement for graduation. (Formerly Jour 124W)

108. In-Depth Reporting (4)
Prerequisites: pass Department Qualification Exam, MCJ 102W, Engl 1, 70 units completed or permission of instructor. Advanced reporting for the media; emphasis on covering community sources and issues, including politics, local government, courts and law enforcement. (2 lecture, 4 lab hours) (Computer lab fee, $15) (Formerly 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) (Formerly 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) (Formerly TCOM 50; TCOM 105)

114. Media Operations (1; max total 2)
Not open to students with 2 units of credit in MCJ 114 and 117. Prerequisite: permission of instructor. Enrollees participate in operation of the university radio station, production of on-campus video programs, or work in the community media, on a scheduled basis and under supervision of department faculty. *CR/NC* grading only. (1 lab, 4 arranged hours) (Formerly TCOM 131)

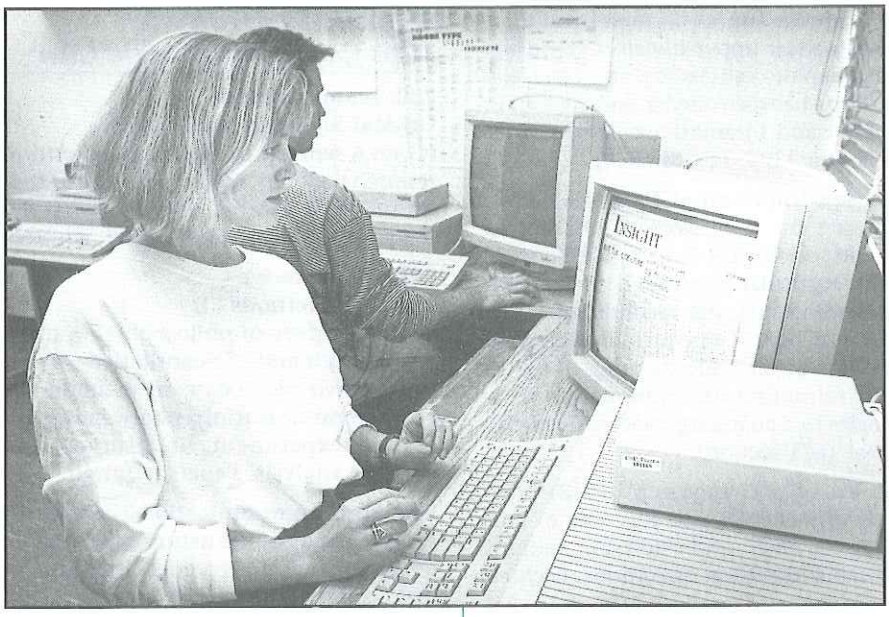
115. Electronic Field Production (4)
Prerequisite: MCJ 113. Lecture and discussion of field-production techniques as used in ENG/EFP; preproduction planning, production execution, and postproduction processes. Field assignments required. (2 lecture, 4 lab hours) (Formerly TCOM 70; TCOM 107)

116. Advanced Video Production and Directing (4)
Prerequisites: MCJ 113 and 115 or equivalents, with *B* or better. Development of critical and creative skills; study of production theory and practice; planning and producing for the director's role. Laboratory goal: air-worthy products for closed-circuit, cable, or broadcast distribution. (1 lecture, 6 lab hours; arranged hours) (Formerly TCOM 150)

118. Corporate Video (4)
Prerequisites: MCJ 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, 3 lab hours; arranged hours) (Formerly 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) (Formerly TCOM 189)

124. Broadcast News Writing (4)
Prerequisites: pass Department Qualification Exam, Engl 1. Gathering, writing, and editing news for the broadcast media. (2 lecture, 4 lab hours) (Computer lab fee, $15) (Formerly Jour 128)



126. Radio-Television Performance (4)
Prerequisite: Drama 22 or 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, 3 lab hours; arranged hours) (Formerly TCOM 80; TCOM 108)

128. News/Public Affairs Production (4)
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. (2 lecture, 4 lab hours; arranged hours) (Formerly Jour 153; TCOM 153)

132. Photo Editing (4)
Study of photographs and other visual elements in publications; principles of graphic design. Practical experience in selecting photographs and design elements for content, aesthetic values, and technical quality. (3 lecture, 2 lab hours) (Formerly Jour 116)

134. Intermediate Photojournalism (4)
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; arranged hours) (Formerly Jour 117)

138. Advanced Photojournalism (4; max total 8)
Prerequisites: MCJ 17, 134, and permission of instructor. Individualized study and practice in advanced skills, including lighting, color, laboratory techniques, and electronic imagery. (1 seminar, 3 arranged hours) (Formerly 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. (Formerly 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. (Formerly Jour 146)

144. Advertising Copy Writing (4)
Not open to students with credit in MCJ 144 or 147. Prerequisites: pass Department Qualification Exam, MCJ 142. Develops print and broadcast copy writing for magazine, direct mail, outdoor, newspaper, radio, television, and new advertising media. Examines the role of the copy writer, creative strategies, research target marketing, copy styles, and laws regulating advertising. (Formerly 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. (Formerly Jour 160)

148. Advertising Campaigns (4)
Prerequisites: MCJ 142 and 144 or 146. Background, research, planning, and preparation of national advertising campaign as advertising agency with client-agency set-up; marketing plan and creative execution. (3 lecture, 2 lab hours) (Formerly Jour 175)

152. Public Relations (3)
Development of public relations practice; principles and methods; application in business, education, and other fields. (Formerly Jour 113)

158. Public Relations Strategies and Techniques (4)
Prerequisites: pass Department Qualification Exam, MCJ 102W, 152, Engl 1. Study of effective publicity methods and assessment of public relations programs and problems in business, philanthropy, and public institutions. (Formerly Jour 173)

163. Radio/TV as Popular Culture (3)
Prerequisite: to be taken no sooner than the term in which 60 units of coursework are completed. 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. (Formerly TCOM 163)

164. Applied Media Research (3)
Not open to students with credit in MCJ 167. 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. (Formerly TCOM 145)

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. (Formerly TCOM 173)

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. (Formerly 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. (Formerly 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. (Formerly Jour 180)

174. History of Mass Media (3)
Historical background of American media from colonial to modern times. (Formerly Jour 184)

175. Media Stereotypes (3)
Prerequisite: 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 stereotypes. Roles of minorities and women in media industries. (Formerly Jour 115; TCOM 115)

176. International Media (3)
Factors affecting the international flow of news and entertainment programming; social, economic, and political influences on national concepts of freedom of the press; comparative mass media systems; roles of media and new information technologies in other countries. (Formerly Jour 182; TCOM 167T section)

177T. Media Topics (3; max total 6)
Prerequisites: upper-division standing. Topics explore various aspects of the relationships between media and society in national and international arenas. (Formerly 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. (Formerly 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. (Formerly 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. (Formerly 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. (Formerly TCOM 185)

190. Independent Study (1-3; max total 6)
See *Academic Placement — Independent Study*. Approved for ***SP*** grading. (Formerly 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. (Formerly 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.

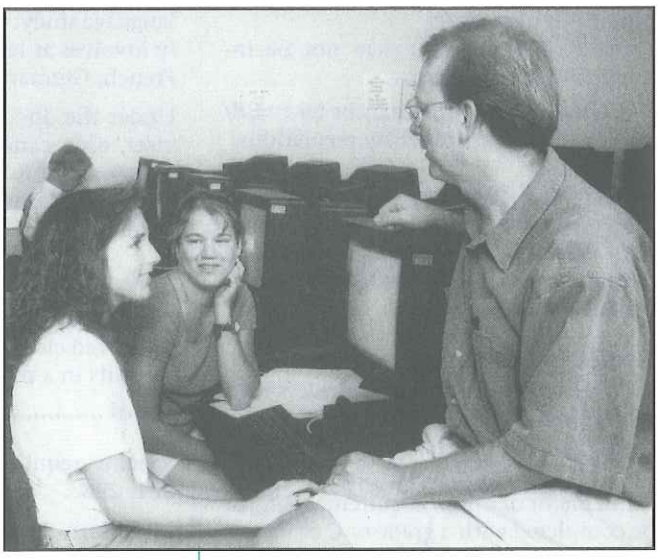
204T. Seminar in Journalism (3; max total 9)
Seminar in a print media topic: government information policy, news media and urban affairs, social responsibility in public relations, magazine influence in America.

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.



Professor Larry Cusick is helping students solve a geometry problem with "Mathematica." The computer lab is available to all students.

School of Natural Sciences
Department of Mathematics
ROBERT F. ARNOLD, *Chair*
Peters Business Building, Room 381
(209) 278-2992

B.A. in Mathematics
M.A. in Mathematics
Minor in Mathematics
Single Subject Teaching Credential

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.

Electives in applied mathematics prepare students to assume positions in technical industries or government employment, or to continue advanced studies in the applied area.

Electives in pre-college teaching in mathematics provide students with the necessary background for obtaining a California Single Subject 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.

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 industry.

Electives in statistics and probability provide a foundation for students planning to work as statisticians for industry or government agencies. They also can enhance employment opportunities in the bioscience and health-related fields. Statistics courses (in addition to Math 75, 76, and 77) are essential for the first two Actuarial Examinations offered by the Society of Actuaries.

Faculty

Robert F. Arnold, *Chair*

Graduate Coordinator: Hugo S. Sun
Undergraduate Advisers: All full-time faculty
Credential Advisers: Agnes Tuska and Norman Woo
ILE Coordinator: Margretha Bentz

Sean Cleary
Moses E. Cohen
Larry W. Cusick
Donald J. Donohue
Della C. Duncan
Ernesto Franco
Noal C. Harbertson
Harold B. Haslam
Merrilee K. Helmers
Detlev Lindae
Rudolph M. Najar
Hussain Sayid Nur
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 as well as 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	**43-48**
Core curriculum	(28)
Math 75, 76, 77	(12)
Math 151, 152	(8)
Math 171A	(4)
Math 171B or 172	(4)
Elective curriculum	(15-20)
Five mathematics courses, upper-division or Math 81, excluding Math 124 and 128.	
Additional requirements	**7**
C Sci 40	(4)
Phys 4A[1]	(3)
General Education	**51**
Electives	**18-26[2]**
Total	**124**

Major 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, Math 76 or above	8-10
Total	**20-22**

Minor Advising Notes

1. Math 140 and 142 may not be included in the minor.
2. Courses in the minor may be taken *CR/NC*, subject to university regulations.

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 required as prerequisites for a mathematics course must be completed with a grade of *C* or better before registration will be permitted. All courses taken to fulfill major or minor requirements must be completed with a grade of *C* or better.

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 California State University, 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 21 units of mathematics in the 200 series	21
Approved electives (no more than 6 units in a related field)	9
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; max 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 370 and below 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)
Prerequisites: 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. (Formerly Math 1AR)

4R. Intermediate Algebra (3)
Prerequisites: elementary algebra and geometry. Radicals, rational exponents, quadratic equations, simultaneous linear equations, graphing inequalities, com-

plex 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)
Prerequisites: 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. (Formerly 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. (CAN MATH 16)

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)
No credit if taken after Math 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. 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. (CAN MATH 4)

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.

61. Geometry and the Imagination (3)
Prerequisites: 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. Topics in Geometry. May include, but is not restricted to, tilings and tessellations, regular polyhedra in 3 and 4 dimensions, ruler and compass constructions, map coloring. Fulfills the Mathematics Content requirement for the B.A. in the Liberal Studies major.

70. Mathematical Analysis 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. Prerequisites: 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, 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) (Computer 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) (Computer 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.

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)
Prerequisites: 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.

121L. Numerical Analysis Laboratory (1)
Corequisite: Math 121. Optional computer laboratory for Numerical Analysis I. Use of microcomputers to implement numerical algorithms. (2 lab hours) (Computer lab fee, $15)

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)
Prerequisites: 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.

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: Math 76. 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 77. The classical elliptic, parabolic, and hyperbolic geometries developed on a framework of incidence, order and separation, congruence; coordinatization. Theory of parallels for parabolic and hyperbolic geometries. Selected topics of modern Euclidean geometry.

165. Differential Geometry (3)
Prerequisite: Math 77. Study of geometry in Euclidean space by means of calculus, including theory of curves and surfaces, curvature, theory of surfaces, and intrinsic geometry on a surface.

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. (Formerly 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)
Prerequisites: 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 total 6)
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)
Prerequisites: 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)
Prerequisites: 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 171B or equivalent. 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)
Prerequisites: 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: 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 total 6)
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 (1-3; 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
Department of Military Science
GARY MASTERS, *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 $1,500 a year and can earn as much as $10,000 during their college careers. Each student receives $150 (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 $150 (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

Gary L. Masters, *Chair*

Advisers:
Gene N. Anderson
Jon Buonerba
Suriyan Collins
Moose M. Kinsey
Richard F. Sloan
Richard E. White

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 50A, 50B, 131, 132, 141, 142, 150A, 150B; 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.

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.

50A. 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. (Formerly M S 134; M S 134A)

50B. 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. (Formerly M S 134; M S 134B)

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.

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.

150A. 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. (Formerly M S 134; M S 134C)

150B. 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. (Formerly M S 134; M S 134D)

190. Independent Study (1-3; max total 6)
See *Academic Placement — Independent Study*. Approved for ***SP*** grading.

192. Directed Reading in Selected Military Topics (3)
Prerequisites: 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 and composition
- 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, and
- 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, theory and composition, or music education.

Faculty and Facilities

The Department of Music faculty is composed of individuals whose backgrounds reflect varied areas of specialization: performance, composition, scholarly research, and music education. Many members of the faculty have national and international reputations as performing artists and teachers. Others are well known for their articles and books. They are *all* dedicated to the task of providing the best music education possible for students in their classes and studios.

The music building consists of faculty studios, offices, classrooms, practice rooms, rehearsal halls, and a recital hall. Special facilities include an electronic studio and a computer-assisted instruction laboratory.

Career Opportunities

While many graduates have made successful performing careers in opera, orchestras, and popular music ensembles, the majority have established careers as private or public school teachers. Those who complete graduate studies have either advanced in public school careers or have made careers as teachers in higher education.

There are also other types of careers open for music majors and minors in music-related areas. The music industry draws 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.

Whether your goal is to become a teacher of music or a performer, what you learn here will always enhance your knowledge of the musical art and increase your sensitivity to the musical world around you.

Faculty

Jack R. Fortner, *Chair*

M. Teresa Beaman
Kathryn Bumpass
W. Ritchie Clendenin
José A. Diaz
Steven E. Gilbert
Gary P. Gilroy
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* and all requirements listed under *Degree Requirements* and *General Education.*

Options — select one:

Option I (47-64 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, or c — 14-21 units); *Other Departmental Requirements*; 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, 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 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 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 Recital) 2
Two semesters in piano (Music 36S and 136S) after passing Piano Jury Examination, Level 1 4
21

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 regarding the 30 units of professional education necessary for completion of the Single Subject Teaching Credential and fifth 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
Four semesters in Music 31S and 131S through 39S and 139S, including two semesters with advanced standing 8
Music 198 (Senior 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, 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 Guitar 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 no sooner than the term in which 60 units of coursework are completed.

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, conducting, and/or pedagogy. In addition, students minoring in music must enroll in a major performing organization (see *Note 4* under *Other Departmental Requirements*) 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.

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 bachelor's degree in music or the equivalent.

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 21 units in 200-series

	Units
Specific requirements	11
Music 204, 220, 1 music history seminar (Music 260, 267, 277, 287), and Music 211 or another performance class by advisement	
Concentration (select one)	9-12
Music Education	
Performance	
Theory and Composition	
Electives	4-7
Courses in music or related fields, including at least 3 units in a subject other than music	
Project or thesis	3
Total	30

Students with concentrations in vocal performance and choral conducting 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; Music 2 max total 4; Music 102 max total 6, 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; Music 3 max total 8; Music 103 max total 12, 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; Music 17 max total 8; Music 117 max total 12, 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. (Formerly Music 130T section)

18 and 118. Instrumental Ensembles (1; Music 18 max total 4; Music 118 max total 6, 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; Music 21 max total 8; Music 121 max total 12, 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.

10 and 110. Voice for Non-Majors (1)
To acquaint the beginning voice student with basic principles of good singing; to apply principles of good singing to different song styles and to help the beginning voice student develop and strengthen performing skills. (Formerly Music 130T section)

11. Intermediate Guitar Technique (2)
Introduction to classical guitar, major, minor, and chromatic scales, chord progression, and beginning classical guitar selections. (Formerly Music 130T section)

12. Flamenco Interpretation (2)
Introduction to basic flamenco guitar techniques; rasgueados, picados, tremolos, basic rhythms, studies and interpretation of flamenco repertoire. (Formerly Music 130T section)

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)
Prerequisites: 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. Intermediate 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.

111. Advanced Guitar Technique (2)
Advanced studies in classical guitar works, diatonic major and minor scales, chord progression, and interpretation of classical guitar repertoire. (Formerly Music 130T section)

112. Advanced Flamenco Interpretation (2)
Special studies in flamenco guitar interpretation including advanced techniques, traditional rhythms, improvisations, and analysis of music, songs and dance. For majors and non-majors. (Formerly Music 130T section)

119I. Upper Brass Pedagogy (1)
Prerequisites: 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)
Prerequisites: 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)
Prerequisites: 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)
Prerequisites: 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)
Prerequisites: 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)
Prerequisites: 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)
Prerequisites: 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)
Prerequisites: Music 40, 41. Principles, playing and teaching procedures, and materials for teaching keyboard instruments in the elementary school, high school, and community college. (Course fee, $20)

119Q. Voice Pedagogy (2)
Prerequisites: Music 40, 41. Principles, playing and teaching procedures, and materials for teaching voice in the elementary school, high school, and community college. (Course fee, $20)

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. *CR/NC* grading only. (Formerly Music 130T section)

130T. Topics in Performance (1-2; max total 12, 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)
Prerequisites: Music 40, 41, 42, 43. Technical, stylistic, and aesthetic elements of theory and composition.

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)
Prerequisites: 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)
Prerequisites: 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)
Prerequisites: 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)
Prerequisites: 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)
Prerequisites: 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.

161A. Survey of Music History I (3)
Prerequisites: 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)
Prerequisites: 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)
Prerequisites: Music 61, permission of instructor. Lectures, discussion, and reports on music from approximately 1880 to the present.

169. Instrumental Techniques and Materials (2)
Prerequisites: Music 41, 119I-O. 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 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)
Prerequisites: 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; max total 12, 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)
Prerequisites: 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)
Prerequisites: 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)
Prerequisites: 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)
Prerequisites: 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 total 6)
See *Academic Placement — Independent Study*. Approved for ***SP*** grading.

191. Readings in Music (1-3; max total 6)
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 (2)
Prerequisites: 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.

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 discussion of problems in the area of literature, philosophy, and practices of teaching, administration, and curriculum planning.

220. Seminar in Research Methods and Bibliography (3)
Prerequisites: 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 total 6)
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.

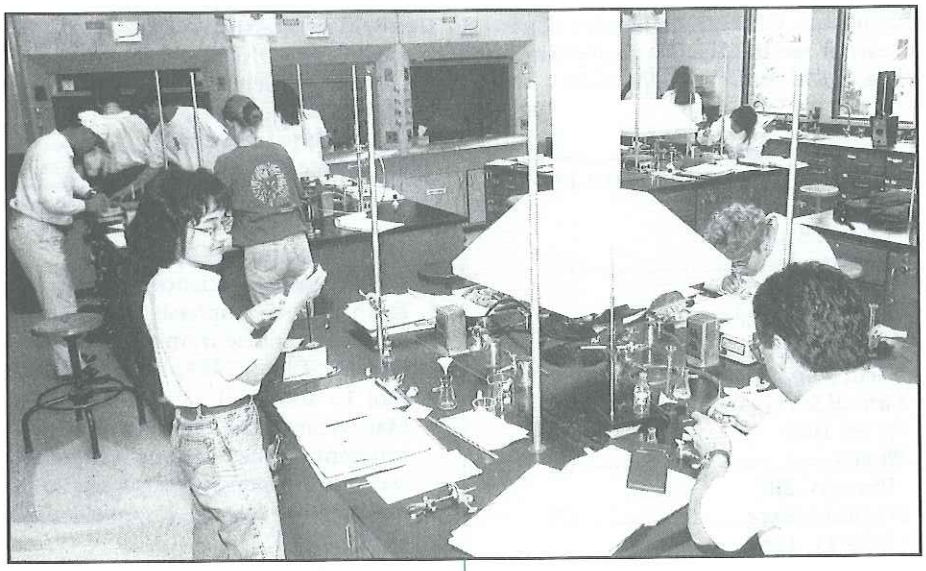
IN-SERVICE COURSES

(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; max total 6)
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.



School of Natural Sciences
KIN-PING WONG, *Dean*
Science Building, Room 101
(209) 278-3936

B.A. in Natural Sciences

The goal of the School of Natural Sciences is to provide professional training at the undergraduate and graduate levels. To achieve this goal, our programs of study serve as foundations for careers in science and mathematics. They provide professional training in preparation for careers in medicine, dentistry, pharmacy, veterinary medicine, and other professions.

The school consists of the departments of Biology, Chemistry, Geology, Mathematics, Physics, and Psychology. Their degree programs are listed separately. The school provides study for students in the areas of biology, chemistry, geology, mathematics, physics, and psychology by offering courses in the majors; support courses for non-science majors such as agriculture, engineering, and the health professions; and courses for the general education of all university students.

The school requires faculty members to possess the appropriate terminal degree recognized in their discipline. The school has 90 permanent faculty members; all hold a doctorate in their discipline. Doctorates held by faculty were granted by some of the most prestigious universities in the nation and abroad. Furthermore, students and faculty members conduct research and scholastic activities in their academic areas as well as solve 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/mathematics teacher education. The recruitment, retention, and education of underrepresented minorities and females in science and mathematics are also major emphases.

Science Careers Opportunity Program (SCOP)

Through the Science Careers Opportunity Program (SCOP), the school offers a unique opportunity for minority and underrepresented students interested in the sciences, science teaching, or health professions. Students are assisted in their transition from high school and/or community college into the university. They are provided with academic support and extracurricular activities that are designed to help the students successfully complete their undergraduate education and enter into graduate-level science and health professional school programs.

Man/Woman and the Natural Environment (MNE)

(18-unit thematic cluster)

A 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. This course of study (fall semester only) involves approximately one month of instruction in various field locations with significant time in several of the locations. A special fee of $300 is charged for transportation and food on field trips. For further information, contact the dean's office at 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)

Math and Science Teacher Education

The school offers baccalaureate degree programs in mathematics, natural science, physics, chemistry, and biology that serve as waiver programs leading to the Single Subject Teaching Credential in Mathematics, Physical Science, and Life Science. For more information, call Agnes Tuska (Math Education) at 278-2992 or Dave Andrews (Science Education) at 278-2001.

Biotechnology Certificate Program

The school offers a one-year postbaccalaureate Certification of Advanced Study in Biotechnology. This intensive program of study emphasizes molecular biology and a wide range of laboratory skills at the forefront of modern biotechnology. 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 strong background for advanced studies in biochemistry, molecular biology, and agricultural biotechnology. For further information, call Howard Ono (Chemistry) at 278-2103 or Shirley Kovacs (Biology) at 278-2001.

