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Fresno State College Bulletin

GENERAL  
CATALOG  
1970 - 1971

# FRESNO STATE COLLEGE

## *Bulletin*



# GENERAL CATALOG

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**1970-1971**

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# ACADEMIC CALENDAR, 1970-1971

## SUMMER SESSIONS 1970

Bakersfield.....	June 15-July 24, incl
Fresno.....	June 15-July 24, incl
Fresno Post-Session.....	July 27-Aug 28, incl

## FALL SEMESTER 1970

Note: *Calendar dates subject to change.*

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

Aug	3	Mon	Deadline for application by any student seeking admission or readmission. This deadline may be modified on the basis of budget limitations and enrollment pressures. Applies to all persons not enrolled in campus classes Spring 1970.
Sept	7	Mon	Holiday—Labor Day.
	8	Tues	Academic year 1970-71 begins.
	8	Tues	Academic Assembly meeting.
	8	Tues	Meeting for all new undergraduate students. Men's Gym.
	9-10	Wed-Thur	Orientation and advising for new students.
	9-12	Wed-Sat	Registration (See <i>Schedule of Courses</i> ).
	14	Mon	Instruction begins.
Oct	14	Mon	Late registration begins (\$5 fine).
	25	Fri	Last day for late registration or adding classes.
	25	Fri	Last day to file applications for degrees and credentials to be granted January 1971 without fine. Last day to file with fine December 4.
	1-2	Thurs-Fri	File application for spring semester 1971 elementary student teaching: 9 a.m.-3 p.m., Ed Psych 102.
	7-8	Thurs-Fri	File secondary student teaching applications, 9 a.m.-3 p.m., Ed Psych 102.
	23	Fri	Last day to drop a course without a fine.
	26-27	Thurs-Fri	Thanksgiving recess.
Nov	21	Mon	Christmas recess begins.
	21	Mon	Classes resume.
Jan 1971	4	Mon	Last day to drop a course.
	6	Wed	Last day to complete admission to School of Education for students beginning any spring semester course work leading to a teaching credential.
	11-20	Mon-Wed	Semester examinations and reading period.
	18	Mon	Last day to file with Office of School of Graduate Studies completed and approved theses for master's degrees to be granted January 1971.
	22	Fri	Final grade reports due. Fall semester ends.

JUNE 1970							JULY 1970							AUG 1970							SEPT 1970							
S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	
1	2	3	4	5	6					1	2	3	4							1				1	2	3	4	5
7	8	9	10	11	12	13	5	6	7	8	9	10	11	2	3	4	5	6	7	8	6	7	8	9	10	11	12	
14	15	16	17	18	19	20	12	13	14	15	16	17	18	9	10	11	12	13	14	15	13	14	15	16	17	18	19	
21	22	23	24	25	26	27	19	20	21	22	23	24	25	16	17	18	19	20	21	22	20	21	22	23	24	25	26	
28	29	30					26	27	28	29	30	31	23	24	25	26	27	28	29	27	28	29	30					
														30	31													
OCT 1970							NOV 1970							DEC 1970							JAN 1971							
S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	
				1	2	3	1	2	3	4	5	6	7				1	2	3	4	5							2
4	5	6	7	8	9	10	8	9	10	11	12	13	14	6	7	8	9	10	11	12	3	4	5	6	7	8	9	
11	12	13	14	15	16	17	15	16	17	18	19	20	21	13	14	15	16	17	18	19	10	11	12	13	14	15	16	
18	19	20	21	22	23	24	22	23	24	25	26	27	28	20	21	22	23	24	25	26	17	18	19	20	21	22	23	
25	26	27	28	29	30	31	29	30					27	28	29	30	31	24	25	26	27	28	29	30				
																			31									

**SPRING SEMESTER 1971**

Jan	4	Mon	Deadline for application by any student seeking admission or readmission. This deadline may be modified on the basis of budget limitations and enrollment pressures. Applies to all persons not enrolled in campus classes Fall 1970.
	26	Tues	Spring semester begins.
	26	Tues	Meeting for all new undergraduate students.
Feb	26-29	Tues-Fri	Registration (See <i>Schedule of Courses</i> ).
	1	Mon	Instruction begins.
	1	Mon	Late registration begins (\$5 fine).
	12	Fri	Last day for late registration or adding classes.
	12	Fri	Last day to file applications for degrees and credentials to be granted June 1971 without fine. Last day to file with fine April 23.
	25-26	Thurs-Fri	File applications for fall semester 1971 elementary student teaching: 9 a.m.-3 p.m., Ed Psych 102.
Mar	4-5	Thurs-Fri	File secondary student teaching applications, 9 a.m.-3 p.m., Ed Psych 102.
Mar	12	Fri	Last day to drop a course without fine.
Apr	5-9	Mon-Fri	Easter recess.
	12	Mon	Classes resume.
May	14	Fri	Last day to drop a course.
	19	Wed	Last day to complete admission to School of Education for students beginning any fall semester course work leading to a teaching credential.
	27	Thurs	Last day to file with Office of School of Graduate Studies completed and approved theses for master's degrees to be granted June 1971.
	31	Mon	Holiday—Memorial Day.
24-June	2	Mon-Wed	Semester examinations and reading period.
	2	Wed	Fifty-ninth Annual Commencement.
	4	Fri	Final grade reports due. Academic year ends.

<b>FEB 1971</b>							<b>MAR 1971</b>							<b>APRIL 1971</b>							<b>MAY 1971</b>							
S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	
1	2	3	4	5	6		1	2	3	4	5	6		1	2	3					1	2	3	4	5	6	7	8
7	8	9	10	11	12	13	7	8	9	10	11	12	13	4	5	6	7	8	9	10	2	3	4	5	6	7	8	
14	15	16	17	18	19	20	14	15	16	17	18	19	20	11	12	13	14	15	16	17	9	10	11	12	13	14	15	
21	22	23	24	25	26	27	21	22	23	24	25	26	27	18	19	20	21	22	23	24	16	17	18	19	20	21	22	
28							28	29	30	31				25	26	27	28	29	30	23	24	25	26	27	28	29		
																					30	31						
<b>JUNE 1971</b>							<b>JULY 1971</b>							<b>AUG 1971</b>							<b>SEPT 1971</b>							
S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	
	1	2	3	4	5					1	2	3		1	2	3	4	5	6	7				1	2	3	4	
6	7	8	9	10	11	12	4	5	6	7	8	9	10	8	9	10	11	12	13	14	5	6	7	8	9	10	11	
13	14	15	16	17	18	19	11	12	13	14	15	16	17	15	16	17	18	19	20	21	12	13	14	15	16	17	18	
20	21	22	23	24	25	26	18	19	20	21	22	23	24	22	23	24	25	26	27	28	19	20	21	22	23	24	25	
27	28	29	30				25	26	27	28	29	30	31	29	30	31					26	27	28	29	30			

# TRUSTEES OF THE CALIFORNIA STATE COLLEGES

## EX OFFICIO TRUSTEES

- Ronald Reagan, B.A. \_\_\_\_\_ State Capitol, Sacramento 95814  
*Governor of California and President of the Trustees*
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- Robert T. Monagan, B.A. \_\_\_\_\_ State Capitol, Sacramento 95814  
*Speaker of the Assembly*
- Glenn S. Dumke, A.B., M.A., Ph.D., LL.D., L.H.D.  
5670 Wilshire Boulevard, Los Angeles 90036  
*Chancellor of the California State Colleges*

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Appointments are for a term of eight years, expiring March 1 on dates in parentheses. Names are listed in order of accession to the Board.