Marine Science

The school offers a Master of Science degree in Marine Science in cooperation with Moss Landing Marine Laboratories. The program at Moss Landing provides extensive field and laboratory work for

advanced study to prepare students for careers as marine specialists, scientists, and teachers. For further information, call the Biology Department at 278-2001.

South Pacific Semester

Relying on the uniqueness of New Zealand and Australia, the school offers an intensive program of study during alternate spring semesters in biology and geology along with other disciplines such as art, business, and anthropology. Students will be required to enroll for a minimum of 15 units, most of which may be applied in satisfaction of some General Education requirements. When offered, this program, which has special subsistence and travel expenses for students, will be limited in size and will encompass dates not exactly coinciding with normal spring semester dates. For additional information and a brochure about this unique program, contact the dean's office at 278-3936.

Preprofessional Programs

Preprofessional programs are available for students who plan to transfer to other institutions for the completion of professional curricula in such fields as medicine, veterinary medicine, dentistry, pharmacy, optometry, and chiropractic. For further information call:

Premedical
Stephen Rodemeyer 278-2961
Predental
Fred Schreiber 278-2001
Preveterinary
Wallace Harmon 278-2001
Prepharmacy
Wallace Harmon 278-2001
Preoptometry
Floyd Judd 278-2371
Prechiropractic
Dean Mitchell 278-2103

Bachelor of Arts Degree Requirements

Natural Sciences Major

The Bachelor of Arts degree in Natural Sciences serves as a waiver program for the single subject teaching credential in Science. With the Science Credential, you are able to teach any introductory science class, i.e. earth, general, life, or physical science along with the courses in your chosen emphasis. For additional information, see the listing under the Biology, Chemistry, Geology or Physics departments or see the Science Credential Adviser, David Andrews (278-2412).

	Units
Core requirements[1]	45-49
Biology	(12-13)
BioSc 1A or Biol 15,[2]	
BioSc 1B and 130	
Chemistry	(13)
Chem 1A, 1B	
Chem 8 or 128A[1]	
Geology	(5)
Geol 1 and 3 (or 15)[2]	
Natural Science	(3)
N Sci 106	
Physics	(8)
Phys 2A, 2B[3]	
Physical Science	(7)
P Sci 21, 168[1]	
Emphasis (select one)	20-33
Biology[4]	(20-22)
BioSc 140A, 140B	(7)
BioSc 180	(3)
Micro 140	(4)
Select one course from the following:	
A. Bot 131, 132, 144, Micro 171, Ecol 151, 152, 162, Zool 120, 141, 148, 150, 174, 177	(3-4)
B. Bot 130, Micro 161, PhyAn 151, 163	(3-4)
Chemistry[4]	(20)
Chem 102, 108, 128B, 129A, 139, 155	
Earth Science[4]	(33)
Geol 2, 12, 30, 100, 101, 102, 105, 106, 155	(27)
Plus 6 units from the following: Geol 110, 114, 117, 124; Geog 111	(6)
Physics[4]	(23)
Math 77, 81	(8)
Phys 4A, 4B, 4C, 4AL, 4BL (replaces Phys 2A-B in core, 3 additional units)	(3)
Phys 102, 105A, 107A, 140	(12)
Additional requirements	4-8
Math 75, 76; *Biology Emphasis* requires Math 70 or 75 and 101; *Earth Science Emphasis* requires only Math 75	
General Education	42[5]
6-unit CAPSTONE requirement to be met by Geol/Geog 168	
Electives and remaining degree requirements[6] (See *Degree Requirements*)	0-6
Total	124-128

Advising Notes for all Options within the Natural Sciences Major

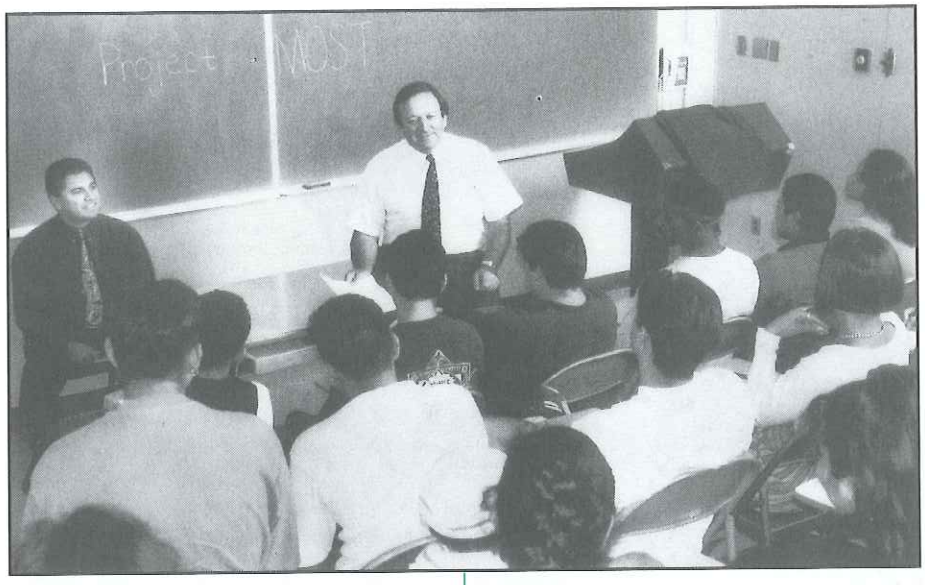
1. Earth Science Emphasis students will select one course from the following: Chem 8, Chem 128A, P Sci 168.
2. Biol 15 and Geol 15 are part of the Man/Woman and the Natural Environment Cluster. See the *Natural Science Interdisciplinary Courses* section in this catalog. Geol 15 is equivalent to Geol 1 and 3.
3. Substitutions may be made with the permission of the appropriate department chair. Phys 4A-B-C (with labs) is recommended instead of Phys 2A-B for those students well prepared for physics.
4. Consult your faculty adviser regarding the selection of your elective units to have this emphasis used as the Science Waiver Program.
5. Nine units of General Education requirements are satisfied by major and additional requirements. Consult your major academic adviser for details.
6. Students should be sure to take sufficient upper-division units in their General Education courses and electives to satisfy the university requirement of 40 upper-division units for graduation.

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.



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. (MNE program field trip fee, $300)

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) (Formerly 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 UCSF Fresno 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. (Formerly 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
RUTH WILLMINGTON, *Chair*
McLane Hall, Room 178
(209) 278-2041

B.S. in Nursing

M.S. in Nursing
Options:
Clinical Specialization
Primary Care/Nurse Practitioner

Health Services Credential in School Nursing

The process of nursing consists of systematic assessment, planning, implementation, and evaluation of nursing 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. California State University, 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 placements are available. Placement facilities include Community Hospitals of Central California, 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

Ruth Willmington, *Chair*

Judith Allender
Carol L. Avent
Marlene A. Dehn
Filomena C. Flores
F. Ndidi Griffin
Janet Hild
Mary R. Ivan
Sandra Lookinland
Mariamma K. Mathai
Patricia R. Nuttall
Gozil M. Oxley
Cherie Rector
Michael F. Russler
Elizabeth H. Wilkerson

Policies and Procedures for B.S.N. Admission

Admission to the program is a two-step process: 1) admission to the university and 2) admission to the nursing major. 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 California State University, Fresno with the application fee and two official transcripts from each college or university previously attended.
   b. Transfer students with fewer than 56 transferable semester units must file ACT or SAT scores and high school transcripts by the document deadline.
   c. Students not in the major may apply to the university as prenursing majors.
2. Students must submit a nursing program application with 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.

Eligibility to Apply to the Program. Students need:

- to complete at least two natural science prerequisites and two other prerequisites by the end of the fall semester and all nine prerequisites by spring semester with a minimum *C* grade — *CR/NC* grades are not acceptable
- a GPA of 3.0 or above in all prerequisite courses
- a number of prerequisites completed without repetition (maximum of two prerequisite courses may be repeated once to improve grade), and
- validated admission to California State University, Fresno for the term of program entry.

All nine prerequisites must be completed before consideration for admission into the program. **No prerequisite courses can be taken concurrently with the nursing courses. No exceptions.**

Selection Criteria. The program is on impacted status (the number of applications received is greater than the number of vacancies for the program). Therefore, admission into the nursing major is very competitive; there is no waiting list. Only applicants with the highest composite scores based on the selection criteria below will be admitted each fall. The number admitted varies. Applicants must reapply each year and compete with the entire applicant pool if not selected.

Note: California residents are given preference over out-of-state and international students as long as the program is on impacted status.

Selection is based upon the following:

- GPA in nine prerequisite courses
- number of prerequisite courses completed without repetition
- underrepresented population in nursing in California, and
- recent California veterans (discharged within the last four years) who are regularly eligible for admission and meet minimum requirements will be admitted to the major.

Application Filing Period

Fall Admission: November 1–February 15; applications are available October 1.

Dates are subject to change. Contact the Nursing Admissions Office at (209) 278-3928.

The program application includes additional instructions and deadlines.

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.

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 93740-0025.

Policies and Procedures for Direct Transfer into the Nursing Major

1. Students must have completed at least two 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 California State University, 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.

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; nursing electives (2 units) Nurs 134, 136, 137, 180T

RN students only ..... (65)
Nurs 135, 136, 137, 141, 141L, 141S, 145, 150, 150L; nursing electives (6 units) Nurs 112, 134, 140, 151, 180T; 33 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 or 2; 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 and arrange an appointment.
6. 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 27 units. Courses taken in NLN accredited baccalaureate programs may be accepted for the credential at the discretion of the Department of Nursing.

		Units
CSD 103	Speech and Hearing Science	3
CSD 128	Observation in Audiology	1
CSD 131	Principles of Audiology	3
	or	
CSD 188T	Audiometry for School Nurses	3
CSD 114	Education of Exceptional Children	3
	or	
Psych 168	Exceptional Children	3
	or	
SPED 160	Mainstreaming Exceptional Children	3
COUN 174	Introduction to Counseling	3
	or	
COUN 200	Seminar in Counseling Techniques	3
Nurs 136	Health Appraisal*	3
Nurs 137	Teaching Strategies for the Health Care Client (micro-teaching required)*	3
Nurs 184	Introduction to School Nursing	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 this 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.

A 3-unit introductory statistics course and a 3-unit nursing theory/research course are required for admission into the Health Services Credential Program.

*Courses only available through regular enrollment in the university following acceptance into the 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 clearances are obtained through the Student Health Center.

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, Education Building, Room 100, (209) 278-0300, 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 Procedures

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 official 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, Education Building, Room 100, (209) 278-0300.

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. There are two pathways into the M.S.N. program for individuals with different educational backgrounds.

In addition to advanced practice in a clinical area, students elect a functional role as clinical specialist or nurse 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 for B.S.N. Graduates

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
11. Current CPR certification

Admission Procedures

1. Request an application packet by writing to the following address and enclosing 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, CA 93740-0025
2. Arrange to take the Graduate Record Examination. If in Fresno, contact California State University, Fresno's Division of Graduate Studies.
3. Request application from Nursing Department and submit completed form to Admissions Office, California State University, Fresno.
4. Request official transcripts of previous academic work to be forwarded to Admissions Office.
5. Submit Nursing Department application and required credentials.
6. Complete on-site written essay and personal interview.

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 MARCH 1.

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 California State University, Fresno, 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.

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* Course must be taken within five years. Outdated courses may be validated by examinations administered by the department or through enrollment in a course.

For admission to this 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 California State University, Fresno.
3. Satisfactory completion of the individualized program established by the coordinator before enrolling in the regular M.S.N. program.
4. Admission to the Nurse Practitioner Program is not guaranteed, and all students must make application to the Nurse Practitioner Program.

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	14
Nurs 221, 223, 225, 226, 228; Soc 174	
Approved cognates	1-10
(See *graduate coordinator for cognates.*)	
Role specialization courses	9-18
(See *next column.*)	
Thesis (Nurs 299) or Project (Nurs 298)	3
or	
Comprehensive Exam*	0
Minimum Total	36

*Additional approved 3-unit elective required for students taking the Comprehensive Exam.

Role Specialization (Options)

Clinical Specialization
Nurs 229, 250, 251; 10 units clinical cognates

Primary Care Nurse Practitioner
Family
Nurs 210, 264, 265, 266, 267, 277, 278
Pediatric
Nurs 210, 264, 265, 266, 269, 279, 280
Geriatric
Nurs 210, 264, 265, 266, 271, 281, 282
(*Nurs 211 is required for nurse practitioner certification.*)

Thesis, Project, and Comprehensive Exam. The department offers students the option of writing a thesis, completing a project, or taking a written comprehensive exam on five areas of the field. Information about the options is available from an adviser in nursing.

Note: All practicum courses require a minimum of three hours of clinical work per unit of credit as a minimum to meet course objectives.

Advancement to Candidacy. Completion of 9 graduate units with a GPA of 3.0. Some students may have additional requirements as indicated by a faculty adviser.

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.

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)
Prerequisites: 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 (1)
Prerequisites: 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 (2)
Prerequisites: 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)
Prerequisites: 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)
Prerequisites: Nurs 10, 10L, 10S; CFS 38. Corequisites: 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)
Corequisites: 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)
Corequisites: 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)
Prerequisites: 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)
Prerequisites: 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. (9 clinical hours)

123. Concepts of Acute Illness in Adults (2)
Prerequisites: 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. (Formerly Nurs 130)

The nursing program is on impacted status. Admission into the nursing major is very competitive; there is no waiting list. California residents are given preference over out-of-state and international students as long as the program is on impacted status.

123L. Clinical Practicum: Acute Illness in Adults (3)
Corequisite: Nurs 123. Application of nursing process in secondary prevention and care of acutely ill adults. (9 clinical hours) (Formerly Nurs 130L)

124. Pharmacology in Nursing (2)
Prerequisites: Nurs 110, 110L, 110S, 112. Pharmacological theory required for effective nursing practice. Principles of pharmacokinetics and pharmacodynamics. (Formerly Nurs 180T section)

131. Nursing of the Childrearing Family (2)
Prerequisites: 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)
Prerequisites: 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. (Formerly 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) (Formerly Nurs 120L)

133. Issues in Nursing (2)
Prerequisites: 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 socio-political issues.

134. Geriatric Nursing: Concepts in Health Aging (2)
Prerequisites: 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. (Formerly 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.

136. Health Appraisal (3)
Prerequisite: admission to the major or RN license. 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; max total 3, non-repeatable)
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)
Prerequisites: 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 de-

rived from nursing and other disciplines in implementation of primary, secondary, and tertiary prevention for clients of all ages.

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)

141. Concepts in Community Health Nursing (2)
Prerequisites: General Education Division 9: Other Cultures; Pl Si 2 or 101; Nurs 131, 131L, 132, 132L, 133. Corequisites: 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.

141L. Practicum in Community Health Nursing (3)
Corequisites: Nurs 141, 141S. Application of primary, secondary, and tertiary prevention in the community with individuals, families, and groups. (9 clinical hours)

141S. Activities in Community Health Nursing (1)
Corequisites: 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)
Prerequisites: 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)
Prerequisites: 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.

150L. Practicum in Leadership and Role Development (4)
Corequisites: 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)

151. Senior Project (2)
Prerequisites: 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)
Prerequisites: Nurs 136; Psych 168 or CSD 114 or SPED 160; admission to HSC program. Role of the nurse in the school health program; parameters of school health practice.

185. School Nurse Seminar (3)
Prerequisites: Nurs 136, Psych 168 or CSD 114 or SPED 160; 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)
Prerequisites: 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)

187. School Nurse Practicum II (3)
Prerequisites: 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 total 6)
See *Academic Placement — Independent Study*. Approved for ***SP*** grading.

GRADUATE COURSES

(See *Course Numbering System.*)

Nursing (Nurs)

210. Primary Care Techniques (2)
Prerequisites: 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)

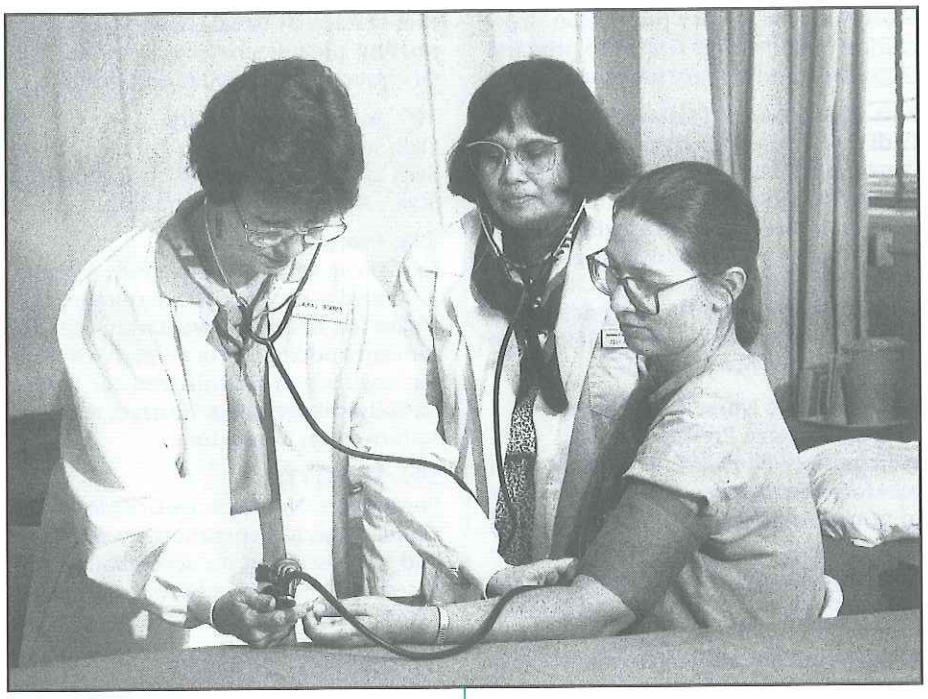
211. Pharmacology for Nurse Practitioners (2)
Prerequisites: RN licensure, certification as nurse practitioner, graduate standing in MSN Program or permission of instructor. Concepts and theory relative to drugs and devices utilized in health care by the nurse practitioners in a primary care setting. Content will include pharmacodynamics, pharmacokinetics, and legal and ethical consideration for use with all age groups of clients. (Formerly Nurs 288T section)

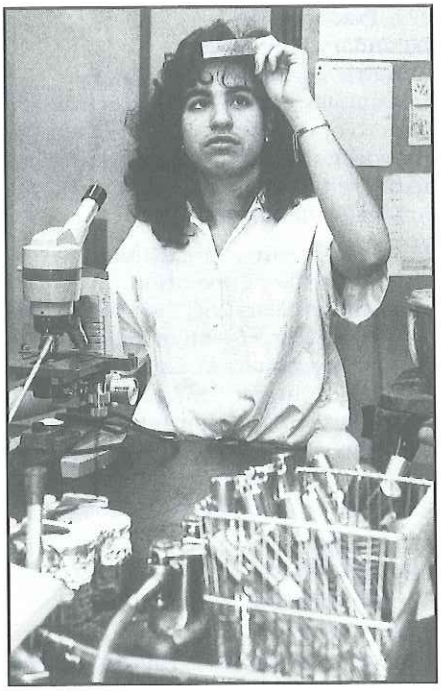
221. Theories in Nursing (3)
Prerequisite: admission to Graduate Program in Nursing. Selected nursing theories are described and evaluated. Theory construction, theory critique with comparative analysis of extant nursing theories, the relationship between theory and research, and the utility of nursing theory for practice, education, and administration are explored. (Formerly Nurs 224)

223. Advanced Research Methodology in Nursing (3)
Prerequisites: 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.

225. Role Transitions in Nursing (2)
Prerequisite: admission to Graduate Program in Nursing. 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: admission to Graduate Program in Nursing, Nurs 221. 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 for the Clinical Specialist (3)
Prerequisites: admission to Graduate Program in Nursing; Nurs 221; 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.

250. Seminar in Clinical Specialization (2)
Prerequisites: admission to Graduate Program in Nursing, Nurs 221, 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)
Prerequisites: admission to Graduate Program in Nursing, 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)
Prerequisites: California RN licensure, Nurs 210, 221; Nurs 228 prior to or concurrently; Nurs 265 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 (2)
Prerequisites: Nurs 210, 221; Nurs 228 prior to or concurrently. Corequisite: Nurs 264. 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)
Prerequisites: Nurs 228, 264, 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)
Prerequisites: Nurs 228, 264, 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)
Prerequisites: Nurs 228, 264, 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)
Prerequisites: Nurs 228, 264, 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)
Prerequisites: 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 (4)
Prerequisites: 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)
Prerequisites: 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 (4)
Prerequisites: 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)
Prerequisites: 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 (4)
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

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

Barbara Birch, *Co-Coordinator*
Bob Fischer, *Co-Coordinator*

Barbara Birch, *Linguistics*
Melanie Bloom, *Speech Communication*
Leslie Farlow, *Education*
Bob Fischer, *Sociology*
Sudarshan Kapoor, *Social Work Education*
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.

Areas of Study

AREA I — Personal and Interpersonal Issues

Soc 150T	Interpersonal Relationships
Soc 162	Social Psychology
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
ISC 93	Contemporary American Society (1 unit)
Soc 111	Sociology of Minority Relations
Phil 120	Contemporary Conflicts of 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	International Political Economy
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

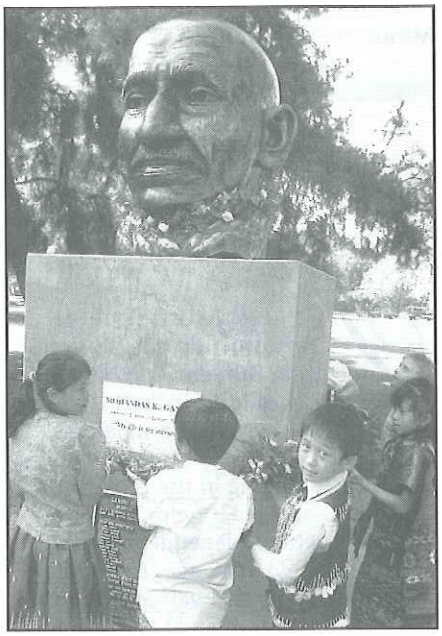
Ag Ec 117	Agricultural Labor-Management Relations
B A 156	Labor Law
Hist 166	U.S. Latin American Diplomacy
Hist 185	American Diplomatic History
HRM 152	Labor Relations and Collective Bargaining
Pl Si 8	Human Civil Rights
Pl Si 126	International Law and Organization
Pl Si 159T	Conflict Resolution
Spch 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

School of Social Sciences
PETER J. KLASSEN, *Dean*
Social Science Building, Room 108
(209) 278-3013

Peace and Conflict Studies Minor



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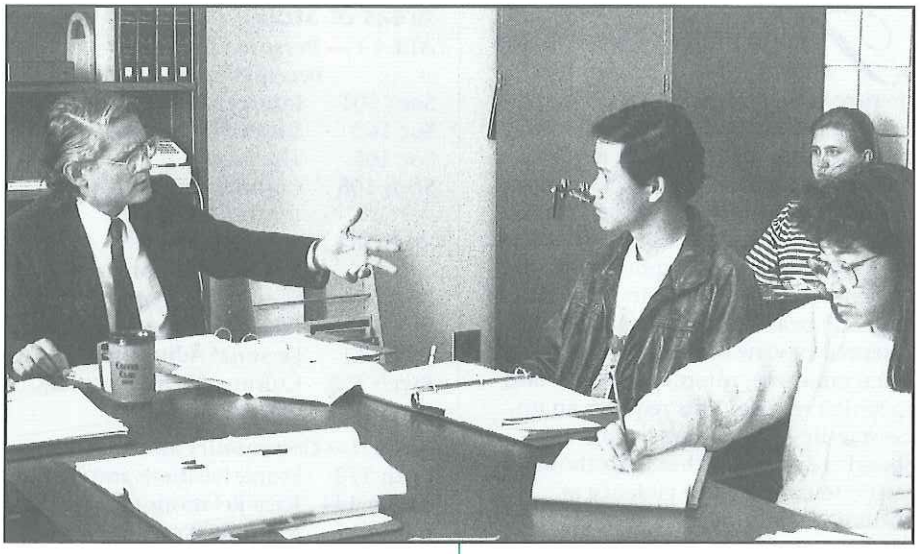
Philosophy

School of Arts and Humanities
Department of Philosophy
KAREN BELL, *Chair*
Music Building, Room 102
(209) 278-2621

B.A. in Philosophy
Options:
Prelaw
Religious Studies
Minor in Philosophy



Philosophy is one of the fundamental domains of human thought. It grows out of basic life questions, including questions of ethics, religion, politics, and science. The study of philosophy has had an historic role in the core of sound education, because it helps sharpen skills of careful, independent thinking and aids people of all ages in defining their most important values and beliefs. The examination of great philosophical ideas, and the emphasis on clear reasoning and personal development that are involved in philosophy serve as a strong foundation for life, regardless of one's career objectives.

The Department of Philosophy offers students the following opportunities for a rich and rewarding undergraduate experience: the traditional B.A. philosophy major, the 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, colloquium, etc.

The Prelaw Option emphasizes analytical skills, ethics, and values courses. Law schools seek a broad general education background and do not recommend any specific major. Students who enjoy philosophy and are interested in law should find this option an excellent way to combine their interests.

The Religious Studies Option offers objective methods for exploring the vast and complex human experience known as religion. This study is done with an appreciation for the variety and diversity of religious beliefs and expressions. This option provides students with an academic approach to religion in personal, social, historical, and global contexts.

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.

Faculty

Karen Bell, *Chair*

Adviser: James W. Slinger
Prelaw Adviser: Karen R. Bell
Religious Studies Adviser: Robert D. Maldonado

Pedro Amaral
Ann E. Berliner
Donald N. Blakeley
Hague D. Foster
Warren L. Kessler
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)
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	(8)
Prelaw Option requirements	**33**

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)
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	(3)
Electives: Anth 146; Crim 20; Af Am 146; B A 120; Pl Si 70, 110, 111, 170, 171 or other approved courses	(6)
Religious Studies Option requirements	**32**

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)
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 (see *Degree Requirements*); may be used toward a dual major or minor	**40-47***
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)

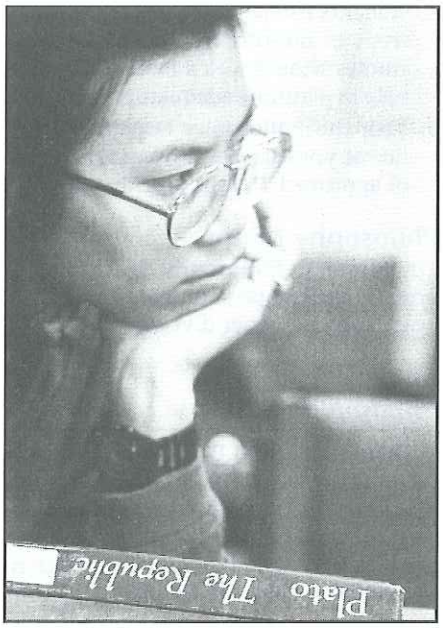
10. Self, Religion, and Society (3)
Conceptions of human nature; nature and varieties of religion; personal and social implications and values of religion. General Education BREADTH, Division 6.

25. Methods of Reasoning (3)
No credit if taken after Phil 26, 27, or 45. Principles and methods of good reasoning. Typical topics: identification of argument structure, development of skills in deductive and inductive reasoning, assessment of observations and testimony reports, language and reasoning, common fallacies in reasoning. General Education CORE, Critical Thinking.

26. Reasoning and Religion (3)
No credit if taken after Phil 25, 27, or 45. 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 (3)
No credit if taken after Phil 25, 26, or 45. 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. Introduction to Logic (3)
No credit if taken after Phil 25, 26, or 27. Basic concepts and methods of logic;



development of skills in deductive and inductive reasoning, with emphasis on deduction. Includes elementary formal techniques for propositional logic; also categorical logic, fallacies, and language. General Education CORE, Critical Thinking. (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 culture. Topics typically include: Presocratics, Sophists, Socrates, and the works of Plato and Aristotle. 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; 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 business. 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 the world; 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: satisfactory completion (*C* or better) of the Engl 1 graduation requirement. Discussion and close written analyses of selected texts from the New Testament. Meets the 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, including an examination of classical scriptural texts, e.g., Upanishads, Bhagavad-gita, as well as modern Hindu writings.

138. Chinese Thought (3)
Introduction to the development of major ideas and systems of thought in China; emphasis on Confucian, Taoist, and Chinese Buddhist traditions.

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. Seminar in Philosophical Issues
(1-4; max total 12 if no topic repeated)
Prerequisite: one upper-division philosophy course. Intensive investigation of selected problems, major figures, or 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 selected problems, major works, or specific traditions; may involve comparative perspective. Extensive writing and supervised research.

190. Independent Study
(1-3; max total 6)
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.

198. Applied Ethics Internship (3)
Prerequisite: junior standing, Phil 120, 122, or applied ethics courses and permission of instructor. Workstudy experience in community service, with a focus on ethical analysis and understanding.

199. Fieldwork in Philosophy and Law (3)
Prerequisites: senior standing, permission of instructor. Practical community workstudy experience in legal or paralegal setting. Student works under sponsorship of a law firm or law-related agency, meets periodically with instructor, and submits a 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

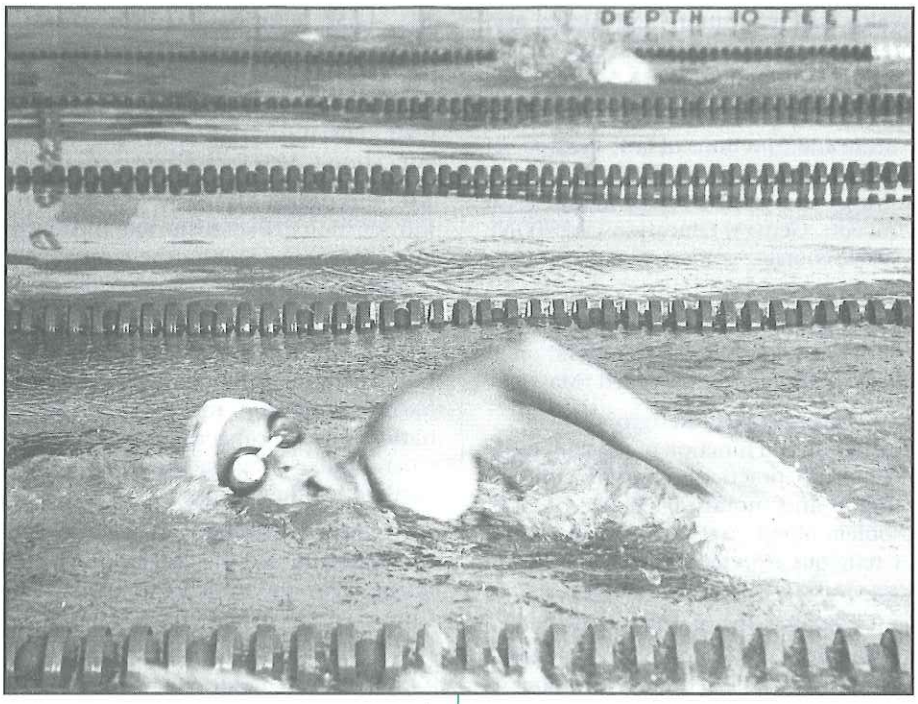
M.A. in Physical Education
Option: Exercise Science

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; 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: Virginia F. Chadwick
Athletic Trainer Adviser: Edward L. Ferreira

Tim R. Anderson
Sally L. Ayer
O. Duane Ballard Jr.
Richard W. Francis
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)
    Select three from:
    P E 106A, 106B, 106C, 108, 111, 114, 146, 148, 150, 152, 157A, 162
    Select three from:
    P E 115D, 125A, 125B, 125C, 125D, 135B, 135E, 135H, 145A, 145B, 145C, 145D
    Select 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
    Select one from:
    P E 125A, 125B, 125D, 135E, 135H
    Select one from:
    P E 115D, 125C, 135B
  - ***Teaching Option*** ..... (29)
    P E 108, 115D, 145A, 145D, 152, 157A
    Select two from:
    P E 125C, 135B, 145B, 145C (one must be 145B or 145C)
    Select two 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
  Select one from:
  P E 159A; H S 92; Math 11, 101
- **Emphases (select one)** ..... (24)
  - ***Exercise Physiology*** ..... (24)
    Select 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; Ph Th 125, 126, 127; PhyAn 130, 140, 151; Phys 2B, 135
  - ***Biomechanics*** ..... (24)
    Select 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)
- Select two 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. A grade of *C* or higher in all required coursework is necessary for successful completion of the major. Any course required as a prerequisite must be completed with a grade of *C* or better before registration in the subsequent course. *CR/NC* grading is not permitted in courses for the physical education major, including "additional requirements."
7. General Education and elective units may be used toward a minor (see *departmental minor*). Consult the ap-

propriate 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.
10. Lower-division courses taken at other institutions may be accepted as being equivalent to lower-division requirements in the department. Petitions to have courses accepted should be completed during the first semester in the major.

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 their 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 Minors 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	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, 237, 238, 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 California State University, 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)
(Formerly 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)
(Formerly 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. (Formerly 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)
(Formerly PE AC 80T section)

39. Jogging (1)

40. Elementary Karate (1)
Japanese style of Shotokan Karate.

41. Judo (1)
(Formerly 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)

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)

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)

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. (Formerly 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; max total 8 if no topic repeated)
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)
Prerequisites: 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)
Prerequisites: 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)
Prerequisites: 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)
Prerequisites: 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)
Prerequisites: 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)

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)
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)
Prerequisites: 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)
Prerequisites: 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)
Prerequisites: P E 157A, P E 159B. The design, implementation, and evaluation of individually prescribed adapted physical education programs for the handicapped in school and special settings. (1 lecture, 2 lab hours)

158A. Physical Education for the Severely Handicapped (2)
The study of motor, behavioral, and learning characteristics of the severely handicapped and the development of appropriate movement and sports activities.

158B. Physical Education for the Orthopedically Handicapped (2)
The study of motor, behavioral, and learning characteristics of the orthopedically handicapped and the development of appropriate movement and sports activities.

159A. Measurement and Evaluation in Physical Education (3)
Prerequisite: P E 30. The study of the selection, construction, evaluation, and administration of both norm referenced and criterion referenced tests for use in judging various aspects of physical performance and knowledge. The application of electronic word processing, statistical methodology, and the interpretation of statistics. (Instructional materials fee, $15)

Physical education majors with certification in athletic training have opportunities with professional teams and in private enterprise, in addition to the traditional educational setting.

159B. Sensory Motor Evaluation (2)
Prerequisites: P E 150, P E 159A. The study of evaluation methods and tests used to appraise sensory-motor functioning, and the application or adaptation of these devices to fit specific populations.

162. Coaching Concepts (3)
Current problems of coaches in the school setting; techniques of motivation, organization, and public relations. (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 total 6)
See *Academic Placement — Independent Study*. Approved for ***SP*** grading.

199. Supervised Work Experience (1-2; max total 4)
Prerequisites: 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)

222. Biomechanics (3)
Prerequisites: 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 Bases 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; study of statistical methodology relating to the selection of the most appropriate statistical technique, and the interpretation of findings. Required of all M.A. candidates. (Instructional materials fee, $15)

231. Research Methods in Physical Education (3)
Seminar in research methods appropriate for physical education, exercise science, and related professions: use of information retrieval technology; critiquing, conducting and reporting research. Required of all M.A. candidates.

233. Advanced Exercise Physiology I: Metabolic and Neuromuscular Physiology (3)
Prerequisites: 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)
Prerequisites: 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)

237. Design and Implementation of Resistance Training Programs (3)
Study of research findings and established scientific principles of resistance training for development of muscular strength, power and endurance; practical applications to technique, program development, and competition.

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 apparently healthy populations and populations with special needs supported by extensive practical laboratory testing experiences. (2 lecture, 3 lab hours) (Formerly P E 250T section)

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)
Study of environmental factors which influence management of human resources of sport organizations in public and private sectors. Analysis and application of administrative/leadership theory to strategic planning, organizing, implementing and controlling programs 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)
Prerequisites: 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.

244. Legal Aspects in Sport and Physical Education (3)
The study of legal principles and their implications for physical education and sport. Emphasis is on safety procedures, preventative measures, and legal responsibilities of teachers, coaches, and sport administrators. (Formerly P E 250T section)

250T. Topics in Physical Education (3; max total 6 if no topic repeated)
Advanced studies in theoretical research in selected topics.

260. Historical Concepts of Physical Education (3)
Interpretation of exercise and sport in western thought and practice, from 3000 B.C. to the present.

261. Philosophical and Ethical Inquiry in Physical Education and Sport (3)
Philosophic/critical examination of current and classical literature in physical education, sport, and exercise science. Understanding systems of thought, their application; analysis of, as well as support for, points of view in verbal and written communication. Required of all M.A. candidates.

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; max total 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 total 6)
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; 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 COURSES

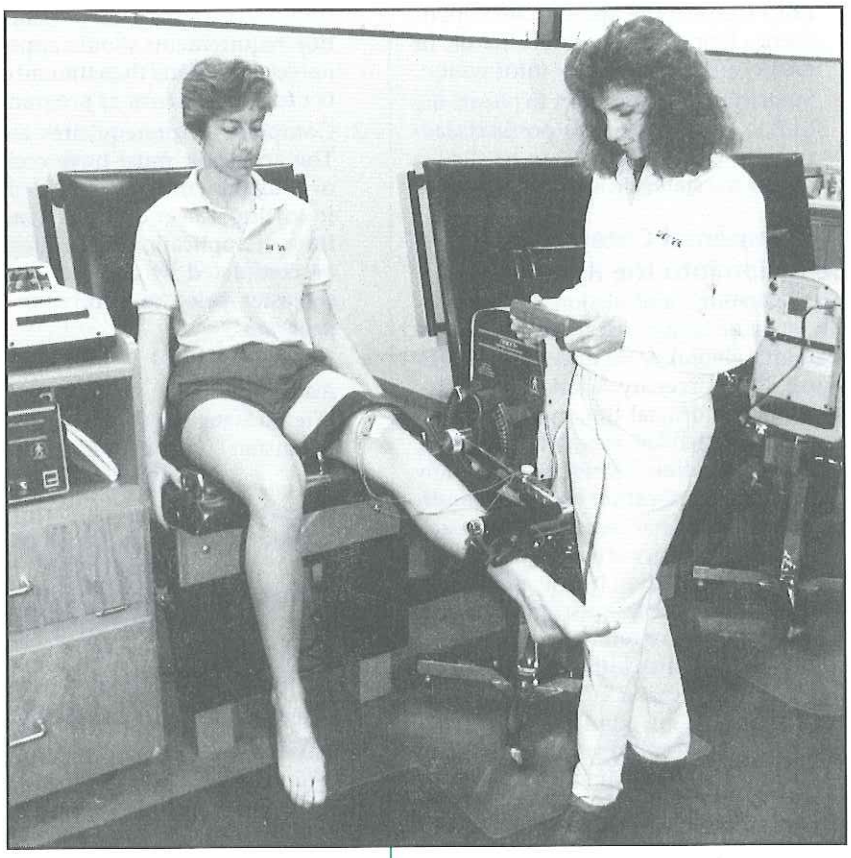
(See *Course Numbering System*.)

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 theories 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. 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.

*The B.S. in Physical Therapy will no longer be available effective Fall 1997.

Faculty

Darlene L. Stewart, *Chair*

Kathleen A. Curtis
Janet K. Duttarer
Joanne M. Laslovich
Gary L. Lentell
Robert K. Martin
Jonathan T. Spry
H. Steven Sadowsky
Peggy Trueblood
Toni Tyner

Notice of Discontinuance

The Bachelors of Science degree in Physical Therapy will be discontinued after Fall 1996 admission. All students seeking eligibility for admissions consideration to the Master of Physical Therapy for Fall 1997 and thereafter must have completed a baccalaureate degree in another field and have met all physical therapy prerequisites.

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

The program admission process begins a year prior to planned entry into the Physical Therapy Program.

Physical Therapy Applications are available:
September 1

Physical Therapy Application Filing Period:
October 1 through October 31

A complete application includes an information form, an official transcript from each institution attended including previous spring and summer terms, observation documentation, and letters of reference. Late transcripts or documentation will result in not being considered. Follow program application instructions.

The following admissions criteria are reviewed by the screening committee:

1. The program applicant must be enrolled at California State University, Fresno or an admitted applicant to the university for the spring term or on an approved leave of absence. Fresno State applicants with all prerequisites completed, including lower and upper division, and no additional General Education requirements should apply to the university no later than the end of October for the fall term of program entry.
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 the end of the fall semester prior to admission to the program.

Lower division

Anatomy
Fresno State: PhyAn 64, 65
Transfer: Human anatomy with lab

Chemistry
Fresno State: Chem 3A, 3B or Chem 1A, 1B
Transfer: Inorganic and organic or biochemistry with labs

Psychology
Fresno State: Psych 10
Transfer: General psychology

Physics
Fresno State: Phys 2A, 2B
Transfer: Physics with lab including mechanics, heat, light, sound, and electricity

Statistics
Fresno State: 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 California State University, 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 by May prior to admission to the program.
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 Fresno State 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 Department
School of Health and Social Work
California State University, Fresno
2345 E. San Ramon Ave.
Fresno, CA 93740-0029.

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 Fresno State 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. (Formerly HSW 101)

119. Neuro-Musculoskeletal Anatomy (3)
Cannot be substituted for Ph Th 125. Prerequisites: PhyAn 64, 65. An in-depth study of the structure and function of the musculoskeletal system. Includes a laboratory utilizing cadavers and prosected material to integrate muscle and tendon attachments with bony landmarks. (2 lecture, 3 lab hours) (Instructional materials fee, $35)

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. (Formerly 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)
Prerequisites: 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) (Instructional materials fee, $35)

126. Applied Pathophysiology (4)
Prerequisites: 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) (Instructional materials fee, $35) (Formerly 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 total 6)
See *Academic Placement — Independent Study*. Approved for ***SP*** grading.

GRADUATE COURSES

Physical Therapy (Ph Th)

200. Advanced Anatomy and Pathokinesiology (4)
Prerequisites: 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) (Instructional materials fee, $35)

201. Advanced Evaluation and Clinical Management of Cardiopulmonary Dysfunction (3)
Prerequisites: 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)
Prerequisites: 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)
Prerequisites: 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)
Prerequisites: 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
and Physical Science
BRANDT KEHOE, *Chair*
McLane Hall, Room 169
(209) 278-2371

B.S. in Physics
M.S. in Physics
Minor in Physics
Minor in Physical Science
Single Subject Teaching Credential in the Sciences

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: Vanvilai Katkanant
Graduate Adviser: Michael J. Zender
Premedical Adviser: Brandt Kehoe
Preoptometry Adviser: Floyd L. Judd

Manfred Bucher
Gerardo Munoz
James P. Vesenka
Steven J. White
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	**47**
(see *Note 1*)	
Physics core	(30)
Phys 4A, 4AL, 4B, 4BL, 4C, 102, 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	**31-33**
(see *Notes 1, 4,* and *5*)	
Math 75, 76, 77, 81; Chem 1A, 1B; C Sci 15, 20 or 40 or ECE 70; I T 53	
General Education	**45***
(see *Note 3*)	
Electives and remaining degree requirements	**0-1**
(see *Degree Requirements* and *Note 3*)	
Total	**124-125**

*This figure takes into consideration that one General Education CORE class (Math 72 or 75) and a BREADTH Division 1 class (Phys 4A) 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. 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 129 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; I T 53; Math 77, 81
3rd Year:	Phys 102, 104, 105A, 105B, 110, 170A
4th Year:	Phys 107A, 107B, 115, 130, 140, 162; plus upper-division electives

Physics Minor

	Units
Phys 4A, 4AL, 4B, 4BL, 4C	11
Phys 102	3
Other upper-division physics	6
Total	**20**

Bachelor of Arts in Natural Sciences

Physics Emphasis

The B.A. in Natural Sciences is designed primarily to meet the needs of students interested in pursuing a teaching career in the sciences at the secondary level. Students interested in satisfying the waiver program in the natural sciences should consult an appropriate adviser early in their academic program. Contact either the Department of Physics or the Office of the Dean, School of Natural Sciences.

The degree is also a suitable choice for students with a general interest in physics and interest in pursuing a career in law, medicine, dentistry, optometry, and other areas for which the breadth of scientific coverage of this degree is advantageous.

A full description of the degree, including all of the emphases available, can be found in the *Natural Science Interdisciplinary Courses* section in this catalog. The B.A. in Natural Sciences with the Physics Emphasis is as follows:

Bachelor of Arts Degree Requirements

Natural Sciences Major	*Units*
Core requirements	**48-49**
Biology	(12-13)
BioSc 1A or Biol 15,[1] BioSc 1B and 130	
Chemistry	(13)
Chem 1A, 1B; Chem 8 or 128A	
Geology	(5)
Geol 1 and 3 (or 15)[1]	
Natural Science	(3)
N Sci 106	
Physics	(8)
Phys 2A, 2B[2]	
Physical Science	(7)
P Sci 21, 168	
Physics Emphasis[3]	**23**
Math 77, 81	(8)
Phys 4A, 4B, 4C, 4AL, 4BL, (replaces Phys 2A-B in core 3 additional units)	(3)
Phys 102, 105A, 107A, 140	(12)
Additional requirements	**8**
Math 75, 76	
General Education	**42**[4]
6-unit CAPSTONE requirement to be met by Geol/Geog 168	
Electives[5]	**2-3**
Total	**124**

See *Advising Notes* on next page.

Advising Notes

1. Biol 15 and Geol 15 are part of the cluster course Man/Woman and the Natural Environment. See *Natural Sciences Interdisciplinary Course* section in this catalog for details.
2. Substitutions may be made with the permission of the appropriate department chair. Phys 4A-B-C (with 4AL and 4BL) is recommended instead of Phys 2A-B for those students well prepared for physics.
3. Consult your faculty adviser regarding the selection of your elective units to have this emphasis used as the Science Waiver Program.
4. This figure takes into account that 9 units in the major and additional requirements may also be applied to satisfy General Education requirements as follows: CORE, Quantitative Reasoning — Math 75 (3 units); BREADTH, Division 1 — Chem 1A or Geol 1 or 15 or Phys 2A (3 units); and Division 2 — BioSc 1A or Biol 15 (3 units). Consult your major academic adviser for details. (See *General Education*.)
5. Students should be sure to take sufficient upper-division units in their General Education courses and electives to satisfy the university requirement of 40 upper-division units for graduation.