- Charles Luckman, LL.D., A.F.D. (1974)  
9220 Sunset Blvd., Los Angeles 90069
- Theodore Meriam, A.B. (1971)  
P.O. Box 370, Chico 95926
- Albert J. Ruffo, LL.B., B.S. in E.E. (1971)  
675 North First St., Suite 1200, San Jose 95112
- Mrs. Philip Conley, B.A. (1972)  
3729 Huntington Blvd., Fresno 93702
- E. Guy Warren, B.A. (1973)  
P.O. Box 59, Hayward 94541
- Daniel H. Ridder, B.A. (1975)  
604 Pine Ave., Long Beach 90801
- George D. Hart, A.B. (1975)  
111 Sutter St., San Francisco 94104
- Alec L. Cory, B.A., LL.B. (1973)  
530 B St., Suite 1900, San Diego 92101
- William A. Norris, B.A., LL.B. (1972)  
609 South Grand Ave., Los Angeles 90017
- Edward O. Lee, B.A. (1974)  
610 16th St., Room 420, Oakland 94612
- Dudley Swim, A.B., M.A. (1976)  
Route 2, Box 5000, Carmel Valley Road, Carmel 93924
- Karl L. Wentz, M.S. (1976)  
5565 Tesla Road, Livermore 94550
- E. Litton Bivans (1977)  
2431 Dallas St., Los Angeles 90031
- W. O. Weissich, B.S., J.D. (1977)  
1299 Fourth St., San Rafael 94901
- Robert A. Hornby, E.E., LL.D. (1978)  
P.O. Box 60043, Terminal Annex, Los Angeles 90060
- Phillip V. Sanchez, A.B., M.A. (1978)  
1015 East Alluvial St., Fresno 93726

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President  
Daniel H. Ridder  
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Vice Chairman  
Dr. Glenn S. Dumke  
Secretary-Treasurer

OFFICE OF THE CHANCELLOR OF THE  
CALIFORNIA STATE COLLEGES

5670 Wilshire Boulevard, Los Angeles, California 90036

Area Code: 213 Phone: 938-2981

Glenn S. Dumke.....Chancellor  
H. E. Brakebill.....Executive Vice Chancellor  
C. Mansel Keene.....Assistant Chancellor, Faculty and Staff Affairs  
R. G. Whitesel.....Vice Chancellor, Academic Affairs  
D. Dale Hanner.....Vice Chancellor, Business Affairs  
Norman Epstein.....Vice Chancellor and General Counsel  
Harry Harmon.....Vice Chancellor, Physical Planning and Development

THE CALIFORNIA STATE COLLEGES

California State College, Bakersfield

615 California Avenue, Bakersfield, California 93304

Paul F. Romberg, President

805 327-9101

California State College, Dominguez Hills

1000 East Victoria Street, Dominguez Hills, California 90247

Leo F. Cain, President

213 532-4300

California State College, Fullerton

800 North State College Boulevard, Fullerton, California 92631

William B. Langsdorf, President

714 870-2011

California State College, Hayward

25800 Hillary Street, Hayward, California 94542

Ellis E. McCune, President

415 538-8000

California State College, Long Beach

6101 East Seventh Street, Long Beach, California 90801

Donald H. Simonsen, Acting President

213 433-0951

California State College, Los Angeles

5151 State College Drive, Los Angeles, California 90032

John A. Greenlee, President

213 224-2011

California State College, San Bernardino

5500 State College Parkway, San Bernardino, California 92407

John M. Pfau, President

714 887-6311

California State Polytechnic College, Kellogg-Voorhis,

3801 West Temple Avenue, Pomona, California 91766

Robert C. Kramer, President

213 964-6424

California State Polytechnic College, San Luis Obispo

San Luis Obispo, California 93401

Robert E. Kennedy, President

805 546-0111

**Chico State College**

Chico, California 95926  
Robert E. Hill, President  
916 345-5011

**Fresno State College**

Shaw and Cedar Avenues, Fresno, California 93710  
Karl L. Falk, Acting President  
209 487-9011

**Humboldt State College**

Arcata, California 95521  
Cornelius H. Siemens, President  
707 826-3011

**Sacramento State College**

6000 Jay Street, Sacramento, California 95819  
Bernard L. Hyink, President  
916 454-6011

**San Diego State College**

5402 College Avenue, San Diego, California 92115  
Malcolm A. Love, President  
714 286-5000

**San Fernando Valley State College**

18111 Nordhoff Street, Northridge, California 91324  
James W. Cleary, President  
213 349-1200

**San Francisco State College**

1600 Holloway Avenue, San Francisco, California 94132  
S. I. Hayakawa, President  
415 469-9123

**San Jose State College**

125 South Seventh Street, San Jose, California 95114  
Hobert W. Burns, Acting President  
408 294-6414

**Sonoma State College**

1801 East Cotati Avenue  
Rohnert Park, California 94928  
Ambrose R. Nichols, President  
707 795-2011

**Stanislaus State College**

800 Monte Vista Avenue, Turlock, California 95380  
Carl Gatlin, President  
209 634-9101

## THE CALIFORNIA STATE COLLEGES

The 19 campuses of the California State Colleges, from Humboldt County in the north to San Diego in the south, comprise the largest system of public higher education in the Western Hemisphere and one of the largest in the world. Current enrollment exceeds 227,000 full- and part-time students who are served by a faculty numbering approximately 13,000.

Although San Jose State College, the oldest, was founded over a century ago, the California State Colleges were not drawn together as a system under an independent Board of Trustees until after passage of the Donahoe Higher Education Act by the Legislature in 1960.

Responsibility for the California State Colleges is vested in the Board of Trustees, whose members are appointed by the Governor. The Chancellor is the administrative officer of the Trustees. Together, the Trustees and the Chancellor set broad policy, while delegating responsibility for implementation to the colleges. The Academic Senate of the California State Colleges, consisting of elected representatives of the faculty at each college, recommends academic policy to the Board of Trustees through the Chancellor.

Each college in the system has its own geographic and curricular character, but all emphasize the liberal arts and sciences. Programs leading to the bachelor's and master's degrees, as well as a limited number of joint doctorates, are master planned to anticipate and accommodate student interest and the educational and professional needs of the State of California. The primary responsibility of the faculty is the instructional process, with increasing recognition of the importance of the role of research as a necessary concomitant to high quality teaching.

The California State Colleges are now in the dynamic period of their development. Prior to World War II, there were seven State Colleges with a peak total enrollment of some 13,000. Since 1947 twelve new colleges have been established, and sites have been selected for new colleges in Ventura, San Mateo, and Contra Costa Counties. California State College, Bakersfield, will open its doors to students for the first time this year. Enrollment in the system is expected to reach 400,000 by 1980.

### FRESNO STATE COLLEGE ADVISORY BOARD

A group of thirteen citizens of Fresno and vicinity appointed by the Trustees of the California State Colleges as an advisory body to the administration of Fresno State College.

Mrs. Willie L. Brown

Joseph C. Drilling

Lewis S. Eaton

Lowell W. Firstenberger

Ray M. Miles

Leon S. Peters, Chairman

Phillip V. Sanchez

Harold V. Thompson

Joseph R. Weirick

Melville E. Willson

Richard M. Worrel

(two vacancies)

Karl L. Falk, Executive Secretary

### AUXILIARY ORGANIZATIONS

Fresno State College Association, Inc.