Waiver Program for the Single Subject Credential in the Sciences

Students interested in satisfying the waiver program in the Natural Sciences should consult an appropriate adviser early in their academic program.

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.

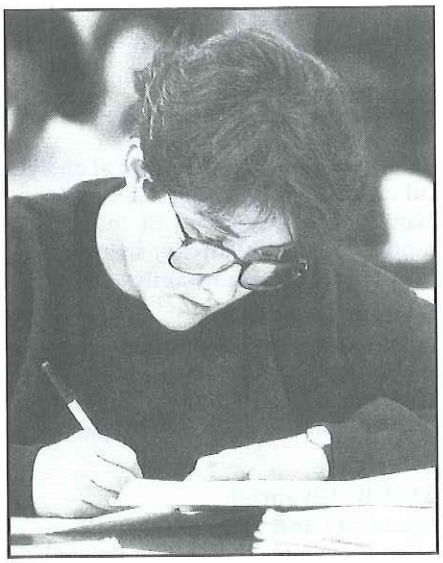
Under the direction of the graduate adviser, a coherent program, directed toward the student's goal in graduate study and designed within the framework outlined below, is prepared and submitted to the department. There is a standard core of classical mechanics (Phys 203), classical electrodynamics (Phys 220A, B) and quantum mechanics (Phys 222A, B) which is strongly recommended for students planning 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 California State University, Fresno is necessary for admission. Note the other requirements under *Graduate Programs*.

	Units
Physics graduate courses	**21**
Phys 290 or 299 (minimum)	(3)
Additional graduate courses in physics	(18)
Students planning further graduate study should include Phys 203, 220A-B, 222A, and 222B.	
Upper-division or graduate electives in physics or related fields	**9**
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: Math 4R or second-year high school 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)
Prerequisites: 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)
Prerequisites: 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.

10. Conceptual Physics (4)
Prerequisite: Math 4R or second-year high school 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 4C. Fundamental concepts of atomic and nuclear structure, transitions and radiation. Includes discussions of relativistic mechanics, quantum mechanics, solid state physics. Special topics as they pertain to modern developments in physics, engineering, and chemistry.

104. Experimental Techniques in Condensed Matter Physics (4)
Prerequisite: Phys 4C. Shop techniques and safety instructions. Basic concepts in condensed matter 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, 9 lab hours)

105A-B. Analytical Mechanics (3-3)
Prerequisite: Phys 4C. **(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)
Prerequisites: 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)
Prerequisites: Phys 4C, 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)
Prerequisites: 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)
Prerequisites: Phys 115, or Chem 110B and permission of instructor, or Chem 215. Quantum mechanics applied to atomic and nuclear physics.

130. Advanced Laboratory (2)
Prerequisites: Phys 102. 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)
Prerequisites: 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.

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.

162. Condensed Matter Physics (3)
Prerequisites: 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 total 6)
See *Academic Placement — Independent Study*. Approved for *SP* grading.

GRADUATE COURSES

(See *Course Numbering System.*)

Physics (Phys)

203. Classical Mechanics (4)
Advanced treatment of classical analytical mechanics including Lagrange's and Hamilton's formulation of the laws of motion, special relativity, small oscillation theory, hydrodynamics. (Formerly Phys 203A-B)

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.

222A. Quantum Mechanics I (3)
Prerequisite: Phys 115. Quantum Dynamics: representations and pictures, path integrals, evolution operator, propagators. Angular Momentum: orbital and spin, addition. Perturbation Theory: time-independent and time-dependent problems, sudden and adiabatic approximations. Scattering: Lippman-Schwinger equations, scattering matrix, Born approximation, partial waves. (Formerly Phys 222)

222B. Quantum Mechanics II (3)
Prerequisite: Phys 222A. Identical Particles: fermions and bosons, second quantization. Electromagnetic Fields: radiation field, photons, coherent states, vacuum state and Casimir effect, interactions with charged particles. Relativistic Quantum Mechanics: Klein-Gordon and Dirac equations, relativistic hydrogen atom, perturbation theory and Feynman diagrams.

262. Advanced Condensed Matter Physics (3)
Binding and crystal structure, crystal electron theories, elementary excitations, transport theories, crystal defects, superconductivity. (Formerly 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. (Formerly Phys 275T section)

272. General Relativity (3)
Prerequisite: Phys 203A. The principle of equivalence, tensor calculus in curved space-times, the Einstein-Hilbert equations, the Schwarzschild solution tests of general relativity, gravitational radiation, introduction to cosmology. (Formerly 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 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.

PHYSICAL SCIENCE COURSES

Physical Science (P Sci)

ASTRONOMY

21. Elementary Astronomy (4)
Prerequisite: Math 4R or second-year high school 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 our understanding of the physical world from ancient times to the 20th century with an emphasis on astronomy, mechanics, thermodynamics, and the nature of matter. An exploration of the evolution of ideas. 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)
Prerequisites: 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 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 (Juniors and Seniors) Philip F. Beach

Public Administration Adviser: Adewole A. Umoja

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.)

Harold H. Haak
Lyman H. Heine Jr.
Bernard E. McGoldrick
David H. Provost

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. No course used to satisfy a General Education requirement may be used to satisfy political science 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. 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. No course used to satisfy a General Education requirement may be used to satisfy public administration 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. 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

International Political Economy

For details about the Minor in International Political Economy, see listing in the Department of Economics.

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 Programs* 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
Electives 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 6 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.

Master of Public Administration Degree Requirements

	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 mini-

mum 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) (Computer 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.

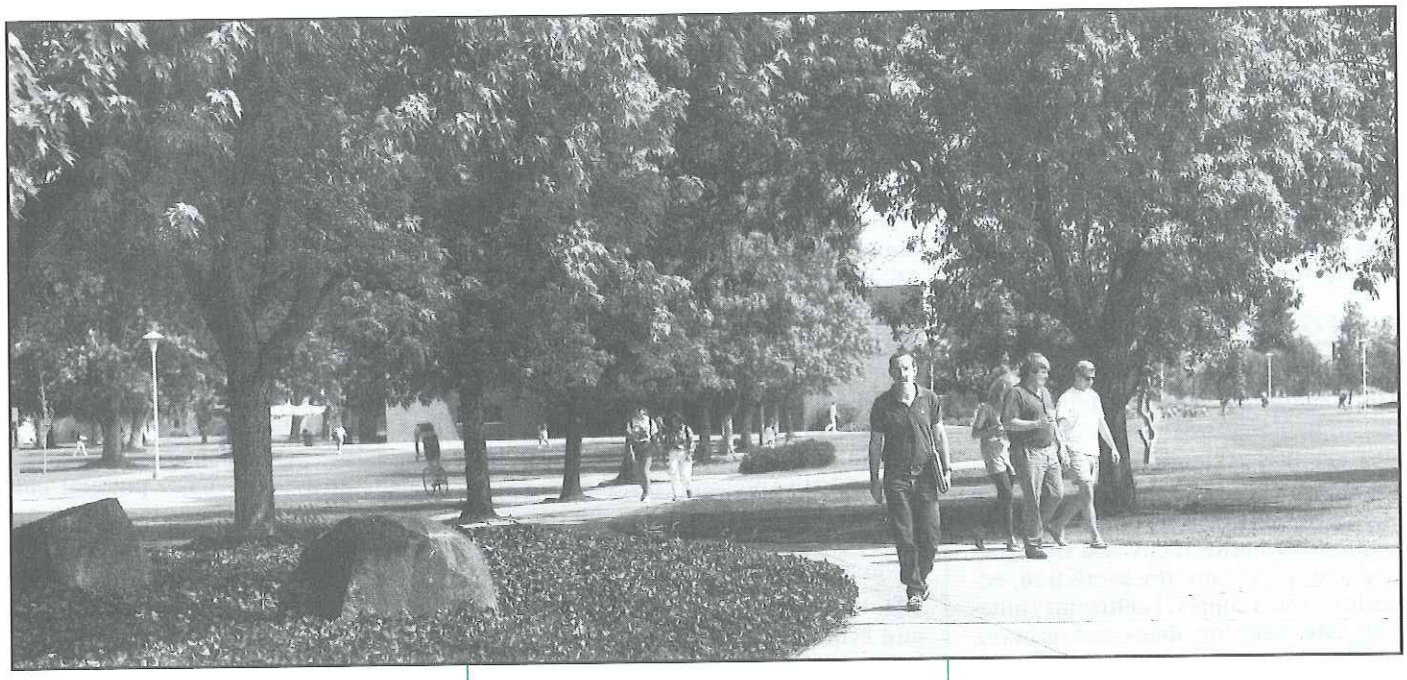
119T. Topics in Political Theory (1-4; max total 8)
Possible topics include theories of democracy; the Marxian tradition; political thought of specific authors, historical periods and countries; peace and war; church-state relations; the nature of politics and of political science.

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 implications of civil service, executive initiation of legislation, minority groups and politics, political implications of news reporting; jurisprudence and legal philosophy; legal institutions; conflict resolution.

Local Government (Pl Si)

160. State and Local Governments (3)
The organization, structure, powers, and functions of state and local governments.

163. Municipal Government (3)
Organization, powers, and functions of city government; types of city charters, relationship between city and state government; police and fire protection, education, water supply, health and sanitation, city planning, debts and taxation, public utilities.

169T. Seminar in Metropolitan Government and Politics (1-4; max total 8 if no topic repeated)
Regional and area intergovernmental relations, urban renewal, human relations agencies, and taxation methodologies.

Public Law (Pl Si)

170. Constitutional Law, the Federal Structure (3)
Judicial Review, 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. (Formerly 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. (Formerly Pl Si 188T section)

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. (Formerly Pl Si 188T section)

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 total 6)
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) (Computer 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)
Prerequisites: 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. (Formerly 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. (Formerly 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)
Prerequisites: 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.

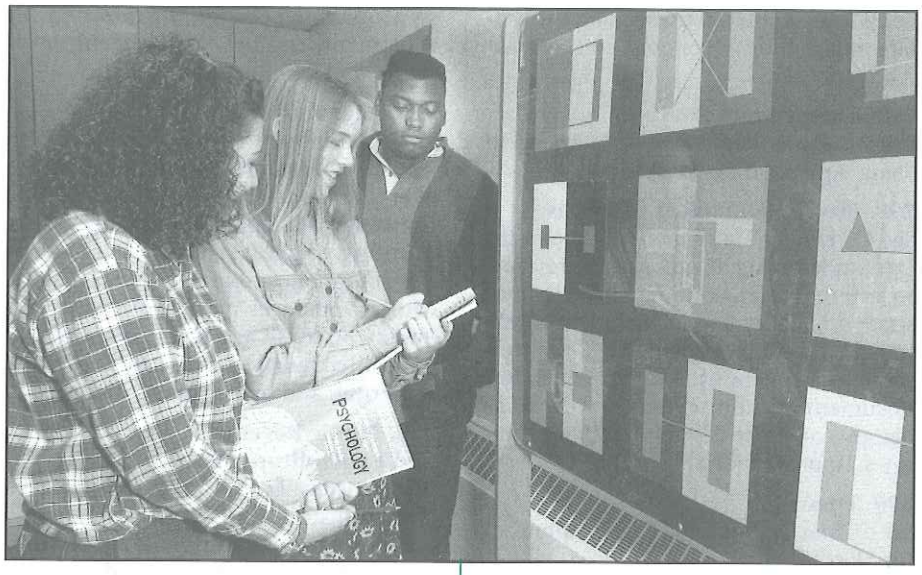
290. Independent Study (1-4; max total 6)
See *Academic Placement — Independent Study*. Approved for ***SP*** grading.

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

School of Natural Sciences
Department of Psychology
ROBERT V. LEVINE, *Chair*
Psychology and Human Services Bldg., Room 234
(209) 278-2691

B.A. in Psychology
M.A. in Psychology
M.S. in Psychology
Minor in Psychology
Pupil Personnel Credential with an Advanced Specialization in School 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.

As preparation for graduate work in psychology, our undergraduate major is one of the strongest and most respected in the CSU System. 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. There are openings in mental health, public schools, community colleges, and other agencies for these advanced students.

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 79-unit M.S./School Psychology degree, students learn many clinical skills (psychotherapy, psychological assessment, etc.) that lead to employment possibilities in the schools and mental health settings.

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
Karen T. Carey
William C. Coe
Arnold M. Cooper
Samuel S. Franklin
Alex Gonzalez
Constance J. Jones
Ernst L. Moerk
Terry G. Newell
Aroldo Rodrigues
Matthew J. Sharps
Michael J. Thackrey
Marilyn S. Wilson
Lynnette C. Zelezny

Bachelor of Arts Degree Requirements

Psychology Major	***Units***
Major requirements	**40**
A. *Core Courses* (all required): Psych 10, 42, 144	(12)
B. *Applications Area* (select 2): Psych 160T, 162, 166, 169, 175, 176, 177	(6-8)
C. *Basic Content Area* (select 2): Psych 134, 150T, 154, 155	(7-8)
D. *Basic Processes Area* (select 2): Psych 120T, 121, 122, 124, 125, 128	(7-8)
E. *Quantitative Applications Area* (select 1): Psych 143, 145, 149	(4)
F. *History and Systems:* Psych 182	(4)
G. *Psychology Electives* (see *Advising Notes*)	
General Education	**51**
Electives and remaining degree requirements (See *Degree Requirements*); may be used toward a dual major or minor.	**33-34***
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 up to 7 units of 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. Students desiring to major in psychology must do the following before being permitted to enroll in restricted, 100-level psychology courses (courses with prerequisites):
   a. formally apply to the major, at which time they will be placed in a pre-psychology major category, and
   b. complete Psych 10, 42, and 144 (or their equivalents) with grades of *C* or better and have earned a cumulative grade point average of at least 2.0.

   Students may apply for upper-division psychology major status in the Psychology Department Advising Office during the semester in which they expect to successfully complete the above requirements. Approval will be contingent upon satisfactory fulfillment of these requirements.

   All students, including transfer students and students changing to the psychology major, must request the Psychology Department to screen their transcripts (to be provided by the student) for successful completion of the requirements before enrollment in restricted, 100-level psychology courses will be permitted. Currently enrolled students who wish to change to the psychology major must first obtain the change-of-major form in the Office of Advising Services, Joyal Administration, Room 121.
2. No course used to satisfy General Education CAPSTONE requirements may be used to satisfy psychology major requirements.
3. ***CR/NC*** grading is not permitted in the psychology major.
4. General Education and elective units may be used toward a dual major or minor (see *Dual Major* or departmental minor). Consult the appropriate department chair, program coordinator, or faculty adviser for further information.
5. Although not required, psychology electives may be applied toward the major.

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 California State University, Fresno undergraduate major in psychology, or their equivalent. Potential graduate students should submit transcripts of all academic work and three letters of recommendation. In addition, students must submit scores from the GRE general test and the subject test in psychology to be considered for admission. School Psychology program applicants must submit scores from the CBEST as well and complete other prerequisites as outlined in the department's application. All students must submit applications to both the Division of Graduate Studies and the Department of Psychology.

Admission to the graduate program in psychology is based on the evaluation of a student's capacity to successfully complete Master's level work. The graduate committee uses multiple criteria to assess an applicant's qualifications including coursework completed, grades, test scores, essays, and letters of recommendation. In addition, an applicant's professional interests and goals are evaluated in terms of the interests of the faculty and the resources of the Department of Psychology. Separate evaluations of applicants

are made for the M.A. general/experimental program and the M.S. School Psychology program. Although many applicants meet our minimum admission requirements, we are limited in the number of positions available and many qualified applicants cannot be offered admission.

Admission to classified graduate standing requires a minimum undergraduate grade point average of 3.0, as well as a minimum grade point average of 3.0 in undergraduate psychology courses, a combined GRE Aptitude Test score of 1,000 or higher, and a score on the GRE Subject Test in Psychology equivalent to the 60th percentile or higher. Applicants lacking minimum scores in one area with compensating strengths in other areas may apply. The Department of Psychology does not typically admit unclassified students into the graduate program.

(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 previous column)	16-21
Electives in psychology or related fields	9-14
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 79 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 previous column)	16-21
Electives (see below)	51
Internship in School Psychology (Psych 267)	12
Total	**79-84**

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 200T, 225T, 277, 278, 279 (21 units); Psych 281, 282, 284, 285 (16 units); COUN 201, 240; Psych 220T, 255T, 270T, 283T (19 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. (CAN PSY 10)

42. Introductory Statistics (4)
Prerequisites: Psych 10; 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)

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)
Prerequisites: Psych 42 and 144 or permission of instructor. 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)
Prerequisites: Psych 42 and 144 or permission of instructor. Initiation and continuation of behavior, acquisition, and modification of motives. (May include lab hours)

124. Sensation and Perception (4)
Prerequisites: Psych 42 and 144 or permission of instructor. 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)
Prerequisites: Psych 42 and 144 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)
Prerequisites: Psych 42 and 144 or permission of instructor. 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.

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)
Prerequisites: Psych 42 and 144 or permission of instructor. 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) (Computer lab fee, $15)

144. Research Designs and Experimental Methods (4)
Prerequisite: Psych 10. 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)
Prerequisites: Psych 42 (may be taken concurrently) and Psych 144 or permission of instructor; 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) (Computer lab fee, $15)

149. Psychological Testing (4)
Prerequisites: Psych 42 and 144 or permission of instructor. 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)
Prerequisites: Psych 42 and 144 or permission of instructor. Major contemporary theories of personality; techniques for research in personality. (May include lab hours)

155. Developmental Psychology (4)
Prerequisites: Psych 42 and 144 or permission of instructor. 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. (Formerly 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; max total 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; max total 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)
Prerequisites: 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. (Formerly Psych 112)

190. Independent Study (1-3; max total 6)
See *Academic Placement — Independent Study*. Approved for ***SP*** grading.

199. Senior Thesis (2-4; max total 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)
Prerequisites: 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.

277. Role and Function of the School Psychologist (3)
Prerequisites: 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. (Formerly 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)
Prerequisites: 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)
Prerequisites: 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)
Prerequisites: 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 total 6)
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
ANDREW E. HOFF, *Coordinator*
Psychology and Human Services Bldg., Room 121
(209) 278-2838

B.S. in Recreation Administration
Emphases:
Leisure Services Management
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.

Faculty are 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 management, administration, and therapeutic techniques.

Curriculum

Accredited by the National Recreation and Park Association Council on Accreditation, the program offers a B.S. degree and a Minor in Recreation Administration. Preparation is provided within the major for two distinct emphasis areas: leisure services management 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, adventure-based programming, legal and financial aspects of recreation service, advanced program planning, organization and administration of leisure services, trends, research, and professionalism.

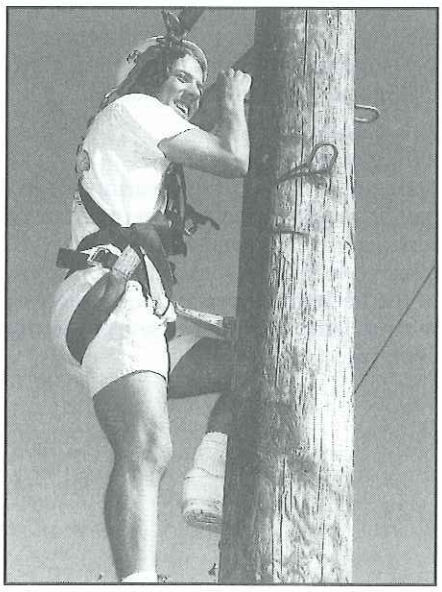
Within the leisure services management emphasis, students develop specific competencies in the areas of accounting, finance, business management, marketing, funding, resources, program planning and supervision, and facility management. Students in the therapeutic recreation emphasis acquire specific 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.

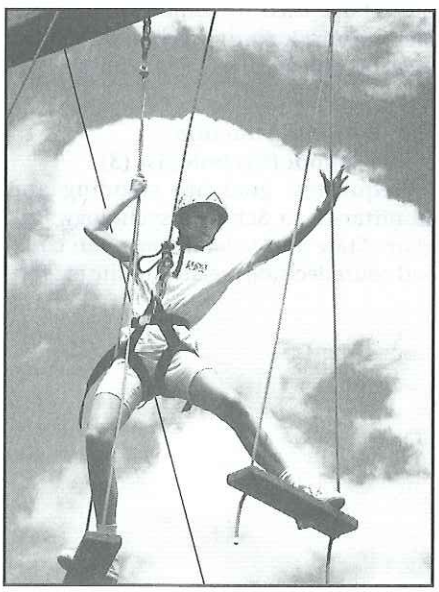
Under the guidance of a practitioner, students in recreation administration and leisure studies may earn more than 1,000 hours of paid or voluntary hands-on experience in a variety of recreation, clinical, or leisure services agencies. In addition, they serve full-time internships with commercial recreation enterprises, public recreation agencies, nonprofit organizations, park-oriented agencies, hospitals, rehabilitation centers, and other service organizations.

Students may apply for an Honors Internship (out of state) if they achieve a major GPA of 3.3 and a cumulative GPA of 3.0. Additional requirements must also be met.

Career Opportunities

The recreation and leisure business comprises the second largest industry in the United States. Fresno State graduates have been very successful in securing professional positions as recreation therapists in hospitals, centers for the disabled, and rehabilitation facilities; recreation directors in schools, churches, youth agencies, detention centers, cities, and counties; state and federal recreation specialists; managers of resorts, membership clubs, travel and tourism, hotel guest services, employee services, armed forces recreation services, and others.





Faculty

Andrew E. Hoff, *Coordinator*
Ralph W. Weber

Bachelor of Science Degree Requirements

Recreation Administration Major

	Units
Major requirements	59-62

The following courses are required of all candidates for this degree. Additional required courses dependent upon the selected emphasis are outlined following the core program requirements.

Core Program
RLS 55, 73, 73L, 128, 128L, 146, 179, 180 ..... (19)
Emphases (select one) ... (28-31)
Leisure Services Management Emphasis
RLS 125, 131, 133, 135, 139, 184 ..... (28)
Therapeutic Recreation Emphasis
RLS 142, 144A, 144B, 148, 187; PhyAn 64; Psych 166 ..... (31)
Recreation electives ..... (12)
All students must complete a minimum of 12 units from the following divisions with no more than 6 units taken from any one division except for those students electing area F.

A. Art 20, 30, 40, 60, 70
B. Drama 136, 137; Music 9, 153; PE AC 12, 14; P E 108, 152
C. Psych 36, 167, 169; COUN 174
D. RLS 75, 80, 101
E. Acct 3; B A 18; Mgt 104, 106, 110; IS 50
F. PhyAn 65, 130; Ph Th 110
Students who are interested in pursuing a graduate degree related to physical rehabilitation should elect area F.

Additionally, for state and national certification in therapeutic recreation, it is highly recommended that students take the following CAPSTONES: Psych 102 and Crim 120.