Fresno State College Foundation

Fresno State College Agricultural Foundation

Director of Related Educational Activities..... Earle L. Bassett

Assistant General Manager—College Union Director..... Earl Whitfield

Assistant General Manager—Controller..... Darrell Foletta

## COLLEGE ADMINISTRATION, 1969-1970

President.....	Karl L. Falk (acting)
Director of Community Relations.....	Charles H. Dick
Director of Planning and Development.....	Leonard H. Hildebrandt
Executive Vice President.....	James A. Fikes (acting)
Executive Dean.....	Kenneth H. Beesley
Associate Executive Dean.....	Marvin B. Wampler
Director of Institutional Studies.....	Patricia S. Wright
Manager of the Computer Center.....	Woodrow W. Shumate
Dean of Students.....	W. Donald Albright
Associate Dean of Students.....	Deryle K. Allen
Director of Activities.....	Kenneth M. Kerr
Director of Counseling and Testing, and Coordinator of Faculty Advising.....	Kenneth E. Blood
Director of Foreign Student Programs.....	Robert G. Knudsen
Director of Housing.....	Robert S. Brooks
Director of Admissions and Records, and Coordinator of Relations with Schools.....	Harry E. Jones
Admissions Officer.....	T. Russell Mitchell
Registrar.....	Robert R. Board
Evaluations Supervisor.....	Caroline Ryles
Director of the Educational Opportunity Program.....	
Director of Financial Aids.....	Kenneth E. Lewis
Director of Health Services.....	Marvyn S. Schwartz, M.D.
Director of Placement.....	Harold D. Jones
Director of Athletics.....	Cecil N. Coleman
Director of the Instructional Media Center.....	Leonard H. Bathurst, Jr.
Research Coordinator.....	Thomas I. Gunn
Administrative Vice President.....	Harold E. Walker
Academic Vice President.....	Norman A. Baxter
Associate Vice President for Academic Planning.....	Warren R. Biggerstaff (Fall) David E. Clark (Spring)
Assistant Academic Vice President.....	Paul J. McGuire
Assistant Academic Vice President, Operations Research.....	
Assistant Academic Vice President.....	Sydney Bluestone
<i>Academic Deans</i>	
Dean of the School of Agricultural Sciences.....	Othmar J. Burger
Dean of the School of Arts and Sciences.....	Phillip N. Walker (acting)
Dean of the School of Business.....	Claude E. Elias, Jr.
Dean of the School of Education, Director of Teacher Education.....	Richard K. Sparks
Dean of the School of Engineering.....	Thomas E. Evans
Dean of the School of Professional Studies.....	Horace O. Schorling
Dean of the School of Social Work.....	Thomas M. Brigham
Dean of the School of Graduate Studies.....	Phyllis W. Watts
Dean of Educational Services and Summer Sessions.....	Edward M. Spencer
Director of Bakersfield Center.....	Leo P. Varner* E. Merle Foster (acting, Spring)
Director of the Extension Program.....	Arne J. Nixon
College Librarian.....	Henry M. Madden
<i>Coordinators and Directors</i>	
Coordinator of Honors Program.....	Sydney Bluestone
Coordinator of the Overseas International Program.....	Gwendolin B. Cobb
Coordinator of Television.....	John P. Highlander
Director of the Experimental College.....	
Faculty Coordinator of Data Processing.....	Irvin H. Kral

\* Deceased.

Director of Business Affairs.....	Carl Levin
College Fiscal Manager.....	Henry Roberts
Director of Personnel.....	William M. Coughran
College Police Chief.....	Douglas F. Bambridge
Housing Manager.....	Lavon C. Erickson
Procurement and Services Manager.....	Ralph D. Koerber
Superintendent of Buildings and Grounds.....	Ashton H. Shields
Ombudsman.....	Paul F. Murray

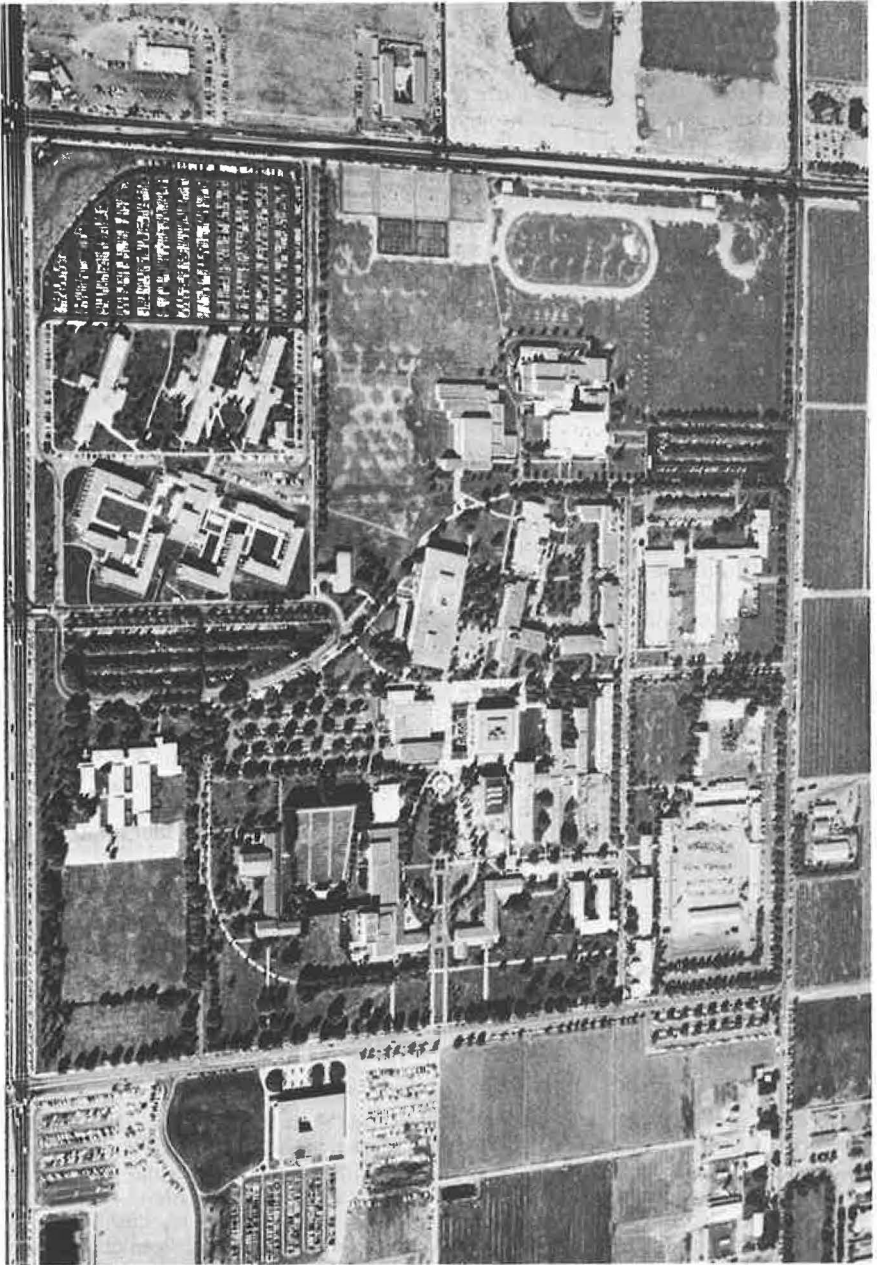
### SCHOOL DEANS AND DEPARTMENT CHAIRMEN, 1969-1970

School of Agricultural Sciences.....	Othmar J. Burger
Agricultural Industry and Education Department.....	Clarence D. Jensen
Animal Science Department.....	Jesse T. Bell
Plant Science Department.....	Harry P. Karle
School of Arts and Sciences.....	Phillip N. Walker (acting)
Anthropology Department.....	Sydney R. Story
Art Department.....	Heinz N. Kusel
Biology Department.....	Keith M. Standing
Chemistry Department.....	Richard P. Ciula
Economics Department.....	Robert A. Minick, Jr.
English Department.....	Eugene E. Zumwalt
Foreign Language Department.....	Edgar A. List
Geography Department.....	Chester F. Cole
Geology Department.....	Bruce A. Blackerby
History Department.....	Peter J. Klassen
Linguistics Department.....	Edward R. Gammon
Mathematics Department.....	Burke Zane
Music Department.....	Wilson W. Coker
Philosophy Department.....	J. Marvin Smith
Physical Education and Recreation Department.....	Cecil N. Coleman
Physics Department.....	Frederic A. Scott (fall), Michael J. Zender, (spring)
Political Science Department.....	John A. Rotstan
Psychology Department.....	J. Mitchell Smith
Sociology Department.....	William C. Beatty, Jr.
Speech Arts Department.....	Gaylord O. Graham (acting)
Urban and Regional Planning Department.....	Harold H. Tokmakian
School of Business.....	Claude E. Elias, Jr.
Accounting and Quantitative Studies Department.....	Clayton R. Tidyman
Finance and Industry Department.....	Robert A. Carr
Management and Marketing Department.....	John H. Kruger
Office Administration Department.....	Berle Haggblade
School of Education.....	Richard K. Sparks
Advanced Studies Department.....	Orley W. Wilcox
Elementary Education Department.....	Jerome E. Leavitt
Secondary Education Department.....	Edwin J. Swineford
School of Engineering.....	Thomas H. Evans
School of Professional Studies.....	Horace O. Schorling
Aerospace Studies Department.....	Alastair W. Thompson
Criminology Department.....	Frank M. Boolsen
Health Science Department.....	Henry F. Fricker
Home Economics Department.....	M. Gene Shelden (acting)
Industrial Arts and Technology Department.....	Frank E. Schroeter
Journalism Department.....	John H. Duke
Nursing Department.....	Fannie L. Gardner

School of Social Work.....Thomas M. Brigham  
 Social Welfare Department.....David E. Ellis (acting)  
 Graduate Department of Social Work.....Barbara K. Varley  
 School of Graduate Studies.....Phyllis W. Watts

**LIBRARY**

College Librarian.....Henry M. Madden  
 Librarian V.....Stephanie Hillman, Lillie A. Parker  
 Librarian IV.....Elizabeth A. Landrum, J Prentise Womack  
 Librarian III.....Sara C. Berry, A. Zane Clark, Sandra Cowling,  
 Ronald J. Harlan, Ann Hopping, Erland L. Jacobsen,  
 Charlotte M. Lowery, Pauline Micciche, Grace T. Waibel  
 Librarian II.....Rudolph P. Altmuller, Charles V. Dintrone,  
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 Arthur G. Gothe, Susanne A. Haffner, Ronald J. Mahoney,  
 Eugene Mescherin, Colleen A. Mitchell, Diane L. Mosher,  
 William J. Petesch, Bertina Richter, Wai-Fong Tang,  
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THE COLLEGE

# FRESNO STATE COLLEGE

The educational program at Fresno State College is designed to develop competent individuals as students, as citizens, and as intelligent and creative leaders. Its eight schools offer instruction through the master's degree in the liberal arts and sciences, in applied fields, and in the professions. Special programs have been developed which are interdisciplinary in nature. Educational opportunities are offered to individuals, public agencies, school systems, private business, and agriculture through the continuing education, in-service education, and research programs of the college.

## HISTORY

Fresno State College was established in 1911. Between 1911 and 1921 a campus was built and expanded at the northern border of the City of Fresno. In 1921 the former normal school became Fresno State Teachers College, granting the bachelor's degree. Continuing its growth and diversification of offerings, the college became Fresno State College in 1935. After World War II Fresno State College accelerated its expansion. In 1949 the college first granted the master's degree.

During the years 1953-1958 the college was moved from its first campus to a site of 1410 acres, six miles to the northeast. In 1961 the administration and control of the California State Colleges were transferred from the State Board of Education to the Trustees of the California State Colleges.

An approximation of university organization was effected during the years between 1965 and 1968 through the organization of eight schools, each with its own dean. The college at present has a faculty of approximately 1,000 and a regular semester student body of approximately 15,000 undergraduate and graduate students. Additional thousands of students are enrolled in summer session and extension programs.

## ACCREDITATION

Fresno State College is accredited by the California State Board of Education, the Western Association of Schools and Colleges, and the National Council for Accreditation of Teacher Education. The college is 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. Other accreditations and accrediting organizations follow.

Business.....	American Association of Collegiate Schools of Business
Chemistry.....	American Chemical Society
Engineering.....	Engineering Council for Professional Development
Journalism.....	American Council of Education for Journalism
Nursing.....	National League for Nursing
Social Work.....	Council on Social Work Education, and undergraduate and graduate membership in the Council

## BUILDINGS AND FACILITIES

Fresno State College is located at Cedar and Shaw Avenues in the northeast section of the City of Fresno. The 1410 acres provide ample space for the expansion of facilities necessitated by a continually increasing enrollment. The major buildings on campus include administration, student administration, agricultural classroom, agricultural mechanics, art-home economics, bookstore, business, cafeteria, college union, education-psychology, engineering, home management cottage, industrial arts, laboratory school, library, men's gymnasium, music, science, social science, speech arts, student health service, women's gymnasium, and residence halls. New residence hall commons, classroom buildings, and bookstore are now in use and a new art building is under construction. Other new buildings and additions to existing buildings are scheduled for the immediate future.

The major academic buildings on Shaw Avenue, first occupied during the 1953-54 school year, are located within a 220-acre area. They are in a setting of colorful trees, shrubbery, flowers, and lawns. A tree-lined amphitheater accommodates commencements, convocations, and other large assemblages. A memorial court and fountain and a free speech area, centrally located, contribute both to the functions and atmosphere of the college.

A college farm operated by the School of Agricultural Sciences has more than 34 structures and is considered one of the most modern and best equipped agricultural plants in the west. The properties of the college also include the Ratcliffe Stadium and the University Avenue Extension Center, both off-campus.

#### LIBRARY

The College Library is housed in a building completed in 1965: Its resources include 280,000 catalogued volumes, 120,000 government publications, 33,000 pamphlets, 33,000 maps, 25,000 pictures and prints, and over 2,600 periodicals are received on subscription. Special collections include the Roy J. Woodward Memorial Library of Californiana and the College Archives. A collection of 10,000 volumes in the College Laboratory School Library provides a model library for an elementary school. The Music Library has over 14,000 phonodiscs and tapes. The library building accommodates 1,218 readers. All students have free access to the resources of the Library. Professional librarians are available to assist students in their use of library materials. The Library is open eighty-three hours a week, during hours posted at the entrance to the building.