General Education	51
Electives and remaining degree requirements	15-24*
Total	128

*This figure takes into consideration that students pursuing the leisure services management emphasis may also apply Music 9, RLS 80, 101, Art 20, 30, 40, 60, or 70 to General Education BREADTH, Divisions 4 and 5 requirements. Students pursuing the therapeutic recreation emphasis may also apply Art 20, 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 exceptions of RLS 75, 184, and 187.
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.
3. Students who must complete a course to fulfill the university writing requirement are advised to take IS 105W.
4. Only a grade of *C* or higher in RLS 55, 73, 73L, 128, 128L, 131, 142, 146, 179 and 180 will apply to the major in Recreation Administration.

Recreation Administration Minor

The Minor in Recreation Administration consists of 23 units. Students completing the minor develop a basic knowledge of leisure services management that has application in many diverse fields.

	Units
RLS 55, 73, 73L, 80 or 101, 128, 128L, 131, 133 or 146, 135	23

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, nonprofit, therapeutic, and commercial recreation. (Formerly Rec 55) (CAN REC 2)

73. Leadership in Recreation Service (3)
Theoretical and philosophical basis for leadership. Dynamics of leading recreation activities, developing basic program planning skills, and procedures for facility utilization. (Formerly Rec 73)

73L. Leadership in Recreation Service Laboratory (1)
Concurrent enrollment with RLS 73. Practical leadership experience in supervised recreation settings. (Formerly 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. *CR/NC* grading only. (Course fee, $30) (Formerly 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.) (Formerly 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.) (Formerly Rec 101)

125. Understanding Special Populations in a Contemporary Society (3)
Basic understanding of different special populations including important terms, etiology, facilities, trends, and relationships to recreation. (Formerly Rec 95; RLS 95)

128. Legal and Financial Aspects of Recreation Service (3)
Prerequisite: RLS 55. Legal and financial aspects of recreation service; budget analysis, legal terminology, and their role in recreation administration. (Formerly Rec 168; RLS 168)

128L. Legal and Financial Aspects of Recreation Service Lab (1)
Prerequisites: RLS 55 and concurrent enrollment with RLS 128. The lab emphasizes the development of budgets for park, recreation and leisure service agencies through the use of a variety of computer programs. (Computer lab fee, $15)

131. Foundations of Leisure Services Management (3)
Prerequisite: RLS 55. Historical and philosophical foundations of leisure service provisions by public, nonprofit, and commercial recreation agencies. Review of selected service providers including organization, assessment, service provision, legal base, funding profiles, and current trends analysis. (Field trips may be required.)

133. Recreation Facilities Management and Operations (3)
Prerequisite: RLS 131. Emphasis will be on the management and operations of existing recreation facilities. Facility layout for use in activity presentation, safety procedures, staffing, risk management, and maintenance. (Field trips may be required.)

135. Leisure Services Delivery Systems (3)
Prerequisite: RLS 131. Analysis and development of leisure service delivery systems, alternative funding sources, marketing promotion of programs and services, and an in-depth analysis of recreation feasibility plans.

139. Programming and Evaluation in Leisure Services Management (4)
Prerequisites: senior standing or permission of instructor; RLS 128, 135. Concepts and methods in developing, operating, and evaluating recreation programs and services in leisure service settings. Emphasis on costing, scheduling, and marketing programs for a variety of client groups. (3 lecture, 1 lab hour) (Formerly Rec 192T section; RLS 175; RLS 158)

142. Foundations of Therapeutic Recreation Service (3)
Prerequisite: RLS 55. Historical review of therapeutic recreation; identification of special populations including the study of etiology, characteristics, terminology, and support systems; facility design, use, and adaptation; field trips to settings serving the mentally and physically handicapped, the developmentally disabled, the aged, the convalescent, and the socially deviant. (Formerly Rec 165; RLS 165)

144A. Methods in Therapeutic Recreation (3)
Prerequisites: RLS 142; PhyAn 64; RLS 144B concurrently. Application of therapeutic recreation methods including assessment, program design, and evaluation. (Formerly Rec 166; RLS 166)

144B. Facilitation Techniques in Therapeutic Recreation (3)
Prerequisites: RLS 142; RLS 144A concurrently. Practical experiences in applying therapeutic recreation intervention techniques. (Formerly Rec 166L; RLS 166L)

146. Adventure Based Programming (3)
Prerequisite: permission of instructor. Adventure based programming skills will be explored through experiential activities on the Journey Ropes Course and other outdoor pursuits. (2 lecture, 1 lab hour) (Students will incur expenses related to required field trip.) (Formerly RLS 192T section)

148. Programming and Evaluation in Therapeutic Recreation (4)
Prerequisites: senior standing or permission of instructor; RLS 128, 144A, 144B. Planning therapeutic programs for special populations. Practical program experiences with disability groups required. (3 lecture, 1 lab hour) (Formerly Rec 174; Rec 174L; RLS 174)

179. Supervision and Administration in Leisure Services (3)
Prerequisite: RLS 128 and may only be taken the semester prior to internship. Preparation for the role of supervisor of recreation and leisure services; recruitment, motivation, performance evaluation training and development, and other supervisory and management practices. (Formerly Rec 179)

180. Senior Seminar (2)
Trends and issues, current research, professionalism, and internship search procedures in recreation administration. (Formerly Rec 180)

184. Internship in Leisure Services Management (12)
Prerequisites: completion of all major, General Education, and university graduation requirements. Honors internship requires placement approval in RLS 180. Directed supervisory experience with a nonprofit, public, or commercial recreation agency. Individual development in administration, supervision, program planning, and public relations. Reports and conferences required. (It is recommended before registering for internship that students have the equivalent of 1,000 hours of recreation related experience, either paid or volunteer, in a recreation service agency.) *CR/NC* grading only.

187. Internship in Therapeutic Recreation (12)
Prerequisites: completion of all major, General Education, and university graduation requirements. Honors internship requires placement approval in RLS 180. Supervised, directed full-time experience in the field of therapeutic recreation; reports and conferences required. (It is recommended before internship registration that students 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. (Formerly Rec 187)

190. Independent Study (1-3; max total 6)
See *Academic Placement — Independent Study*. Approved for *SP* grading. (Formerly Rec 190)

192T. Topics in Recreation Administration (1-3; max total 8; repeatable with different topics)
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; repeatable with different topics)
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. (Formerly Rec 313)

330T. Topics in Recreation (1-3; max total 6; repeatable with different topics)
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. (Formerly Rec 330T)

Requirements for majors in the various departments are listed in the respective program descriptions. In addition, the School of Social Sciences offers the following programs and courses.

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	24
Upper-division work in one teaching area, e.g., economics, geography, history, or political science	18
Breadth	
Lower-division survey courses	6
Upper-division work in a second teaching area, e.g., economics, history, geography, or political science	9
Total	57

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 economics, geography, history, 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, 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.

Mexico Semester

In conjunction with the Universidad de las Americas (UDLA), California State University, Fresno offers a semester of study in Cholula, Puebla (located in the southeastern section of Mexico). One of the premier educational institutions in Mexico, UDLA is a fully accredited institution and offers many courses in English. UDLA has exchange programs with universities all over the world.

Fresno State students will live in dormitories or with Mexican families, study Spanish, take courses in English, and have the option of taking UDLA courses taught in Spanish. Students can earn from 12-18 units, the equivalent of one semester of academic work at Fresno State. Courses, credits, and grades for courses taken in this program will appear on Fresno State transcripts. Fresno State students will have student privileges at UDLA, including use of the library, discounts on cultural programs, and access to the campus medical clinic.

The program includes several educational field trips, as part of class instruction, to sites throughout and nearby Puebla. Students will have an opportunity to combine field trips with academic learning as they interact with students and faculty from UDLA. Near Cholula is the Great Pyramid of Tepanampa, the largest single structure in the ancient Americas, and the site of the Festival de la Virgen de los Remedios, held each September. The city of Puebla is just 10 miles from Cholula and from there Mexico City can be reached by a two-hour bus trip.

Program information is available from the Office of the Dean, Social Science Building, Room 108, or by calling (209) 278-3013.

China Semester

In cooperation with universities in China, California State University, Fresno 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 Fresno State. Upon successful completion of the program, the Chinese universities issue a certificate of participation. Courses, credits, and grades appear on the student's 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.

School of Social Sciences
PETER J. KLASSEN, *Dean*
WILLIAM FLORES, *Associate Dean*
Social Science Building, Room 108
(209) 278-3013

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. (MNE program field trip fee, $300) (Formerly Anth 15)

150T. Topics in the Social Sciences (1-3; max total 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

School of Health and Social Work
Department of Social Work Education
G. "VISHU" VISWESWARAN, *Chair*
Psychology and Human Services Bldg., Room 128
(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; 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 schools, as well as 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 1994-95* projects the employment of social workers to increase faster than the average for all occupations through the year 2005 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, as well as increased opportunities in rural areas.

Faculty

G. "Vishu" Visweswaran, *Chair*

Undergraduate Advisers: James E. Aldredge, David L. Ellis, Sudarshan Kapoor, Serge C. Lee, Richard O. Salsgiver

Graduate Advisers: All full-time faculty

Field Coordinator: Cora M. Adams

Andrew J. Alvarado
Frederick W. Childers
Benjamin Cuellar
John B. Franz
Richard D. Ford
Betty Garcia
Mark G. Hanna
Donna L. Hardina
M. Lynn Jacobsson
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	(3)
Approved upper-division electives (see list in department office)	(9)
Cultural Diversity—Ethnic Studies including African American Studies and American Indian Studies; Chicano and Latin American Studies, or Asian American Studies	(3)
Six units from two of the following areas: Anthropology, Criminology, Psychology, or Sociology	(6)
Select three units from the following: S Wrk 122T, 125, 128, 129, 190 (Independent Study), IntD 180, 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.)

Credential Programs

As part of the M.S.W. degree, the Department of Social Work Education offers a program which satisfies the requirements for the Pupil Personnel Services Credential with Specializations in School Social Work and Child Welfare and Attendance Services. Advising and admissions information are available through the P.P.S. coordinator in the Department of Social Work Education.

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.

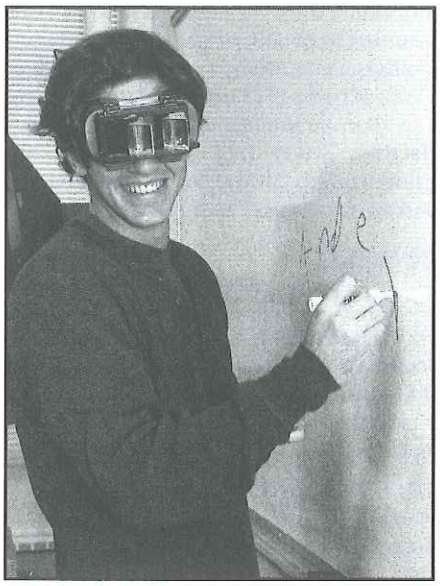
125. Social Services for the Aging (3)
(Same as Geron 125.) Students will be acquainted with the common bio-psychosocial needs of the aging in the United States and the social services available to meet those needs. Within the context of social work values and problem-solving methods, attention will be given to issues of ethnicity, gender, and gaps in services.

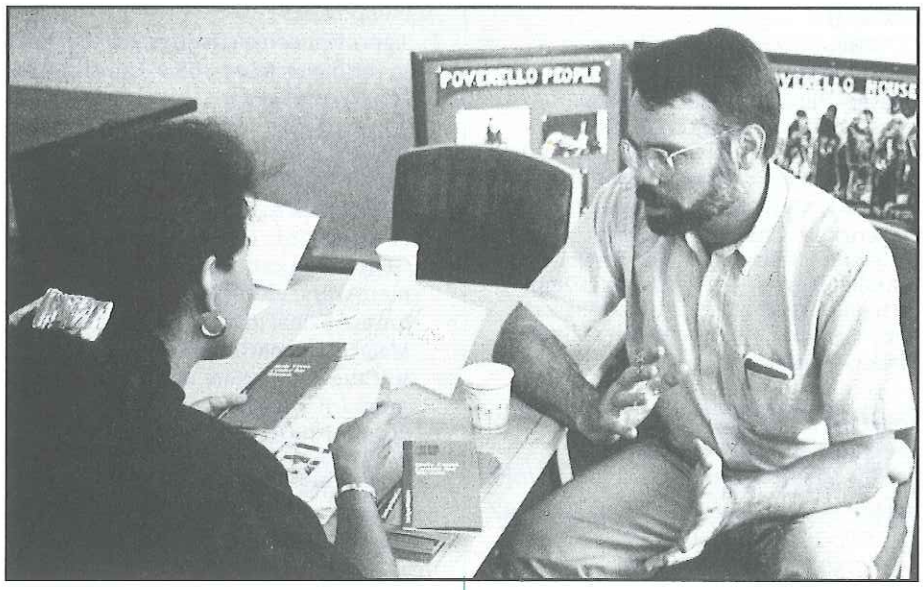
128. Child Welfare (3)
History, development, and provision of child welfare services in the United States.

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 indi-





viduals, 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)
Prerequisites: senior standing; minimum 2.0 GPA; completion of GE writing, core and breadth; and S Wrk 20, 123, 130, 135, and 136. Five units taken with S Wrk 140; 5 units taken with S Wrk 141. Guided social work practice experience with individuals, groups, families, and organizations. Liability insurance required during internships. *CR/NC* grading only.

185. Senior Capstone Seminar (3)
Open only to social work majors. Prerequisites: 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 total 6)
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, introducing the generalist approach to intervention with individuals, families, small groups, organizations and communities.

224. Seminar in Advanced Clinical Social Work Practice with Individuals (3)
Prerequisites: S Wrk 200, 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)
Prerequisites: S Wrk 200, 220 and 224 and concurrent enrollment in S Wrk 250 or 251. 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)
Prerequisites: S Wrk 200, 220 and 224 and concurrent enrollment in S Wrk 250 or 251. 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)
Prerequisites: S Wrk 200 and 220 and concurrent enrollment in S Wrk 250 or 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 and 220 and concurrent enrollment in S Wrk 250 or 251. Theory and practice of the administration of formal social service organizations.

247. Seminar in Social Work Practice with Communities (3)
Prerequisite: S Wrk 200 and 220 and concurrent enrollment in S Wrk 250 or 251. 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. (Formerly S Wrk 271T section)

290. Independent Study (1-3; max total 6)
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. (Formerly 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*.)

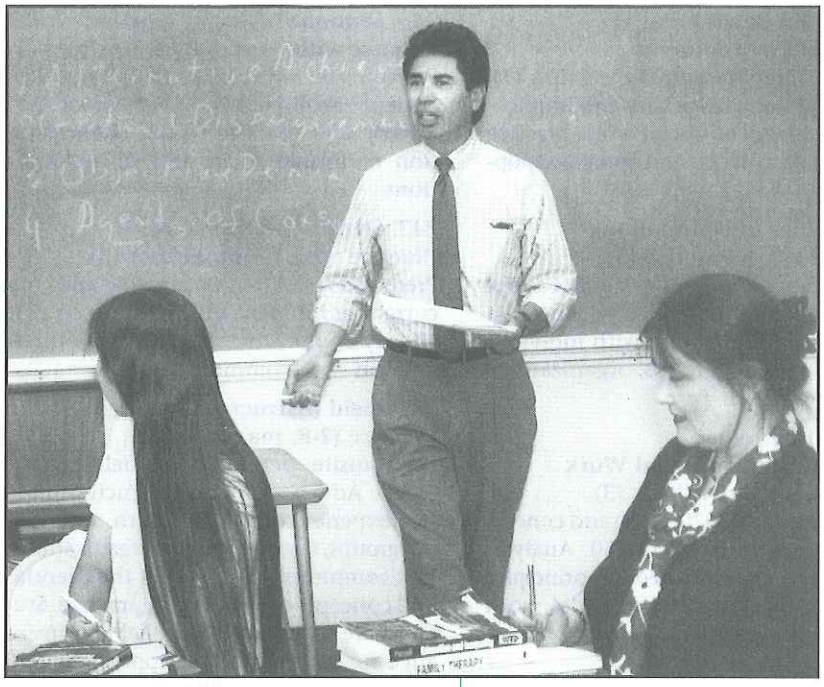
Social Work (S Wrk)

301. Seminar in Social Work Topics (1-3; max total 15)

Sociology

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



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. Recent faculty research has included studies of opinions on women's issues, willingness to pay additional taxes, prayer, stereotypes and ethnic prejudice, and the social organization of sport.

The department encourages students to gain research experience. Some students conduct their own research projects; other students assist faculty members or work with the university's Social Research Laboratory. The laboratory conducts applied research on a variety of topics of regional interest. It regularly conducts the Fresno Area Study examining the quality of life in the San Joaquin Valley. Other projects have examined cancer clusters, residents' perceptions of community problems and solutions, taxes, and local issues. The opportunity to gain practical research experience while working closely with faculty members can add a special dimension to education in sociology at California State University, Fresno. Students can also apply their sociological training through internships with local counseling or social service agencies.

Career Opportunities

Students trained in sociology at California State University, 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 California State University, 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
Robert D. Fischer
Beth Hartung Freimuth
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. S Sci 185, Internship, may be used for upper-division elective units in the major. Consult the Sociology Department chair or faculty adviser for additional details.
3. *CR/NC* grading is not permitted in the sociology major, except for courses offered only under *CR/NC* grading.
4. No course used to satisfy General Education CAPSTONE requirements may be used to satisfy sociology major requirements.
5. 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

	Units
Minor requirements	6
Soc 1, 25	
Sociology upper-division electives	15
Students may substitute Soc 3 and/or S Sci 185.	
Total	21

Advising Notes

1. *CR/NC* grading is not permitted in the sociology minor, except for courses offered only under *CR/NC* grading.
2. 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) (Computer 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) (Computer 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: satisfactory completion (*C* or better) of the Engl 1 graduation requirement. 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.

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. (Formerly 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.

172. Computer Applications (3)
No prior knowledge of computers is necessary. Introduction to computer applications in the social sciences, spreadsheets, database management, statistical applications, Email, data archives, Internet, Lexis-Nexis. (2 lecture, 2 lab hours) (Computer lab fee, $15) (Formerly Soc 170T section)

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 total 6)
See *Academic Placement — Independent Study*. Approved for ***SP*** grading.

Speech Communication

At a university reception, (from left) John Cagle and George Diestel converse with Nobel Peace Prize Laureate Elie Wiesel.

School of Arts and Humanities
Department of Speech Communication
ROBERT G. POWELL, *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.

Faculty

Robert G. Powell, *Chair*

Graduate Adviser: Katherine L. Adams
Undergraduate Adviser: L. Ralph Hennings
Credential Adviser: Gail A. Sorensen

R. Gene Anderson
Melanie M. Bloom
Vincent L. Bloom
Hal W. Bochin
John A. Cagle
Carl W. Carmichael
Connie J. Conlee
George E. Diestel
Douglas Fraleigh
David T. Natharius
David F. Quadro
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 and/or from Spch 115, 120, 188T, 189	(6)
General Education	51
Electives and remaining degree requirements (see *Degree Requirements*) may be used toward a dual major or minor	28-34*
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 be a comprehensive program reflecting the history and breadth of the speech communication discipline. Three objectives serve as measures for competent M.A. graduates of the program. First, all graduates will have a comprehensive understanding of the historical and philosophical assumptions of the communication discipline, as well as the various theoretical perspectives underlying scholarship in the discipline. Second, all graduates will recognize and be able to use appropriate communication strategies in formal, informal, professional, and personal contexts. Third, all graduates will understand quantitative and qualitative methods of research in communication.

Master of Arts Degree Requirements

Speech Communication Option

The graduate program in speech communication assumes undergraduate preparation equivalent to a California State University, Fresno major or minor in speech communication. The Speech Communication Department offers a 30-unit Master of Arts degree with coursework in three areas of human communication: communication, rhetoric and public address, and applied communication. These areas form the basis of two tracks—

Communication majors are finding jobs with reasonably high job satisfaction and above average pay rates.

Track I: Communication and Rhetorical Studies and Track II: Applied Communication Studies.

Graduate assistantships in forensics and an Assistant Lecturer Program for teaching provide students with opportunities for financial assistance and additional educational experiences.

Track I: Communication and Rhetorical Studies

Persons selecting Track I participate in a balanced program which examines the core issues and methodologies in the discipline of human communication. Track I is designed primarily for those individuals who are interested in teaching or who may pursue a doctoral degree in communication or rhetoric.

	Units
Core seminars	6
Spch 241, 262	
Select two seminars in Rhetoric and Public Address	6
Spch 205, 215, 242M, 243, 244	
Select two seminars in Communication	6
Spch 214, 215, 263, 264M, 265, 266	
Elective requirements	6-9
Approved electives	
Culminating experiences	3-6
Select one of these options	
A. *Comprehensive Examination* (take at least 3 additional units of approved Speech Communication electives)	
B. *Spch 298: Graduate Project* (3-6 units; additional approved Speech Communication electives if needed)	
C. *Spch 299: Thesis* (3-6 units; additional approved Speech Communication electives if needed)	
Minimum total	30

Track II: Applied Communication Studies

Persons entering Track II participate in a program which develops and extends competency in applied areas of communication. The focus is on methods of investigating communication problems in professional settings and designing strategies for facilitating more effective communication. Track II is designed primarily for those individuals pursuing professional careers such as business and industry, public service, law, and government.

	Units
Core seminars	6
Spch 241, 262	
Select two seminars in Communication	6
Spch 215, 263, 264M, 265, 266	
Select two seminars in Applied Communication	6
Spch 214, 215, 268, 276	
Elective requirements	6-9
Approved electives	
Culminating experiences	3-6
Select one of these options	
A. *Comprehensive Examination* (take at least 3 additional units of approved Speech Communication electives)	
B. *Spch 298: Graduate Project* (3-6 units; additional approved Speech Communication electives if needed)	
C. *Spch 299: Thesis* (3-6 units; additional approved Speech Communication electives if needed)	
Minimum total	30

Advising Notes

1. At least 21 units in the student's program of study must be in 200-level (seminar) courses.
2. One methods seminar (Spch 242M or 264M) is required in every program.
3. At least 3 units of electives must be an upper-division or seminar course in a department other than speech communication. Any other elective requirements can be met by any approved speech communication seminar, upper-division speech communication course, or appropriate course outside the department. Elective requirements are approved by the graduate student's graduate committee.
4. No undergraduate CAPSTONE course may be used to fulfill graduate core course requirements.

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. (CAN SPCH 8)

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. (CAN SPCH 10)

10T. Topics in Speech (1-3; max total 9)
Contemporary problems and issues in speech communication; sections include such topics as freedom of speech, parliamentary procedure, special communication skills, rhetoric of protest and response, and communication processes.

15. Forensics Laboratory (1-2; max total 4)
Experience in the presentation of debates, oral interpretation programs, persuasive and expository speaking. Intramural and intercollegiate competition in forensics.

100. Theories of Human Communication (3)
Survey of major theories of human communication, philosophical issues, and applications; theories include interpersonal, group, organizational, intercultural, linguistic, and persuasion.

103. Advanced Public Speaking (3)
Advanced principles of expository and persuasive speaking; development of skills through analysis, preparation, organization, and delivery of various types of speech.

105. Argumentation Theory (3)
Analysis of the theories and techniques of argumentation, including models of argument, relationships between persuasion and argumentation, and the effects of argumentative discourse.

106. Statistical Applications in Communication (3)
Introduction to elementary statistical concepts, correlation analysis, parametric and nonparametric tests; emphasis on the application of statistical procedures to communication research. (Computer 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. (Formerly 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.