## SCHEDULE OF FEES

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

For each student enrolled for more than 6 units:

Materials and service fee, per semester.....	\$54.00
Association fee and health service fee, per semester (not a state fee).....	12.00
College Union fee (not a state fee) .....	10.00
Health facilities fee .....	3.00
Total, per semester (California resident).....	\$79.00

For each student enrolled for 6 units or less:

Materials and service fee, per semester.....	54.00
Association fee, per semester (not a state fee).....	7.00
College Union fee (not a state fee).....	5.00
Health facilities fee.....	3.00
Total, per semester (California resident).....	\$69.00

Nonresident \* tuition fee, per semester *in addition to other fees:*

Each nonresident student enrolled for 15 units or more.....	445.00
Each nonresident student enrolled for less than 15 units, per unit or fraction.....	30.00
Each foreign visa student enrolled for 15 units or more.....	180.00
Each foreign visa student enrolled for less than 15 units, per unit or fraction.....	12.00

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

Extension, per unit:

Lecture or discussion course.....	19.00
Activity course.....	24.75
Science laboratory course .....	38.00
Summer session courses, per unit.....	24.00

Other Fees:

Application for admission fee (nonrefundable).....	\$20.00
Diploma fee (not a state fee).....	3.50
Transcript of record (no charge for first copy).....	1.00
Thesis binding fee, 4 copies (not a state fee).....	18.25
Additional copies, per copy.....	4.75
Foreign visa student health insurance fee (not a state fee).....	15.00
Organ practice, per semester.....	10.00
Studio lesson, per lesson.....	1.00 to 10.00

Credential fee (collected for State Department of Education, \$20 each credential)

Penalties:

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

Residence Hall Rates:

Room and board, per semester each student.....	\$559-634
(Includes room, three meals per day Monday through Friday, and breakfast and dinner on Saturdays and Sundays during the time college is in session; accident, sickness and hospitalization insurance; residence hall social dues.)	

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

**Parking Fees:**

Student enrolled for more than 6 units, per semester.....	\$13.00
Student enrolled for 6 units and less, per semester.....	6.00
Summer session—Fresno Campus Session.....	5.00
Post session—Fresno Campus .....	4.00

**REFUND OF FEES****Refund of Registration Fees**

After a student makes a formal withdrawal through the Student Records Office, a refund of a portion of the *materials and service fee* may be made if written application for refunds is filed not later than fourteen calendar days after the first day of instruction. A student shall make the application personally if he is able to do so. If, in the opinion of the administration, a student is unable to make the application personally, the parents or guardian of the student who is a minor, or the duly authorized representative of the student who is of the age of majority may make the application. (See *Education Code, Title 5, Section 41802*)

The amount of the refund will be determined by the Business Office by deducting the cost of materials and services used, plus \$10 for registration costs. A full refund may be made to a student who is unable to continue a course, because of a college regulation or compulsory military service, at any time prior to the date he receives any academic credit for any course or courses for which he is registered. The *late registration fee* is not refundable. If a student reduces his units to fall within a lower fee category within the first two instructional weeks of the session, makes a formal change of program through the Student Records Office, and files a written application for refund within this time limit, the differential may be refunded except for the cost of materials and services used, plus \$5 to cover registration costs.

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

**Refund of Parking Fees**

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

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

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

**Refund of Other Fees**

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

# REGULATIONS AND PROCEDURES

## ADMISSION TO THE COLLEGE

Requirements for admission to Fresno State College are in accordance with *Title 5*, Chapter 5, Subchapter 2 of the *California Administrative Code*. A prospective applicant who is unsure of his status under these requirements is encouraged to consult a school or college counselor or the college admissions office.

### Limitation of Enrollment

Applicants for admission are notified that, pursuant to Section 40650 of *Title 5* concerning limitation of enrollment, admission to Fresno State College does not guarantee admission to a major or to any courses required for that major. Although every effort will be made to notify students of majors which are at capacity, such notification cannot be guaranteed.

### ADMISSION AS A FRESHMAN

An applicant who has had no college work will be considered for admission under one of the following provisions. Except as noted, submission of the results of the Scholastic Aptitude Test is required.

#### California High School Graduates and Residents

An applicant who is a graduate of a California high school or a legal resident for tuition purposes must have a grade-point average and total score on the SAT which provides an eligibility index placing him among the upper one-third of California high school graduates. The minimum eligibility index is SAT-3072. It is computed by multiplying grade-point average by 800 and adding it to the total SAT score. The grade-point average is based upon all high school work taken, excluding work completed in the freshman year as well as courses in physical education or military science. The table below does not cover every case, but gives several examples of the test score needed with a given grade-point average to be eligible for admission.

Grade-Point Average:	3.21 and above	2.80	2.40	2.00	1.99 and below
SAT Needed:	Any score	832	1,152	1,472	Not eligible

#### Nonresidents Graduating From High Schools in Other States or Possessions

An applicant who is a nonresident for tuition purposes and who is a graduate of a high school in another state or a United States possession must have an eligibility index which would place him among the upper one-sixth of California high school graduates. The minimum required eligibility index is SAT-3402 and is calculated as in the previous section.

#### Graduates of High Schools in a Foreign Country

An applicant who is a graduate of a foreign high school must have preparation equivalent to that required of eligible California high school graduates. The college will carefully review the previous record of all such applicants and only those with promise of academic success equivalent to that of eligible California high school graduates will be admitted. Such applicants may be required to take the Test of English as a Foreign Language (TOEFL) or SAT and other tests deemed appropriate by the college.

#### Non-High School Graduates

An applicant who is over 21 years of age, but has not graduated from high school will be considered for admission only when his preparation in all other ways is such that the college believes his promise of academic success is equivalent to that of eligible California high school graduates.

### High School Students

A student still enrolled in high school will be considered for enrollment in certain special programs if he is recommended by his principal and his preparation is equivalent to that required of eligible California high school graduates. Such admission is only for a given program and does not constitute the right to continued enrollment.

### Other Applicants

An applicant not admissible under one of the above provisions should enroll in a junior college or other appropriate institution. Only under the most unusual circumstances will such applicants be permitted to enroll in the college. Permission is granted only by special action.

### Certificate Program

*Public Administration:* Applications for admission to the public administration certificate program must be approved by the Political Science Department. For information on program requirements consult the department adviser. (See also *Political Science Department.*)

### CEEB Advanced Placement

The college offers advanced placement and credit for those students who take the College Entrance Examination Board advanced placement examinations. The granting of credit and advanced placement is at the discretion of the department. For further details see the advanced placement statements in the Biology, English, History and Mathematics Departments.

### Placement or Credit Granted for Other Precollege Study

In addition to the opportunity provided by the CEEB Advanced Placement Program, an entering student at the time of registration may challenge one or more existing courses and be given the opportunity of attempting to obtain credit in them by examination (see *Credit by Examination*). This opportunity is provided in case the student has not otherwise received credit in high school or college for this work. A student who has earned high school credit for work comparable to that of a lower division college course may, with the approval of the department chairman and usually after the administration of an examination, be permitted to begin his college work at the level for which he is prepared. Under these circumstances no course credit is given for courses which the student is not required to take. The Chemistry, Foreign Language, and Mathematics Departments have made special provisions for the placement of incoming students at the appropriate level. Students who have taken these examinations should consult the Admissions Officer.

### Recommended Preparation

Overall excellence of performance in high school subjects and evidence of academic potential provide the basis for admission at Fresno State College. While no course pattern is required, the applicant to be properly prepared to undertake a full program of studies and particularly to pursue the required program in general education, is strongly encouraged to include the following subjects as minimally adequate background for college work:

1. College preparatory English.
2. Foreign language.
3. College preparatory mathematics.
4. College preparatory laboratory science.
5. College preparatory history and/or social science.
6. Study in speech, music, art, and other subjects contributing to general academic background.

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

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

### ADMISSION OF UNDERGRADUATE TRANSFER STUDENTS

*General Qualifications.* Applicants for admission to the college as undergraduate transfer students must qualify under one of the provisions specified below.

All entering undergraduate students at Fresno State College, except foreign students whose native language is not English, are required to submit scores on the College Entrance Examination Board Scholastic Aptitude Test (SAT). Students transferring with 60 or more units may as an alternative submit scores on the ACT; such scores must be provided directly by the American College Testing Program, P.O. Box 168, Iowa City, Iowa 52240.

#### Applicants With 60 or More Semester Units

An applicant who has completed 60 or more semester units or the equivalent will be admitted if he has achieved a grade-point average of 2.0 (C) on all acceptable college work attempted and was in good standing at the last college attended. (See also *Regulations and Procedures—General Information.*)

#### Applicants With Fewer Than 60 Semester Units

An applicant who has completed fewer than 60 semester units or the equivalent may be admitted if he meets the above requirements and he meets requirements currently in effect for first-time freshmen; or, if he has been in full-time continuous enrollment at a college since his graduation from high school, he meets the requirements in effect for first-time freshmen at the time of his high school graduation.

#### Applicants With Particular Majors

An applicant who does not meet either of the above provisions may be admitted to the college for the purpose of pursuing a major for which appropriate course work is not offered at the college from which he seeks to transfer when he meets all of the following:

1. He has completed all appropriate course work offered.
2. He has attained a grade-point average of 2.0 (C) in all college work attempted.
3. He was in good standing at the last college attended.
4. He can, in the judgment of Fresno State College, succeed in that degree objective.

### REDIRECTION

It is not always possible for the college to accommodate all qualified applicants. If an application is accepted and it later becomes evident that admission will not be possible, the application and any supporting documents will, at the applicant's request, be forwarded to any state college where space is still available. No additional application fee is required.

### CLASSIFICATION OF STUDENTS

Student class levels are determined as follows:

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

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

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

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

*Graduates*—Students who have at least a bachelor's degree from an accredited institution.

### AUDITORS

Students enrolling as auditors only must meet admissions deadlines and be cleared by the Admissions Office. Written permission of instructors must also be secured and filed at registration before enrolling as an auditor for one or more courses with-

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

#### ADMISSION PROCEDURE

Applications for the fall semester are accepted during the common State College filing period and applications for the spring semester are accepted beginning October 1.

For undergraduate admission to Fresno State College a student must:

1. Submit an application on a form provided by the Admissions Office and pay the \$20 application fee to the College Business Office.
2. Request institutions formerly attended to forward directly to the Admissions Office transcripts of credits from high school and colleges. College transcripts are required in duplicate. Failure to include all colleges attended may result in cancellation of the student's registration.
3. Take the Scholastic Aptitude Test of the College Entrance Examination Board and have a copy of the results sent to the college Admission Office.
4. Take any additional entrance examinations required.

A veteran should, in addition, file a photostatic copy of his *Notice of Separation* (DD 214) from the armed services with the Office of Admissions. He will be allowed credit for service time and service schools completed as recommended by *A Guide to the Evaluation of Educational Experiences in the Armed Services*.

Application for admission must be filed by the deadline published in the Academic Calendar or until capacity is reached, usually at least one month prior to the beginning of the semester for which the student plans to enroll. The college cannot assure before registration that an applicant has approval to register, nor can it provide evaluation of prior records unless all documents are submitted by the deadline dates. Applicants for reinstatement will be held strictly to these deadlines.

Students interested in college housing or financial aid should file special applications with the offices concerned as soon as possible.

For admission to graduate study, see *School of Graduate Studies*.

#### GENERAL INFORMATION

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

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

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

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

#### ENTRANCE EXAMINATIONS

All but three categories of entering undergraduate students are required to submit scores on the College Entrance Examination Board Scholastic Aptitude Test (SAT). The three excepted categories include (1) foreign students from non-English-speaking countries, (2) students who have taken the ACT test for entrance to another of the state colleges and who subsequently have been diverted to Fresno State College because of closed enrollment and (3) transfer students with at least sixty (60) units accepted by Fresno State College at the time of transfer who may offer ACT scores in lieu of SAT.

The College Entrance Examination Board has established testing centers throughout the country where students may take the Scholastic Aptitude Test (SAT). Information may be obtained from local high schools and colleges regarding test schedules, application for test reservations, and payment of the \$5.50 registration fee which must be sent to the Education Testing Service. Also, students living in the western states may obtain information by writing to the College Entrance Examination Board, Box 1025, Berkeley, California. Students living east of Colorado should write to the Board at Box 592, Princeton, New Jersey.

In order to allow time for the college to receive the test scores, students should arrange to take the test at least two months before entering the college.

*English Proficiency Test for Foreign Students:* The college requires that students whose native language is not English take the *Test of English as a Foreign Language (TOEFL)*, administered by the Educational Testing Service at testing centers throughout the world. An exception will be made for transfer students from American colleges whose grades demonstrate full competency in English. TOEFL is an objective examination designed to indicate whether the foreign student's comprehension of and ability to use the English language is adequate for college work. Information on testing dates and cities where the test is given may be obtained by writing to Test of English as a Foreign Language, Educational Testing Service, Princeton, New Jersey 08540, USA. Students should arrange to take the test at least six months before enrolling in college in order to allow time for receipt and evaluation of test scores.

*Speech Test:* A speech proficiency test is required of transfer students who are candidates for teaching credentials. Students who fall below the proficiency level required of teachers will be expected to take CD 76. See *School of Education—Admission to Credential Programs*.

*Medical Examination:* Upon entrance, medical examinations are required of all regular students as a condition of registration. Later examinations may be required if college authorities deem it necessary. Candidates for teaching credentials must secure approval of the Health Services at both the time of application for admission to credential programs and upon assignment to directed teaching. A credential may not be issued unless the candidate possesses satisfactory physical and mental health to meet fully the responsibilities of teaching.

#### PROFICIENCY TESTS

Proficiency tests are required by some departments prior to admission and programming students in certain courses or curricula in business, chemistry, engineering, foreign language, mathematics, music, physical education, physics, and teacher education. Some of the tests are administered by the Testing Center; others, by the departments concerned. Further information may be obtained from department advisers.

#### STATEMENT OF RESIDENCE

Each student must complete a Statement of Residence prior to admission to the college. Students in continuous attendance during successive semesters are not required to file statements of residence after the initial filing but a break in attendance requires a new statement. A statement will be mailed to each new or returning student with the application forms and should be completed and returned to the Admissions Office with the application. Students are held responsible for reporting any change in residence.

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

#### PROGRAM PLANNING

Freshman students should plan their programs as early as possible beginning, when practical, with the selection of a major. Degree requirements in each major are listed under the appropriate department and in the section on degrees and credentials.