120. Gender 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.

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. (Formerly 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. (Computer 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. (Computer 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. (Formerly 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)
Prerequisites: 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 total 6)
See *Academic Placement — Independent Study*. Approved for ***SP*** grading.

GRADUATE COURSES

(See *Course Numbering System.*)

Speech Communication (Spch)

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 Instructional Communication (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. (Formerly 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 Strategies and Applications of Communication Research (3)
Prerequisite: Spch 106, 166, equivalent, or permission of instructor. Application of quantitative and qualitative methodologies to a variety of problems studied in human communication. Discussion of design, instrumentation, and analysis of quantitative and qualitative data. (Computer lab fee, $15) (Formerly 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.

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 total 6)
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 or 264M), 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 or 264M), 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.

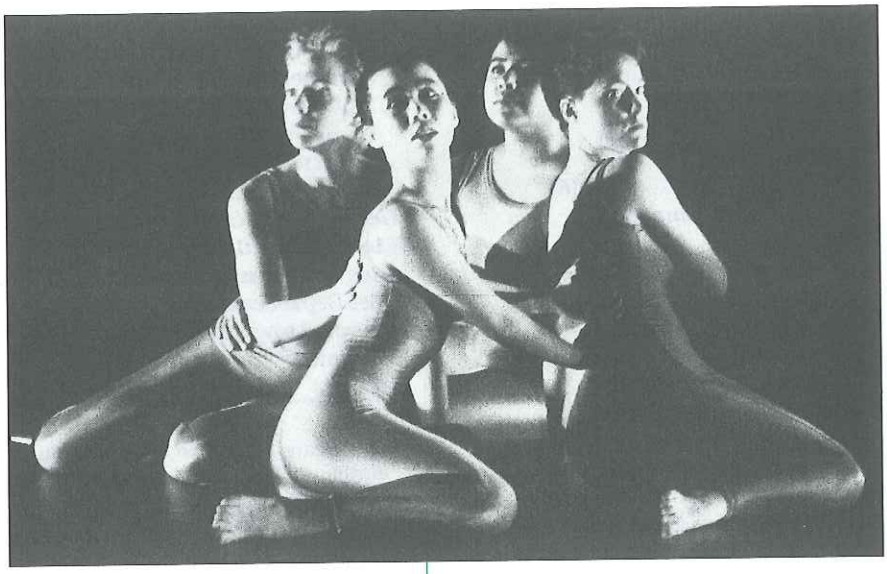
Note: Students must have earned at least a ***C*** in all courses considered as meeting the prerequisite requirements.

IN-SERVICE COURSE

(See *Course Numbering System*.)

Speech Communication (Spch)

303. Topics in Speech (1-3; max total 12; repeatable with different topics)
Prerequisite: permission of instructor. Application of the theories in speech arts.



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

The theatre arts major offers you the opportunity to develop your skills in acting, directing, dance performance, choreography, playwriting, 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 California State University, 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 holds memberships with the American Theatre in Higher Education, the California Educational Theatre Association, the California Alliance for Arts Education, and the United States Institute of Theatre Technology. The department regularly participates in the American College Theatre Festival (ACTF) and the American College Dance Festival (ACDF). Our students, faculty, and productions have been awarded many regional and national honors from both ACTF and ACDF.

Our 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 California State University, 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, we offer a variety of opportunities for you to develop and practice your art.

Facilities

At California State University, 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 370-seat proscenium theatre and a 190-seat arena theatre. We also have a 90-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 California State University, Fresno.

Career Opportunities

Professional theatre and dance are very competitive areas especially for performers. Nevertheless, our 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
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, 132, 133, 135	(18)
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, 132, 133, 138B	(6)
Group 2: Drama 134A, 134B, 135, 180A, 181A, 182A	(6)
Group 3: Drama 130, 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	**48**
Drama 33, 34, 134B or 181B or 182A	(9)
Dance 20, 160, 164, 166, 168, 170, 171	(20)
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)
Music 9	(3)
General Education	**51**
Electives and remaining degree requirements	**25-31***
(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 (Division 5) and Drama 34 (Division 4).

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 departmental 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 164, 166, 168, 170	11
Dance 115	1
Total	**23**

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. (CAN DRAM 6)

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)
Principles and techniques in the preparation and marketing of film scripts. (Formerly 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.

132. Advanced Acting: Period Styles (3; max total 6)
Prerequisite: Drama 35. A study of styles of acting ranging from Greek Tragedy to Theatre of the Absurd with special emphasis on playing Shakespeare. (Formerly Drama 133B)

133. Advanced Acting: Scene Study (3; max total 6)
Prerequisite: Drama 35. Advanced techniques including script analysis, characterization, physicalization, and emotional commitment, developed through improvisation and scene study. (Formerly Drama 133A)

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.

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; produc-

tion, audition, rehearsal process, and organization; technical and performance process and procedures; production personnel and cost management.

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. (Computer 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.

164. 20th Century Drama (3)
Study of the plays of major 20th Century dramatists encompassing various nations and cultures, with emphasis on the contemporary scene. Also includes dramatic theory and analysis, and consideration of social and political issues reflected in these authors' works.

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.

Playwriting is a specialty of several of our faculty; all have published and two have been awarded Schubert Fellowships.

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)
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.

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 total 6)
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; max total 9; repeatable with different topics)
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)
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)
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)
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)
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)
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)
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)
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)
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.

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.

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.

164. Dance History (3)
The historical development of dance from its origins to contemporary forms including diverse cultural perspectives. (Formerly Dance 164A, Dance 164B)

166. Dance Choreography (2; max total 16)
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. Awareness Through Movement (3)
An introduction to the Feldenkrais Method — movement sequences that create new movement skills in the individual. Designed to include movement and observation, analysis and the application of this work in the fields of education and performance.

169. Body Image, Language, and Nonverbal Expression (3)
An investigation into the nature of posture and gesture as configurations of expressive, nonverbal expression.

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
SUSAN ARPAD, *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 Fresno State 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; repeatable with different topics)
(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.)

134. Health Issues, Women of Color (3)
Examines major health issues as they affect U.S. minority women: AIDS/HIV, substance abuse, cancer incidence and prevention, reproductive health, and mental health. Comparisons of white, Asian, Native American, African American, and Mexican American women are made. Addresses the role of race, class and gender as they affect health outcomes for women of color. (Formerly W S 150T section)

135. Women in Other Cultures (3)
Examines the religious, economic, and social roles of women in the world, including their current status in at least 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; repeatable with different topics)
Prerequisite: permission of instructor. May be taken up to four times if no topic repeated. 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. *CR/NC* grading only.

162. Community Service (1-3; max total 6; repeatable with different topics)
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.)

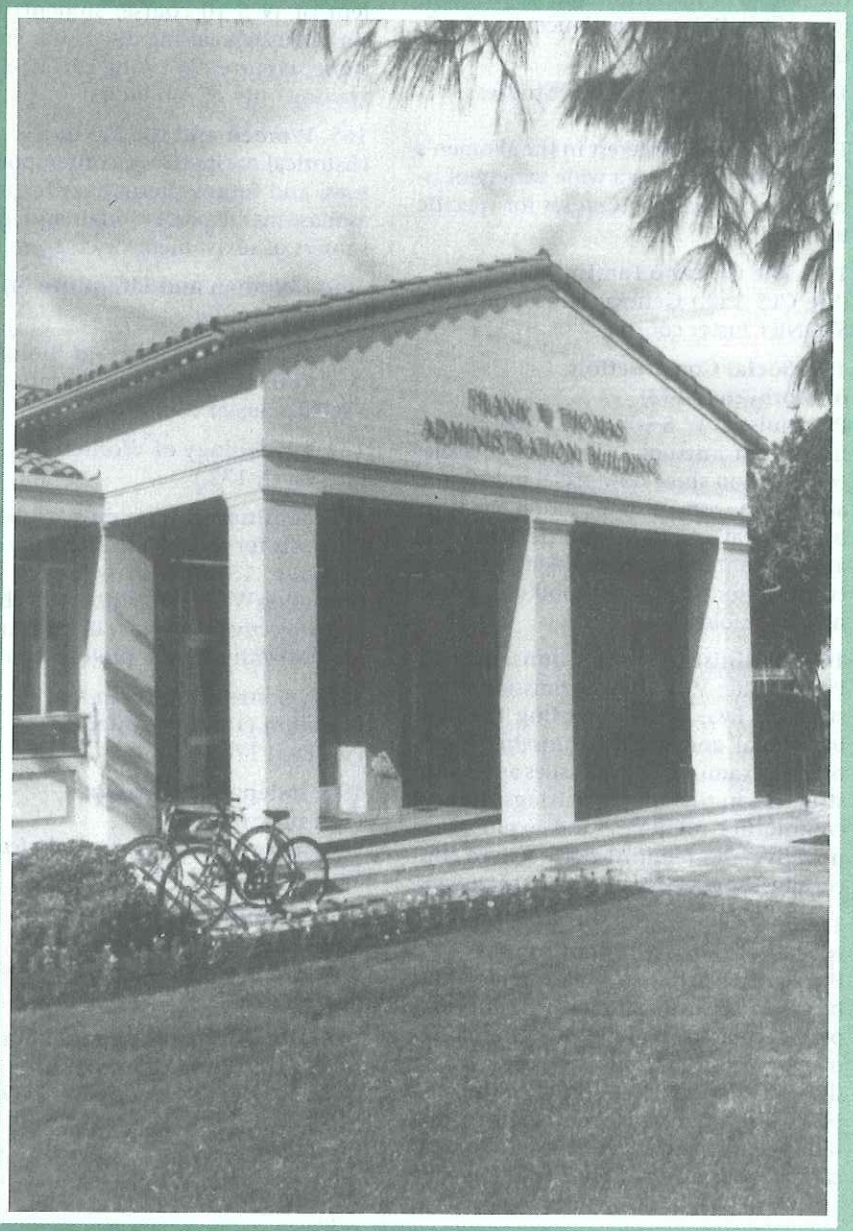
175. Seminar in Women's Studies (3)
Primarily for women's studies minors. Prerequisite: 15 units in women's studies (including W S 10). A synthesis of objective and subjective experience in women's studies. In-depth research project required.

176T. Genre Film: Form and Function (1-4; max total 8)
(See Engl 176T.)

190. Independent Study (1-3; max total 6)
See *Academic Placement — Independent Study*. Approved for *SP* grading.

194T. Seminar in Women and Literature (4; max total 8; repeatable with different topics)
(See Engl 194T.)

195. Diversity in the United States: Race and Gender Issues (3)
(See CLS 195.) (Formerly Eth S 195)


FRANK W. THOMAS
ADMINISTRATION BUILDING

Special Programs

Special Programs

American English Institute

The American English Institute (AEI), which has been a university program for more than 20 years, is designed to prepare international students for American university studies by offering instruction in English as a second language. Students receive 20 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 **(209) 278-2097 or send a FAX to (209) 278-5586** or write to:

Director, American English Institute
California State University, Fresno
2450 E. San Ramon Ave., Room 138
Fresno, CA 93740-0074.

Calendar and Fees. AEI has spring, summer, and fall programs. 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 members are 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 total 6)
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.*)

Asian Studies

California State University, 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.

Cooperative Education

California State University, 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 California State University, Fresno, have at least a 2.0 grade point average, and be a sophomore, junior, senior, or graduate student. For further information, consult the coordinator, **Paul DeRuosi**, or telephone **Career Development and Employment**

Services at (209) 278-2703 or visit the center in the 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
FCS 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 excused from part or all of it by the International Studies Courses (*ISC*) 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.

All resident nonnative speakers of English who cannot demonstrate basic competence on the EPT exam are required to enroll in either Engl A or ESL 20-30 series based on their EPT scores.

First Semester Program. Most students are required to enroll in ESL 30 and ISC 93 in the first semester of residence. In addition, students with less skill in English may be required to take ESL 2R and/or ESL 20 or 21. With permission of their international counselor, students may enroll in other regular courses.

Other Undergraduate Courses. ESL 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 Second Language (ESL)

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. (Formerly EFL 2R)

20. Intermediate English as a Second Language (3)
Emphasizes the development of reading skills and multi-paragraph essays, beginning with personal writing then moving toward the more objective nature of academic prose. Relevant areas of grammar are selected based on student errors and the nature of the written essay.

20L. Writing Skills Lab (1)
Laboratory for students who need individualized writing assignments. (Computer lab fee, $15) (Formerly EFL 10L)

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. (Formerly EFL 21)

30. Advanced English as a Second Language (3)
An introduction to reading based on academic writing and the advanced ESL writing skills required for academic exposition, argumentation, and research papers. Areas of English grammar important to nonnative speakers are taught based on problems in student compositions.

110W. Advanced Composition for Foreign Students (3)
Prerequisite: satisfactory completion (*C* or better) of the Engl 1 graduation requirement, to be taken no sooner than the term in which 60 units of coursework are completed. 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 the upper-division writing skills requirement for graduation. (Formerly EFL 110W)

110L. Writing Skills Lab (1)
Laboratory for students who need individualized writing assignments. (Computer lab fee, $15) (Formerly EFL 110L)

International Studies Course (ISC)

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 Western Sydney (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 University of Paris; the universities of Heidelberg, Hohenheim, Stuttgart, and Tübingen, the technical institutes of Nürtingen and Reutlingen, and the Trade Institute of Stuttgart (Germany); the Hebrew University of Jerusalem and Tel Aviv University (Israel); the University of Florence (Italy); Waseda University (Tokyo, Japan); the universities of Iberoamericana (Mexico City, Mexico) and Pedagógica Nacional; 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 Swansea (the United Kingdom); and the University of Zimbabwe (Harare).

The International Programs organization 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. Students at the sophomore level may, however, participate in the intensive language acquisition programs in France, Germany, and Mexico. 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 Programs Office, Family and Food Sciences Building, Room 111 or call (209) 278-6452. Or, write to: The California State University International Programs, 400 Golden Shore, Suite 122, Long Beach, CA 90802-4275. Applications must be submitted by February 1 for the next academic year overseas.

COURSES

Fresno State students under The California State University International Programs register concurrently on campus and at the host institution abroad, with credit assigned in terms of Fresno State courses. Undergraduate students who find appropriate

study opportunities at the host institution but no local counterpart course may use Independent Study 190, and International Studies Abroad 92 or 192. Graduate students may use Independent Study 290 and International Studies Abroad 292.

International Studies Abroad (ISA)

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 129 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 California State University, Fresno degrees.

To qualify, a participant must: (1) be currently enrolled as a full-time undergraduate student at Fresno State 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 California State University, Fresno. The program is closed to postbaccalaureate students. Applications are available in December. Deadline for submission is February 28.

International programs provide 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.

For more information about this opportunity for educational travel and study in a new environment, contact **Joanne Atwell**, NSE coordinator, International Programs Office, Family and Food Sciences Building, Room 111. **Phone: (209) 278-6452.**

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 (RES)

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. (Formerly BWE 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. (Formerly BWE 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. (Formerly BWE 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. (Formerly BWE 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. (Formerly BWE 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 sec-

tions 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 143	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 California State University, Fresno, as in the use of elective courses, are not approved.

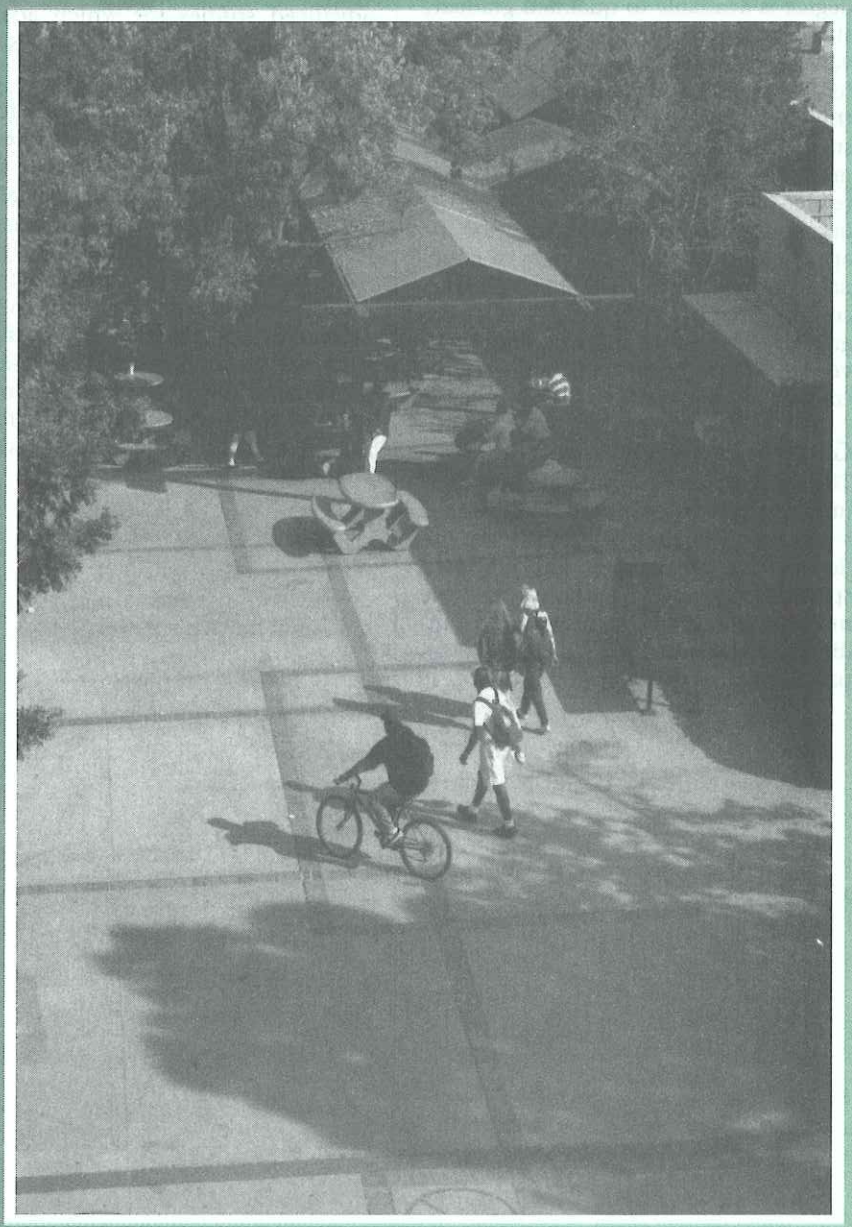
General Eligibility

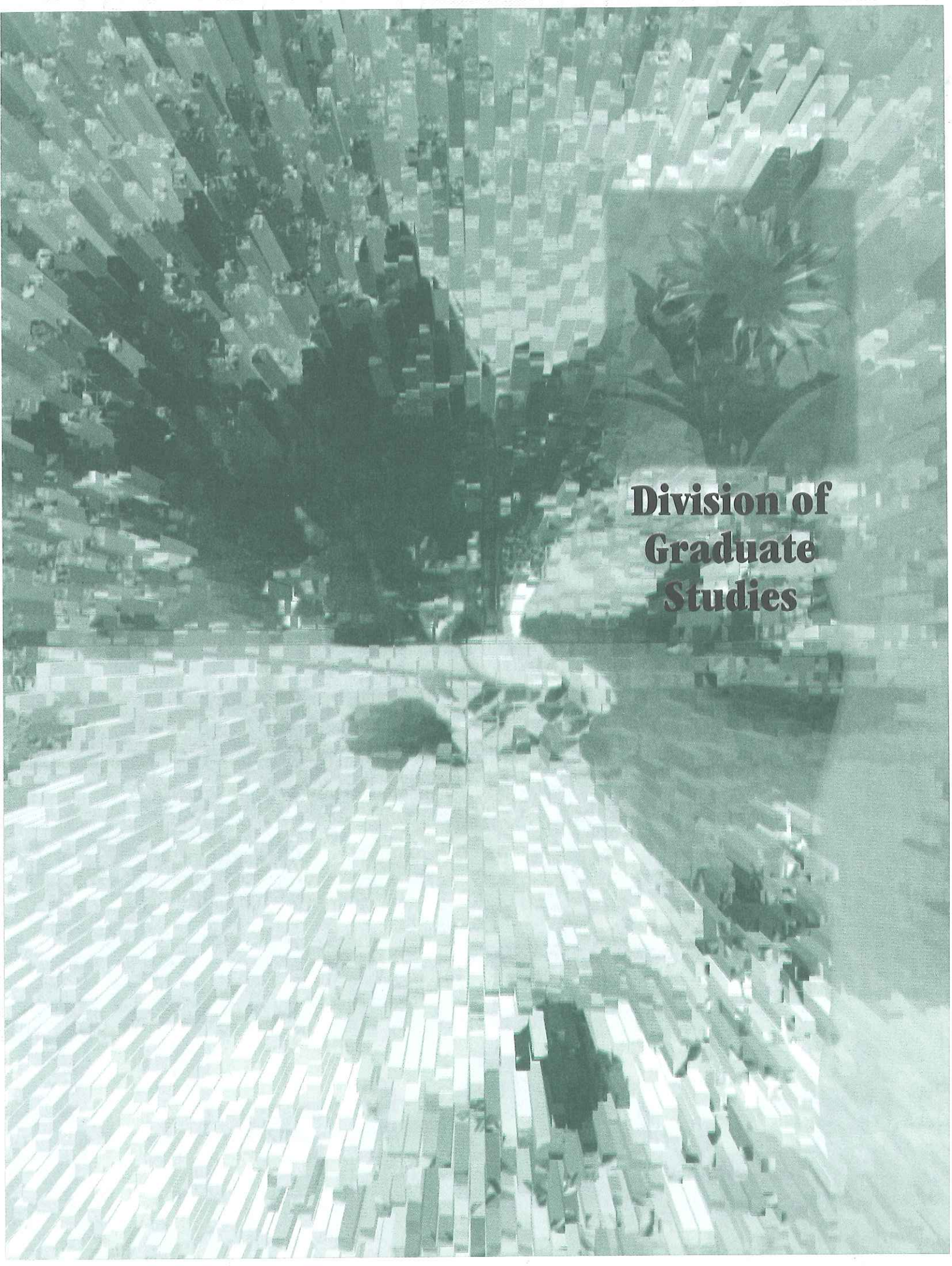
The student must demonstrate a superior undergraduate preparation for advanced studies and research appropriate to the departments involved in the proposed special major. The student must meet the minimum criteria for admission to conditionally classified standing in the departments concerned.

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 and the procedures for constituting a committee and program for the special major, consult the Division of Graduate Studies.





Division of Graduate Studies

Students studying for advanced degrees at California State University, Fresno are a distinctive and valued part of the university. One in six 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 3,000 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 California State University, 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 900,000 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 Fresno State 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 institutionwide 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 university's Graduate Committee. This committee is composed of eight faculty members elected by the faculty, one graduate student member, and the graduate dean.