Students will be assisted in planning their programs by academic advisers, but the primary responsibility for meeting requirements is theirs. The *Schedule of Courses* must be followed when planning a particular semester's program.

The following are among the sections of this catalog students should study carefully:

Academic Calendar	Housing
Admission to the College	Pass—Withdraw
Advanced Placement	Probation
Concurrent Registration	Registration
Counseling Services	Regulations-Procedures
Credit by Examination	Repetition of Courses
Degrees and Credentials	Residence Requirements
Entrance Examinations	Schedule of Fees
Extension Credit	Scholarship Requirements
Financial Assistance	Special Course Requirements
Foreign Language	Special Programs
Foreign Students	Statement of Residence
General Education	Upper Division Credits

### TRANSFER STUDENTS

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

After admission to Fresno State College, the student will usually receive a copy of his advanced standing evaluation indicating how previous college credits have been applied toward requirements at Fresno State College. Normally, applicants will receive the advanced standing evaluation before registration; otherwise applicants will be processed during the semester.

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

### REGISTRATION

Registration is open to new students who have been formally admitted and to former students in good standing. Former students returning after an absence of one semester or more must file in the Admissions Office a form requesting readmission by the deadline date published in the *Academic Calendar* and will be held strictly to this deadline. Students who are returning after an absence of two semesters or more and those who have been absent one semester or more and have attended another institution in the interval will be required to pay the \$20 application fee for readmission. The *Academic Calendar* lists dates of registration. Late registrants are assessed a fine of \$5 and a late filing fee of \$2 if materials are not filed within 48 hours. Registration is complete only when all required forms are completed and filed and all fees are paid. See *Academic Calendar* for all deadline dates.

### SCHEDULE OF COURSES

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

### CONCURRENT REGISTRATION AT ANOTHER COLLEGE

Approval of the Registrar must be obtained in advance of registration before transfer credit may be earned at another college concurrently with registration at Fresno State College. Normally permission for concurrent registration will not be granted for a class which is offered at Fresno State College.

### PROGRAM RESTRICTIONS

Students planning to register for more than 17 semester units must obtain permission from the dean of the school. In general, undergraduate requests to take units above the maximum will be granted on the following basis: 18 semester units may be approved if a 2.5 grade-point average or above (on a 4 grade-point system) has been maintained; more than 18 semester units may be approved if a 3.0 grade-point average has been maintained.

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

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

### PROGRAM CHANGES

Each student is held responsible for the program of courses listed at the time of registration. After the program has been filed, no changes will be made or recorded until the forms provided by the Student Records Office have been properly filled in and filed in that office. No courses may be added after the second week of the semester; courses dropped after the final filing date will incur a fine.

### CHANGE OF MAJOR

Each student who wishes to change his major should report to the Counseling Office to initiate the procedure. The Counseling Office will notify the department concerned so that advisement records may be forwarded to the new department and a new adviser assigned.

### WITHDRAWAL FROM COURSES

Withdrawal from any course after filing the program requires written application on forms provided by the Student Records Office. Such an application filed after the third week and not less than one week before the beginning of the final examination period of the semester, permits the student to drop a course with a "W" recorded. No program changes other than complete withdrawal from the entire enrolled program may be made after that date. See *Refund of Fees*.

### WITHDRAWAL FROM COLLEGE

Students withdrawing from college must file written application on the forms provided by the Student Records Office. Applications filed before the end of the third week of the semester will enable the student to withdraw without having classes recorded. Applications filed after that time will be subject to the same rules as requests to withdraw from individual courses except that a W will be given in all courses on withdrawal from college during the last week of classes or thereafter. See *Refund of Fees*.

**SCHOLARSHIP REQUIREMENTS****UNITS**

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

**GRADES**

A—Exceptionally good.

B—Above average.

C—Average.

D—Below average.

F—Failure.

INC—Semester requirements less than one-third incomplete, work of passing grade.

IP—Continuing work in progress, status satisfactory.

P—Passed without grade.

W—Official withdrawal.

AU—Audit.

An INC is given only when a student who has been doing passing work finds it impossible for justifiable reasons to complete the assignments of the last one-third (or less) of the course. If the course is taken in regular session, the student is obligated to make up the incomplete within the next semester in which he is registered, and the instructor, if he is on campus, is obligated to assist him in doing this. If the course in which the INC was received was taken in a summer session, the student is obligated to make up the incomplete not later than the next following summer. A student may be able to make up an incomplete without being enrolled; he should in every case confer with the instructor concerned. In the absence of the instructor who has assigned the grade of Incomplete, a student seeking to make up this grade should consult the department chairman. In no instance may the INC be made up later than one year after the end of the semester or session in which the grade was given. No student may be required to repeat a course in which he has received an INC unless he wishes to receive credit and the time for making up the grade has passed.

The IP grade may be used only in courses designated on the approved IP grade course list published by the office of Academic Vice President. The IP remains on the transcript without penalty. Any subsequent completion of the course within the permitted time limit is shown by a later entry. Three semesters are permitted for completing a 299 course without reregistration; all other courses given IP grades operate under the same time limit as the INC.

The grade of P may occur in connection with any Pass-Withdraw enrollment (see Regulations and Procedures—Pass Withdraw Grading) and in certain other courses where all students are graded on this basis.

**GRADE POINTS**

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

A—Four grade points per unit of credit.

B—Three grade points per unit of credit.

C—Two grade points per unit of credit.

D—One grade point per unit of credit.

P—Units allowed but not counted in grade-point average.

INC, IP—Neither units nor grade points counted until final grade recorded.

F—Units counted, no grade points.

AU—No units or grade points allowed.

The above grade point system became effective February 1, 1969. Until February 1, 1969, a grade of FW was used; units of FW were counted as "units attempted"

in computing the grade-point average, but no grade points were allowed for a course in which this grade was received. Prior to September 1, 1964, the grade of INC was counted in units attempted but no grade points were allowed. Between September 20, 1956, and September 15, 1961, grade points were computed as follows: the E-grade was used for Condition to be changed to D when condition was removed; P counted two grade points per unit of credit; E counted no grade points per unit. Prior to September 20, 1956, the system was: A, 3 grade points; B, 2; C or P, 1; D, E, F, FW, INC, 0. Prior to September, 1948, grades E, F, FW, and INC carried minus one grade point per unit.

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

## SCHOLARSHIP STATUS

### SATISFACTORY SCHOLARSHIP

Effective September 1, 1965, uniform state-wide minimum standards for probation and disqualification were adopted pursuant to Section 41300 of *Title 5, Education*, of the *California Administrative Code*. All students, new, returning and continuing, will be held to these standards.

Satisfactory scholarship means at least a C average (2.0 grade-point average or twice as many grade points as units attempted). A student is considered in good standing if he is not on probation or disqualified. He should note that a C average in his major is a requirement for graduation. See *Degrees and Credentials—Scholarship requirements*.

### PROBATION

A student will be placed on probation if either his grade-point average based on total units attempted at all colleges is below a 2.0 (C average) or his grade-point average based on all units attempted at Fresno State College is below a C average. A student will be continued on probation until both his over-all and his Fresno State College grade-point average are 2.0 or better, or until he is disqualified under one of the provisions of the disqualification regulations.

### DISQUALIFICATION

A student will be disqualified under either of the following provisions: (a) if he is admitted on probation and fails to meet the conditions established at the time of his admission; (b) if he has a cumulative deficiency on either his overall or Fresno State College record equal to or greater than that indicated below.