Division of Graduate Studies
Thomas Administration
Building, Room 132
(209) 278-2448
FAX: (209) 278-4658
E-mail: shirlee_fulton@csufresno.edu
Web: http://www.csufresno.edu/gradstudies

Vivian A. Vidoli, Dean
David A. Ross, Assistant to the 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 cam-

pus. 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 350,000 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 California State University, Fresno. 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
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 Language 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/Language Arts
English, M.A.
Composition • Creative Writing • Literature • Nonfiction Prose
Family and Consumer Sciences, M.S.
Geography, M.A.
Geology, M.S.
History, M.A.
Industrial Technology, M.S.
International Relations, M.A.
Linguistics, M.A.*
English as a Second Language
Marine Sciences, M.S.
Mass Communication, M.A.
Mathematics, M.A.
Music, M.A.
Music Education • Performance
Nursing, M.S.
Clinical Specialization • Primary Care/ Nurse Practitioner
Physical Education, M.A.*
Exercise Science
Physical Therapy, M.P.T.
Physics, M.S.
Plant Science, M.S.
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 Engineering • Mechanical Engineering

Doctoral Degree

Educational Leadership, Ed.D.

Certificates of Advanced Study

Biotechnology
Educational Technology
English Composition
Teaching English to Speakers of Other Languages (TESOL)

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 $1,686 to $11,001 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 fall 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 that

*In these programs, a student may earn a degree without also declaring an option.

they satisfy all of the following criteria: (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, students must complete the Free Application for Federal Student Aid (FAFSA), and return it by March 1. In addition, students must 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 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, Fresno State 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*, graduate students taking 9 or more units are considered full time and students taking less than 9 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 half-time 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 are included. Requests for exceptions to this policy must be addressed to the Graduate Division on a petition for academic overload. Students employed full time may take a maximum of 6 units. For maximum units during the summer session, see the *Summer Session Catalog*.

Application for Graduate/ Postbaccalaureate Admission

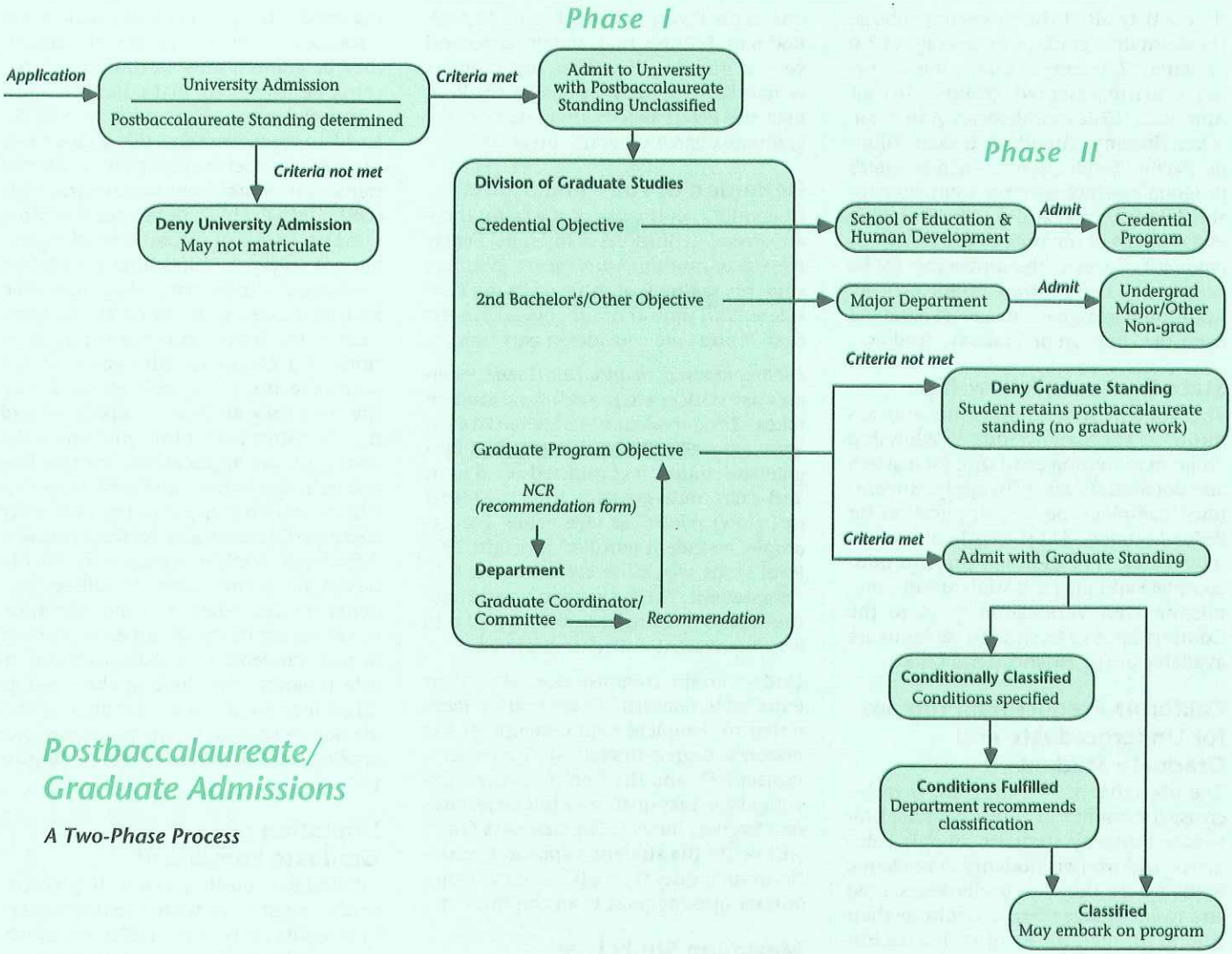
Students are encouraged to plan and apply for graduate admission as early as possible. Completed applications are considered as they are received and thus there are many benefits to applying early. For example, it is often the case that available financial awards such as teaching assistantships and other financial aid resources, which are limited in number, may be granted only to the early applicants. Be aware, too, that a 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. Prospective master's, credential, and advanced certificate students apply to the university using the Graduate and Postbaccalaureate Admission Booklet which may be obtained from the Graduate Office. Students are also referred to the admission requirements described for each graduate degree, credential, or advanced certificate program elsewhere in this catalog. Those interested in a second undergraduate degree should use the undergraduate application available in Joyal Administration.

Limitation of Graduate Enrollment

Admission to postbaccalaureate/graduate studies must be restricted to the number of students for whom an effective education can be provided by staff, facilities, and funding available at California State University, Fresno. The university may limit postbaccalaureate/graduate enrollment on the basis of the academic field and the relative aptitude of the applicant, based on approved admissions criteria.

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 stand-



Postbaccalaureate/ Graduate Admissions

A Two-Phase Process

ing in a master's or joint doctoral degree program. See the *Admissions diagram* on this page.

Postbaccalaureate Standing. Postbaccalaureate applicants may apply to work toward a credential or certificate objective, or may wish to enroll in coursework without declaring a program objective. Postbaccalaureate students may also apply to work toward 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 minimum 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 minimum admission requirements indicated above are initially admitted as follows:

Postbaccalaureate Unclassified Standing. To enroll in graduate courses for professional or personal growth, you must be admitted as a postbaccalaureate unclassified student. By meeting the minimum 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), personal statement, and other requirements as described for each program in the appropriate section of this catalog. Some graduate programs require a separate application in addition to the university application to graduate and postbaccalaureate admission.

All applicants to a 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). Exception: A three-year pilot program permits those possessing a minimum GPA of 3.3 or higher on the last 60 units of undergraduate work to seek a waiver of the GMAT requirement from the graduate business program director. To be eligible for a waiver of the GMAT requirement, international applicants must possess the equivalent of a minimum GPA of 3.3 in the last 60 units earned at a recognized institution, and possess a minimum TOEFL score of 580.

Applicants for admission to the MPA program may submit either GRE or GMAT scores. Applicants to master's degree programs in the School of Education and Human Development may submit either GRE or Miller Analogies Test (MAT). For application information concerning the GRE, visit the Graduate Office in Thomas Administration, Room 132. GMAT information is available in the Craig School of Business Graduate Office in the Peters Building, Room 183. Information concerning the MAT as well as the GRE and GMAT is available through the Testing Office in the Family and Food Sciences Building, Room 101.

The University Graduate Committee has established a standardized test score requirement for all applicants to provide a significant basis of comparison to national educational standards and to ensure the admission of highly qualified students to graduate degree programs. It should be noted that an applicant's standardized test scores will not constitute the sole criterion according to which an admissions decision will be rendered, as noted in a previous paragraph. However, some departments, particularly in the sciences, may give more importance to standardized test scores than departments in other fields.

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 California State University, Fresno/University of California Davis 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 Graduate Degree Objective

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 to 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. Coursework used to satisfy the requirements of one degree may not be used to satisfy the requirements of the second degree. Students may not complete two degrees in the same semester.

Dual Major Objectives

Those graduate/postbaccalaureate students pursuing more than one objective (i.e., two master's degrees or a master's degree and a credential) must notify the Division of Graduate Studies so that appropriate status may be noted with departments concerned.

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.

Prohibition Against Double Counting of Coursework

No units used to fulfill the requirements of one degree may be used to fulfill the requirements of another degree. For example, 100-series courses used toward a bachelor's degree may not be subsequently used toward a master's degree.

Repetition of Courses

A postbaccalaureate student pursuing a master's degree may repeat a course for academic credit, regardless of what grade was originally earned in the course; however, such a student is not eligible to petition for grade substitution. All coursework taken, beginning with the first term of the student's master's degree program, is used in determining the student's grade point average and graduation eligibility.

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 California State University, 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 language is 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, and whose native language is not 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. Applicants to the M.S. in Accountancy and MBA programs may qualify for a waiver of the GMAT by attaining a minimum TOEFL score of 580, and the equivalent of a minimum GPA of 3.3 (on a 4.0 scale) in the last 60 units earned at a recognized institution.

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 program 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:

Testing Services Office
California State University, Fresno
5300 Campus Drive
Family and Food Sciences Building
Room 101
Fresno, CA 93740-0063
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 California State University, 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.

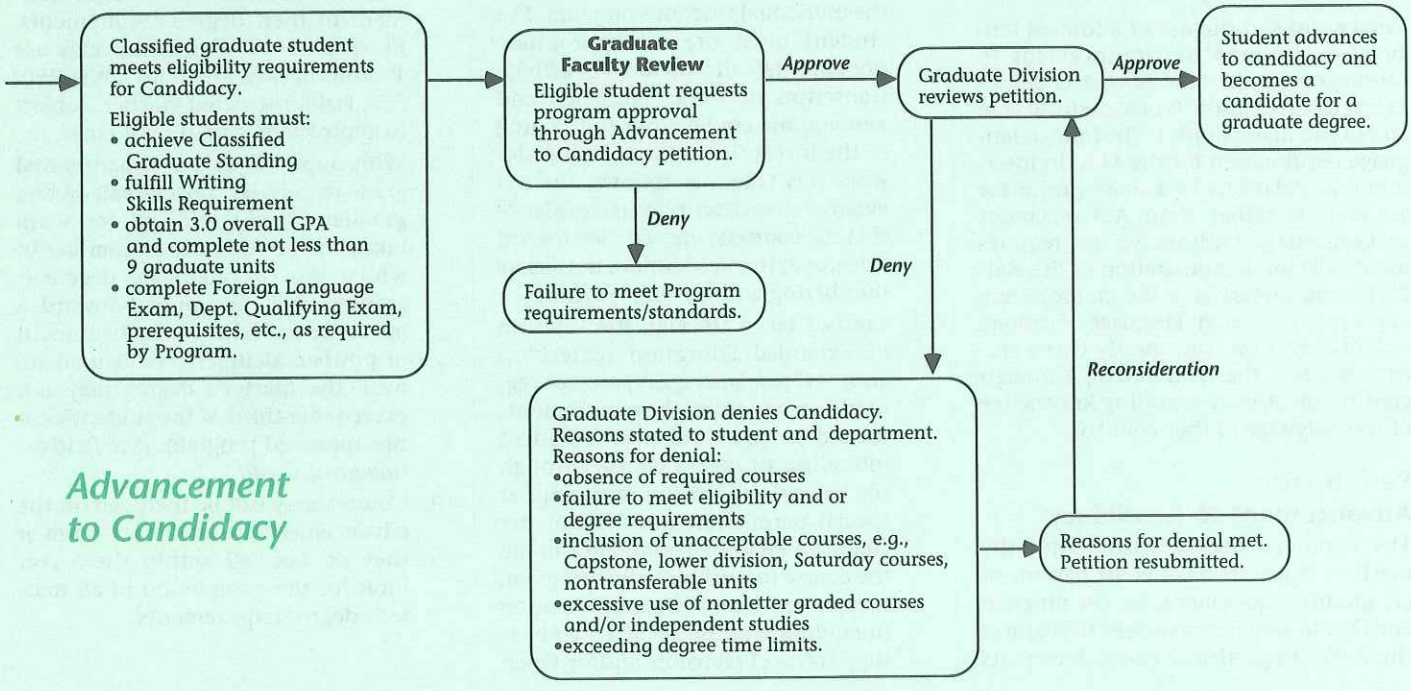
Advancement to Candidacy Criteria

Classified graduate standing gives a student permission to work toward qualifying for candidacy. See *Advancement to Candidacy* diagram on the next page. Advancement to candidacy gives a student permission to proceed toward qualifying for the degree and must have been attained prior to undertaking 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 California State University, 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 agriculture (agricultural chemistry and food science and nutrition), art, civil engineering, mass communication, mathematics, physical education, physics, plant science, rehabilitation counseling, and speech.
4. A minimum grade point average of 3.0 (for both the overall program and courses taken at California State University, 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 California State University, Fresno of at least 9 units of the proposed program with a 3.0 grade point average on all completed work appearing on the Petition for Advancement to Candidacy.
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 (for spring graduation) and March 1 (for summer or fall graduation). 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 require-

Advancement to Candidacy



ment, 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, UDWE.)* Credit earned on the upper-division writing exam or as an upper-division writing **W** course assigned solely to meet this requirement may not be used to fulfill the graduate writing skills requirement. 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 and 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.

Petition 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 which must be 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 degree. Courses that were used to satisfy the requirements of a previous degree may not be used on the program. The approved program must be consistent with the following policies:

At least 21 units of a 30-unit program must be residence credit (courses taken through regular enrollment at California State University, Fresno). No more than 9 units of transfer and/or California State University, Fresno Extension credit may be included in the 30-unit program.

1. Transfer credit may be used toward a California State University, 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 California State University, 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.
2. Courses taken through the Division of Extended Education (Extension and/or Open University) are not regularly used to fulfill the requirements toward a master's degree. A student intending to take a course through the Extension Division must request special permission from his or her Graduate Program coordinator to use the course toward his or her program. If approved, a maximum of 9 transfer (including California State University, Fresno Extension and/or Open University) units may be used on a 30-unit program. Students may not enroll through Open University in order to bypass the university fee structure.
3. 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.
4. Credit by Examination (CBE) may be used to fulfill prerequisites, but may not apply toward the master's degree program.
5. Saturday School courses may not be used on a student's program for the master's degree.
6. Neither CAPSTONE nor undergraduate writing "W" courses may be used in fulfillment of the program requirements of the master's degree.
7. Graduate students may not elect to take a course for a ***CR*** grade either to fulfill prerequisite or major program requirements unless the course is only available for ***CR/NC*** grading as indicated by footnote 14 in the *Schedule of Courses*. A maximum of 6 units of ***CR***-graded coursework may be applied to a 30-unit master's degree program and a maximum of 12 units of ***CR***-graded coursework may be applied to a 60-unit program. Some departments allow no ***CR***-graded courses to be counted toward fulfillment of their degree requirements. Exception: M.S.W. students may use 16 units of such credit for S Wrk 250/251, Field Instructed Practice, subject to approval by department chair.
8. 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. (See *Postbaccalaureate Credit.*)
9. Courses may not be included on the advancement to candidacy form if they do not fall within the 5-year limit for the completion of all master's degree requirements.

10. Refer to catalog section concerning Independent Study.
11. A minimum of 70 percent 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.
12. Substitutions for regular departmental requirements must be accompanied by written justification appended to the advancement form.

Culminating Experience

A culminating experience is required for each master's degree. Acceptable culminating experiences include thesis (299), project (298), or comprehensive examination. Individual departments permit one or more culminating experiences described below.

1. 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.
2. 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.
3. 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.

Program Adjustments

It is the student's responsibility to complete the specific courses listed on his or her Petition for Advancement to Candidacy. 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. Program Adjustment forms are available in 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 in thesis or project units, 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 G S 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 by the established deadline (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 a receipt for the binding and microfilming fee (payable to the California State University, Fresno Kennel Bookstore Print and Copy Center) must be submitted to the Office of the Division of Graduate Studies, before the last day assigned by the thesis consultant. If so desired for the student's personal use and with payment of the required fee, the original copy will be bound with the other copies.
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 has been received from the departmental Human Subjects Committee and, where review demands, the University Committee on Protection of Human Subjects. 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 their departmental office.

Continuous Enrollment

University policy requires a graduate student to be continuously enrolled at the university (1) while completing a grade of ***SP*** in either thesis or project, or a grade of ***SP*** or ***I*** in any other course; (2) while preparing to take a comprehensive examination; or (3) during the semester in which an application for the degree to be granted is filed. This policy does not apply to students who are either enrolled in a course for a letter grade or who have been officially granted a planned educational leave of absence. All students must maintain continuous enrollment during all fall and spring semesters, and during any summer term in which they apply to graduate. To maintain the required enrollment, students must enroll in Graduate Studies Continuation through Extended Education (Extension) or in G S 299 (Regular University Enrollment).

Students who choose to enroll through the Extension option and who later wish to return to regular enrollment at California State University, Fresno will be required to refile an application for admission to the university. Those who have been out of regular enrollment for more than one semester and wish to return will be required to pay an application fee, in addition to refiling an application for admission. For additional information and deadlines, consult the Division of Graduate Studies. Students unable to register in person may provide a letter of permission to a "proxy," allowing the proxy to register on their behalf.

G S Continuation (Extension). Students who choose to enroll in G S Continuation should go to the Division of Graduate Studies office by the second week of the semester or summer term to have their enrollment eligibility verified. They will receive an enrollment card allowing them to pay fees in the Division of Extended Education, Education Building, Room 130. Checks for G S Continuation are made payable to the "California State University, Fresno Foundation" in the amount of $227 (fees are subject to change).

G S 299 (Regular University Enrollment). Students enrolling in G S 299 through regular university enrollment should follow the instructions for S.T.A.R. Registration in the *Schedule of Courses*. G S 299 enrollees must go to the office of the Division of Graduate Studies to obtain the schedule number and have their eligibility verified prior to their assigned registration date and time as indicated on the S.T.A.R. Registration letter.

The International Students Services and Programs Office has indicated that international students must satisfy the continuous enrollment requirement through G S 299 registration.

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 of the petition is granted. 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. Coursework from other institutions may not be validated.

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*** (3.0) 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 (overall, program, and California State University, 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 and dispute resolution is available in the Office of the Dean of Student Affairs.

Application for the Master's Degree to be Granted

An application for the master's degree to be granted (which includes the graduation fee payable at the Cashier's Window in Joyal Administration Building) must be filed within 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 application should be filed before the end of the second week of the first summer session. (See *Academic Calendar* and *Fees and Expenses* in this catalog and the *Schedule of Courses*.) Graduation 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 adviser of the master's program concerned in order to ensure that all program requirements have been, or will soon be, completed.

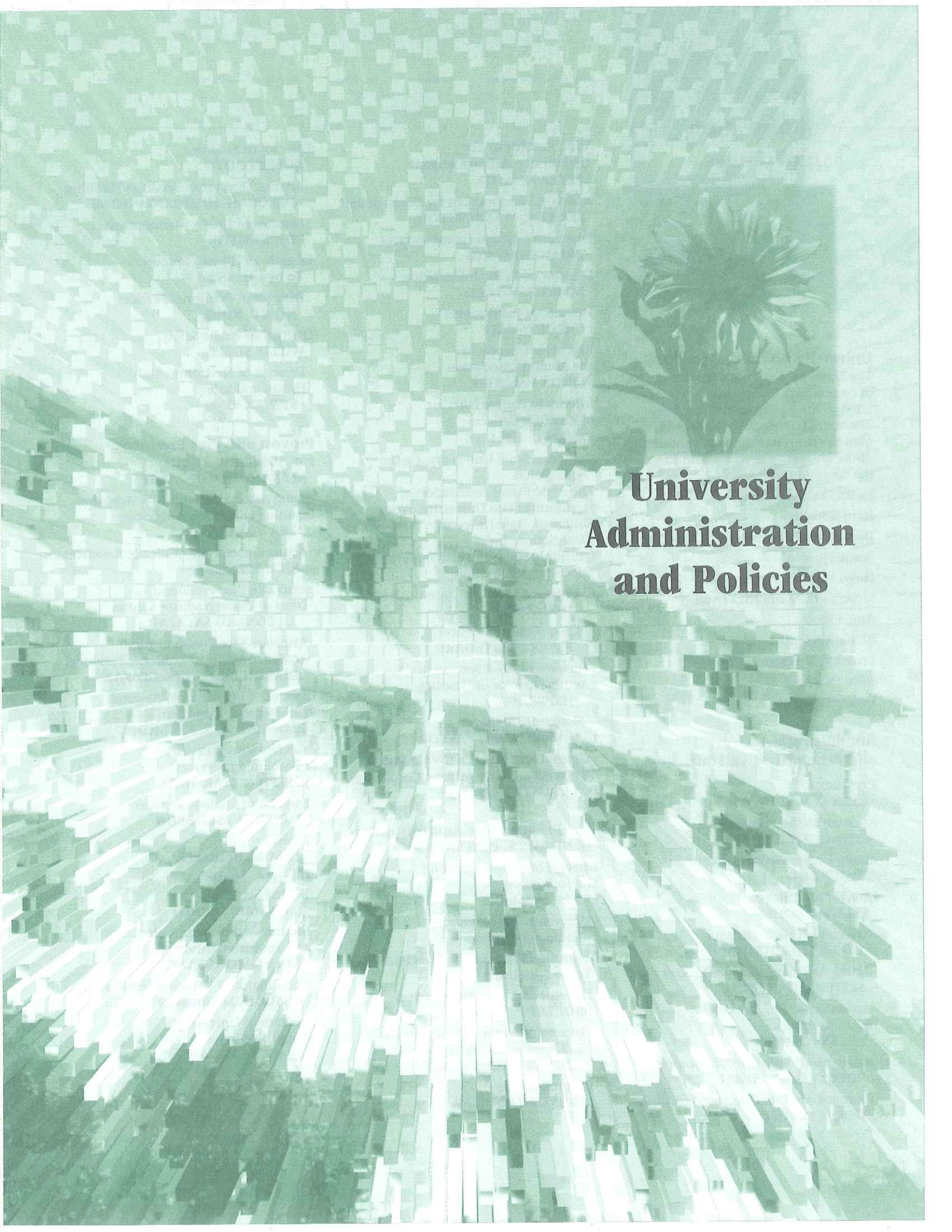
Once all requirements for the degree to be granted have been met, it is the student's responsibility to ensure that all necessary paperwork, including the Master's Degree Clearance, is submitted to the Division of Graduate Studies by the published deadlines. Diplomas for those completing degree requirements will be awarded approximately three 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; max total 12)
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

University Administration and Policies

University Advisory Board

The University Advisory Board consists of community leaders who are interested in the welfare of the university. The board advises the president in matters that relate to the advancement of the university in its relation to the community.

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Donald H. Bruegman
Jamie Howard
Hugo Morales
Sister Ruth Marie Nickerson
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The Agricultural Foundation of California State University, Fresno
California State University, Fresno Association, Inc.
California State University, Fresno Housing Corporation

University Student Union, Director
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PETER PRESTEGARD

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General Manager, California State University, Fresno Athletic Corporation
LES SNYDER JR.

Vice President for Administration
BENJAMIN F. QUILLIAN

Director of Budget Planning and Internal Audit
To be appointed

University Budget Officer
To be appointed

Controller/Financial Management
To be appointed

Director of Accounting Services
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Interim Director of Procurement and Administrative Services
DUTCH GREEN

Payroll Officer
SUSAN VAQUILAR

Director of Facilities
ROBERT BOYD

Interim Director of Facilities Planning
DEBORAH ADISHIAN-ASTONE

Director of Utility Management
DICK SMITH

Director of Human Resources
To be appointed

Director of Personnel Services
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Director of Public Safety
WILLIE SHELL

Director of Environmental Health and Safety
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ALEXANDER GONZALEZ

Acting Associate Provost for Academic Planning and Student Services
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Acting Director for Academic Resources
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and Special Services
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FRANCINE OPUTA

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ALEJANDRA JUAREZ

Director, Upward Bound
PERRY ANGLE

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Animal Sciences and
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E. W. "BUD" STUDE

Special Education Program Coordinator
LANDA IVERSON

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JUDITH C. NEAL

Reading Language Arts Program Coordinator
ROBERT H. PRITCHARD

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KARL E. LONGLEY

Computer Science
WALTER READ

Electrical and Computer Engineering
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Nursing
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Physical Therapy
DARLENE L. STEWART

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GANESHA "VISHU" VISWESWARAN

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LUZ GONZALEZ

Criminology
MAX D. FUTRELL

Victim Services Certificate Program Co-Coordinator
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Ethnic Studies Program Coordinator
LILY B. SMALL

Geography
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City and Regional Planning Program Coordinator
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PHILIP F. BEACH

Sociology
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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 Section 41201 of Title 5, *California Code of Regulations*. The Social Security account number is used as a means of identifying records pertaining to the student as well as identifying the student for purposes of financial aid eligibility and disbursement and the repayment of financial aid and other debts payable to the institution.

Research on Human Subjects

California State University, Fresno has adopted provisions for the conduct of research that employs or influences humans. All research at the university must comply with these provisions. Students must familiarize themselves with the provisions by inquiring in the departmental offices or the office of the dean of their school.

Measles and Rubella Immunizations Health Screening Provisions

The campus shall notify certain students, born after January 1, 1957, of the CSU requirement to present proof of measles and rubella immunizations by the beginning of the next term of enrollment. 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, age, marital status, religion, disability, or sexual preference. Concerns in California State University, 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.

The California State University does not discriminate on the basis of race, color, national origin, sex, physical disability, or sexual orientation in the educational programs or activities it conducts.

Persons who are aggrieved may pursue a complaint informally or formally under the University Antidiscrimination Policy and Complaint Procedures. Inquiries

should be directed to Eddie G. Varela, associate director of human resources, personnel/affirmative action services, Joyal Administration Building, Room 162, phone (209) 278-2032.

Gender. The California State University does not discriminate on the basis of gender 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 gender in education programs and activities operated by California State University, Fresno. Such programs and activities include admission of students and employment.

Inquiries concerning the application of Title IX to programs and activities of California State University, Fresno may be referred to the director of human resources, Joyal Administration Building, Room 262, phone (209) 278-2364; Judy K. Sakaki, acting 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 Regional Director of the Office for Civil Rights, Region 9, 220 Mail Street, 10th Floor, San Francisco, CA 94105.

The California State University is committed to providing equal opportunities to men and women CSU students in all campus programs, including intercollegiate athletics.

Sexual Harassment. Discrimination on the basis of sex is prohibited by Title VII of the Civil Rights Act as well as Title IX of the Education Act. Sexual harassment is a violation of Section 703 of Title VII. Sexual harassment refers to the unwanted imposition of sexual attention usually in the context of a relationship of unequal power, rank, or status, as well as the use of one's position of authority in the university to bestow benefits or impose deprivations on another. This applies equally to all students, staff, faculty, and administrators at California State University, Fresno. Harassment includes verbal, nonverbal, and/or physical conduct that has the intent or effect of unreasonable interference with individuals' or groups' education or work performance. This may also include actions that create an intimidating, hostile, or offensive working or learning environment. Both men and women can be the victims of sexual harassment. Students who believe they are a victim of sexual harassment should contact Carole Snee, 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 Carole Snee, Learning Resource Center, phone (209) 278-3052.

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. Section 504 of the Rehabilitation Act of 1973, as amended, and the Americans with Disabilities Act of (1990) and the regulations adopted thereunder prohibit such discrimination. The director of human resources has been designated to coordinate the efforts of California State University, Fresno to comply with the acts in their implementing regulations. Inquiries concerning compliance may be addressed to the director of human resources, Joyal Administration Building, Room 262, phone (209) 278-2364.

If you have special needs as addressed by the Americans with Disabilities Act (ADA) and need course materials in alternate formats, notify your course instructor immediately. Reasonable efforts will be made to accommodate your special needs.

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 as follows:

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.

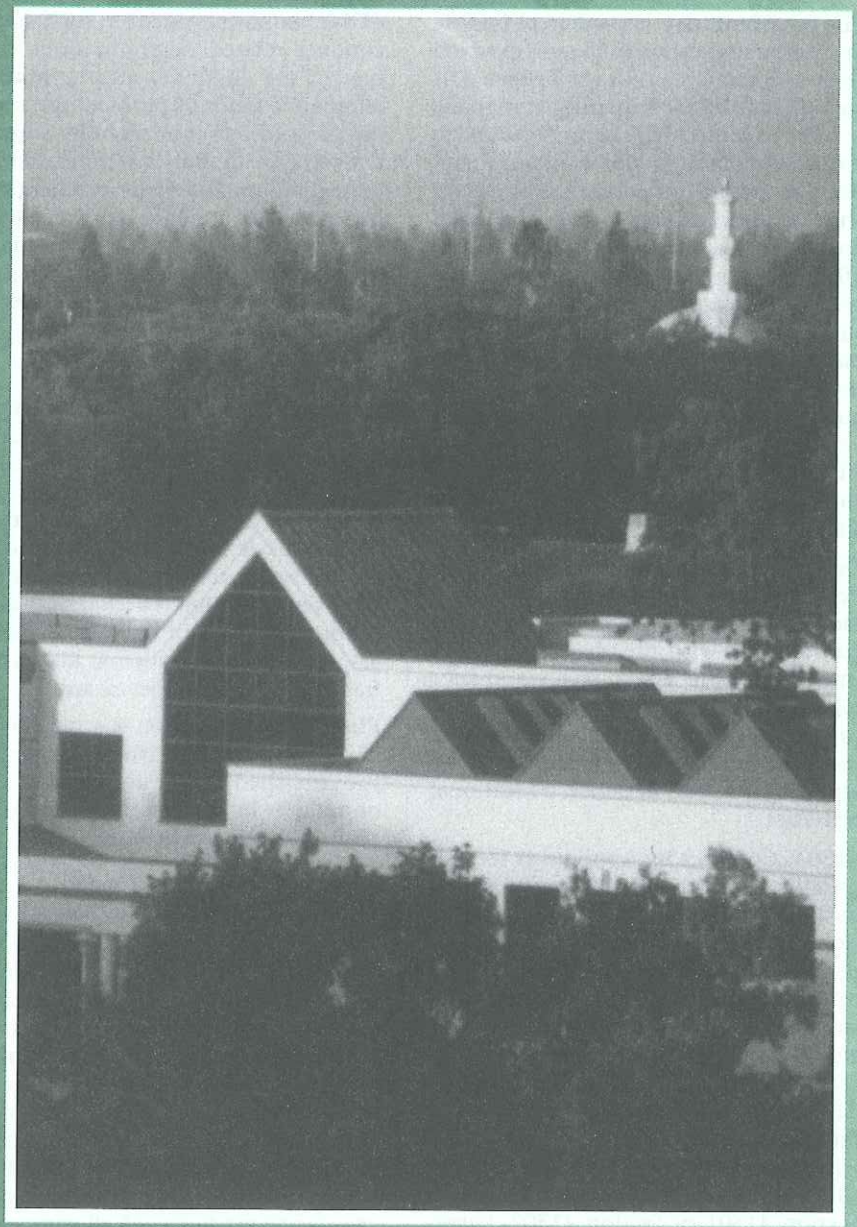
Cheating and Plagiarism

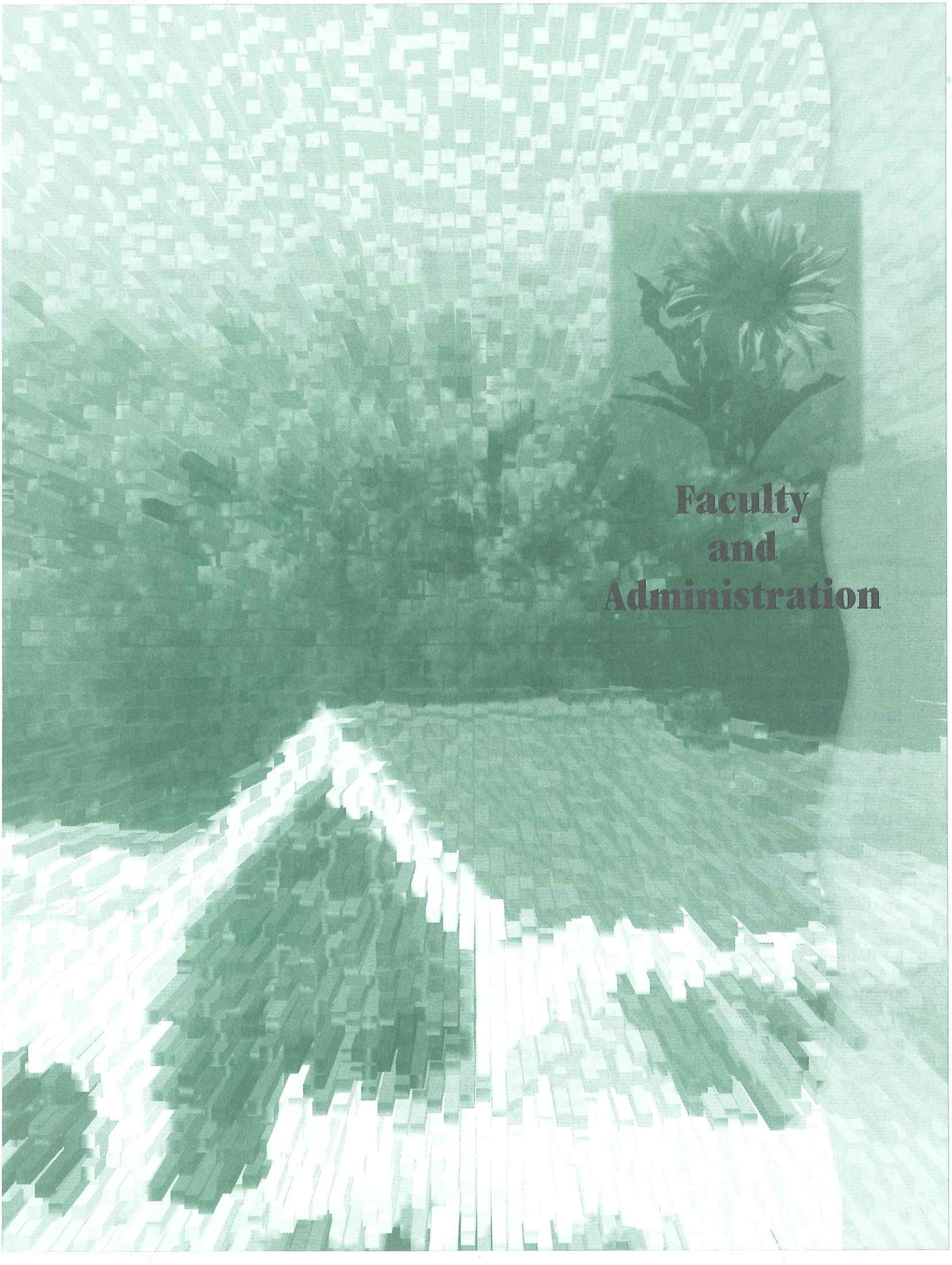
Cheating. Cheating is the practice of fraudulent or deceptive acts for the purpose of improving a grade or obtaining course credit. Typically, such acts occur in relation to examinations. It is the intent of this definition that the term *cheating* not be limited to examinations situations only, but 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.





Faculty and Administration

Faculty and Administration 1995-96

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)
Professor, Department of Psychology
M.D., Autonomous University of Guadalajara (Mexico); M.S., Ph.D., Vanderbilt University.

ALAMELDIN, TAREK K. (1990)
Professor, Department of Computer Science
B.S., Ain Shams University, Cairo (Egypt); M.S., Columbia University; Ph.D., University of Pennsylvania.

ALCOCER, ANTHONY (1995)
Professor, Department of Health Science
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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.

ALEXANDER, LINNEA M. (1983)
Professor, Department of English
B.A., M.A., California State University, Fresno; Ph.D., University of Iowa.

ALLENDER, JUDITH A. (1987)
Associate Professor, Department of Nursing
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ALLISON, ROBERT J. (1967)
Professor, Department of Economics
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ALVARADO, ANDREW J. (1978)
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AMARAL, JACINTA (1988)
Professor, Department of Foreign Languages and Literatures
B.A., Wells College; M.A., New York University; Ph.D., Yale University.

AMARAL, PEDRO (1987)
Professor, Department of Philosophy
B.A., Ph.D., University of Pittsburgh.

ANDERSON, ANN (1995)
Lecturer, Department of Psychology
B.A., M.A., California State University, Fresno.

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 and Design
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
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ANDERSON, WILLIAM K. (1985)
Lecturer, Department of Civil and Surveying Engineering and Construction
B.S., California State University, Fresno.

ANDREWS, DAVID M. (1993)
Professor, Department of Biology and Department of Curriculum, Teaching and Educational Technology
B.A., Southern Connecticut State University; M.Ed., Ed.D., University of Maine.

ARCE, GINA (1957)
Professor, Department of Biology
B.A., M.A., George Peabody College; Ph.D., Vanderbilt University.

ARNDT, J. RICHARD (1973)
Director, Advising and Testing Services
B.S., Wheaton College; M.S., Ed.M., Oregon State University; Ph.D., Michigan State University.

ARNOLD, ROBERT F. (1968)
Professor, Department of Mathematics
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ARPAD, SUSAN S. (1986)
Professor, Women's Studies Program
B.A., Tulane University;
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ASAHINA, ROBERTA REESE (1984)
Professor, Department of Mass Communication and Journalism
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ATWOOD, RITA ANN (1987)
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AU, TONY M. (1985)
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AUERNHEIMER, BRENT J. (Spring 1986)
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AVENT, CAROL L. (1966)
Professor, Department of Nursing
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AVENT, JON C. (1965)
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BADR, SAYED A. (1970)
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BAKER, DENNIS M. (1984)
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BALTRA, ARMANDO (1987)
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BARABAS, ARTHUR H. (1983)
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BENTZ, MARGRETHA M. (1990)
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BERNTHAL, CRAIG A. (1988)
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BERRETT, RICHARD D. (1969)
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BIACINDO, KATHRYN J. (1989)
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BLACKERBY, BRUCE A. (1963)
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BLAKELEY, DONALD N. (1989)
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BLANTON, RONALD L. (1965)
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BLOOM, MELANIE M. (1985)
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BLOOM, VINCENT L. (1970)
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BLUEM, JOHN R. (1984)
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BLUESTONE, SYDNEY (1963)
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BOCHIN, HAL W. (1969)
Professor, Department of Speech Communication
B.S., John Carroll University; M.A., University of Wisconsin; Ph.D., Indiana University.

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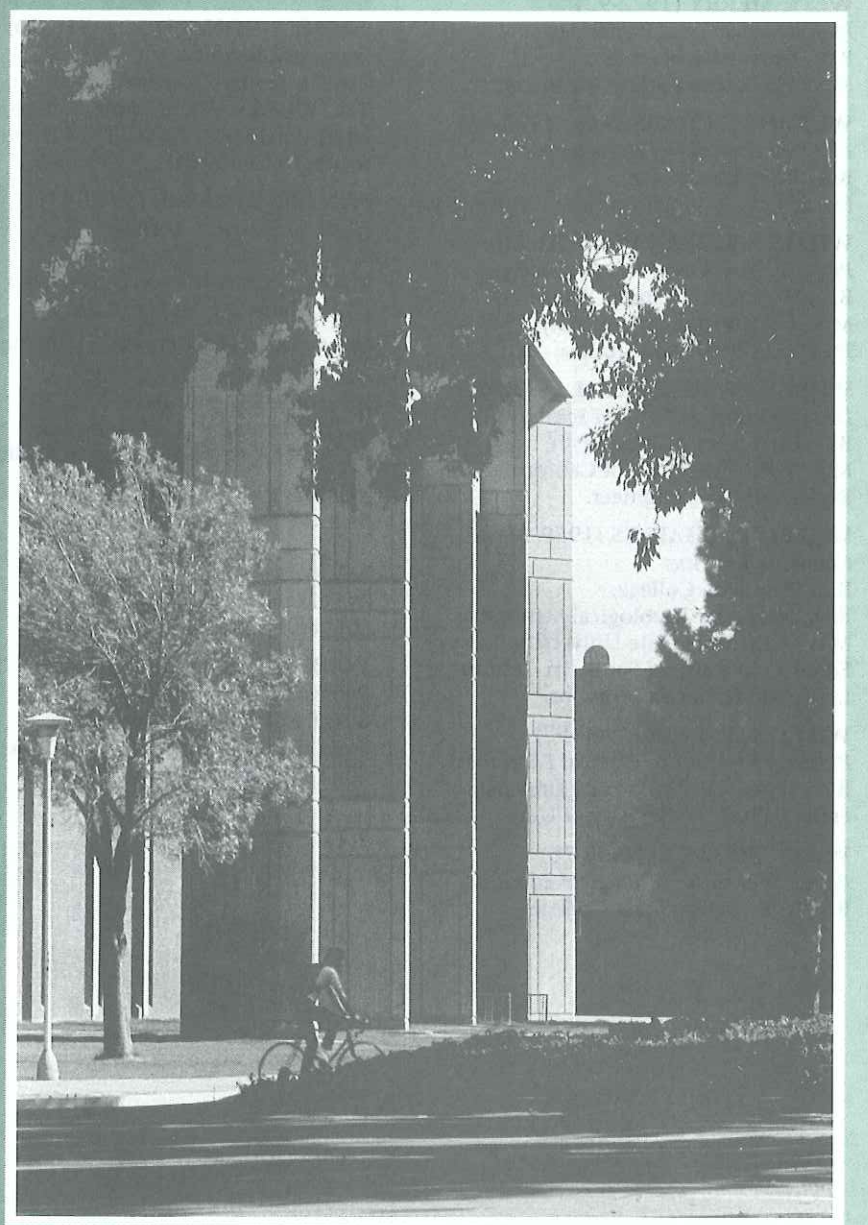

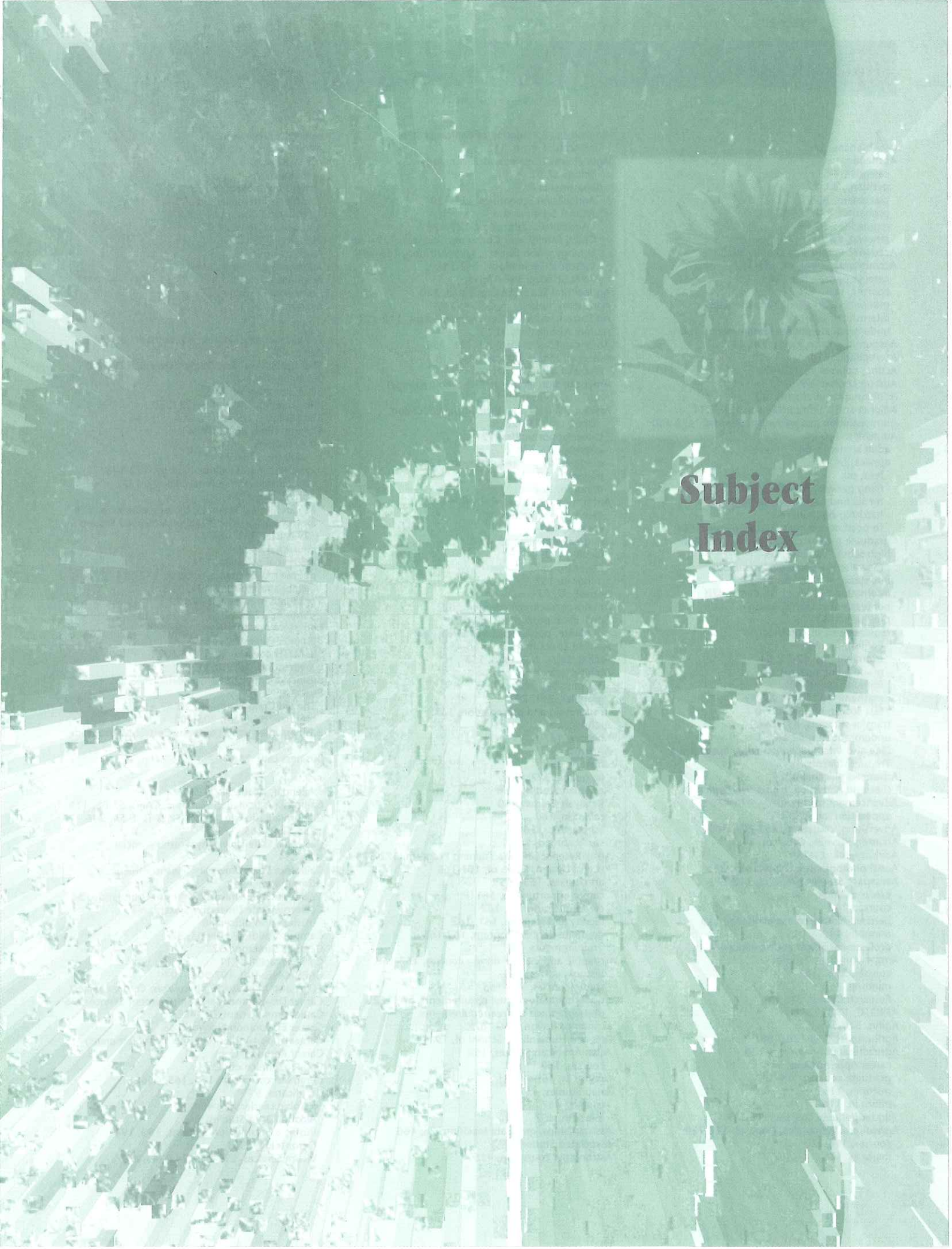

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Admissions, Undergraduate
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University Student Union, Room 316
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Financial Aid
Joyal Administration, Room 296
278-2182

Health and Counseling Services
Health Center
278-2734

International Student Services and Programs
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278-2782

Learning Resource Center
Keats Campus Building
278-3052

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Joyal Administration, south lobby
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Barstow and Jackson Streets
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Public Information Office
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278-2795

Reentry Program
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Joyal Administration, Room 251
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Veterans Affairs
Joyal Administration, Room 106
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