<i>Freshmen, Sophomores</i> (0-59 units completed):	15 grade-point deficiency
<i>Juniors</i> (60-89 units completed):	9 grade-point deficiency
<i>Seniors</i> (90 or more units completed):	6 grade-point deficiency
<i>Graduates</i> (all students):	6 grade-point deficiency
	on post-baccalaureate units

See also *School of Graduate Studies*.

### READMISSION

A student disqualified from Fresno State College may be readmitted for a regular semester only by special action and if the facts in the case seem in the opinion of the appropriate college authorities to warrant such action. A disqualified student may enroll for summer session or extension classes without readmission. Ordinarily consideration for readmission will not be given unless a semester has elapsed since the disqualification. Deadlines for consideration for readmission are established in advance for each semester; exceptions to these deadlines will not be made. Recon-

sideration for readmission will, except in very few cases, require that a student arrange a personal interview with a member of the admissions staff. A former student who has obtained upper division status will normally be required to obtain a statement from the school or department of his major preceding an interview. A student who has been disqualified more than once may not be readmitted except under the most unusual circumstances.

### TRANSCRIPTS AND REPORTS

*Transcript of Record.* One official transcript of his record at Fresno State College is furnished each student free of charge. Each additional copy requires a fee of \$1 paid in advance. Because of the large number of transcripts requested at the end of each semester and summer session, three weeks should be allowed for requests to be filled during those periods. After the Records Office has been notified of overdue student accounts, transcripts will not be provided without clearance from the Business Office.

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

*Reports to Students.* Grade reports are mailed to students at the close of each semester. At mid-term a report is mailed to each student as a verification of his official program.

### CREDIT BY EXAMINATION

Credit by examination may be earned in some cases if the following procedures are used.

1. The student will enroll for credit by examination during registration. Normally he will have conferred with the department and will have completed his application form in advance of registration.

2. The examination must be completed by the end of the fourth week of instruction and the instructor will report the grade prior to the close of the sixth week.

3. The course in which the student requests credit by examination will be so designated on his record. Units earned will count toward all appropriate requirements but will not be used in computing his grade-point average.

For further information consult the department concerned (see also *Advanced Placement*).

### COLLEGE LEVEL EXAMINATION PROGRAM

The college will consider examination results from the College Level Examination Program of the College Entrance Examination Board for placement and credit. Study is currently underway to establish specific policy on placement and credit in degree curricula for those who complete one or more examinations in the College Level Examination Program. Further information about this program may be obtained from the Director of Admissions.

### INDEPENDENT STUDY

Independent study is offered to give the student experience in planning and outlining a course of study on his own initiative under departmental supervision. Independent study should deal either with a special interest not covered in a regular course or with the exploration in much greater depth of a subject presented in a regular course. Each department has an independent study upper division 190 course, and some departments have a graduate level 290 course. In some departments a 190 or 290 course may be desirable preparation for the thesis or other advanced study.

To be eligible for independent study, a student should have an over-all grade-point average of 3.0 or higher; this requirement may be waived in exceptional

cases, when approved by the chairman of the department concerned. Maximum credit of six units is allowed toward the bachelor's degree in 190 courses, and maximum credit of six units is allowed in 190 and 290 courses toward the master's degree. Departments wishing to allow for greater use of independent study in their programs may submit proposals to the Graduate Council for approval. In addition, individual student exceptions may be considered by the department in consultation with the Dean, School of Graduate Studies.

An eligible student desiring to register for a 190 or a 290 course must first obtain the consent of an instructor who will guide the project and the chairman of the department in which the course is given. Having secured these prior approvals, a student registers for a 190 or a 290 course in the same manner as 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 which is filed in the department office, and an abstract of the study which is filed with the department chairman. Approval forms and copies of the current regulations may be obtained at department or school offices.

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

### PASS-WITHDRAW GRADING

In order to encourage academic exploration by students and to discover whether some reduction in the pressure to secure grades can be achieved and is valuable, a "Pass-Withdraw" grading procedure has been in effect since the fall semester of 1967. The procedure is designed to limit the risks inherent in such an evaluation process, both to a student's grade-point average and to his prospect of normal advancement in his college program.

Under this plan a student may individually enroll in a course in which others are receiving grades on a five-point scale, but in which he may receive only the grades of "passed" (P) or "withdrawn" (W). The grade of P will be given if his work is judged to be equivalent to an A, B, or C grade as applicable to regular enrollment, or the grade of W if his work is equivalent to a D or F. Other conditions concerning P-W grading are as follows:

1. Not all courses will be available for this type of enrollment. Those in which P-W grading will be possible will be indicated in the *Schedule of Courses*. Further directions concerning enrollment procedure will also be found there.

2. A student must be in good standing (not on probation).

3. A student may enroll in only one course in a semester or term on a P-W basis in addition to any enrollment in Experimental College and International Studies courses. A maximum of 12 units of such courses may apply to the total units required for the degree.

4. A course enrolled in on a P-W basis will not be taken into account in the computation of the grade-point average.

## STUDENT PERSONNEL SERVICES

The student personnel program provides an organized administration of educational services designed to support the instructional program. These services include admissions and records, relations with schools, counseling, testing, student activities, housing, foreign student assistance, financial aids, placement services, and student health. The program also provides students with nonclassroom experiences which are primarily of an educational nature, such as general orientation to the college, cultural enrichment, and tutorial projects. The program and individual services are described in more detail in the following sections or elsewhere in this catalog.

### ADVISING

*Admissions Advising.* The Admissions Office provides counseling to assist students in making application, in understanding admission requirements, and in utilizing the services of the college during the admissions process. Problems concerning evaluation of previous academic records should be directed to the Director of Admissions and Records.

*Academic Advising.* Each student is assigned to a faculty adviser who is a member of the academic department of the student's chosen field. The student uncertain of his choice of an academic major is assigned to a general adviser until a definite goal is chosen. A faculty adviser assists a student in planning his program of classes and in planning for the achievement of his long-range educational goals. The student, however, is expected to assume final responsibility for meeting all specific degree and/or credential requirements. The academic advising program is coordinated and serviced through the Counseling Center.

### STUDENT COUNSELING CENTER

The Student Counseling Center is staffed by full-time professional counselors and psychologists whose services are available, without charge, to all students desiring assistance. Matters discussed by the student and counselor are held in strict confidence.

*Educational Counseling.* The Student Counseling Center provides services for students who are experiencing difficulties in meeting academic requirements. Counseling and testing are designed to help students understand and resolve their academic problems.

*Vocational Counseling.* The Counseling Center assists students in self-appraisal of their unique interests and aptitudes and determining their vocational goals. Psychological and vocational tests are used as needed. A library of vocational information is provided; also, each academic department provides vocational advising pertinent to its field.

*Personal Counseling.* Counselors and psychologists help students who are concerned about personal matters. The emphasis is upon the student's personal growth and development.

*Group Counseling.* The Student Counseling Center provides opportunities to enter groups of from 8 to 12 students sharing the desire to grow and develop in self-awareness and sensitivity to other people's needs and feelings, and to find meaning and relevance for themselves in their relationship to others.

*Draft (Selective Service) Counseling.* At the time of printing, information concerning selective service which would be valid for the entire service period of this catalog was not available. Students should consult the Counseling Center, Draft Counselor and/or the Office of the Registrar for the latest facts related to Selective Service.

### FOREIGN STUDENTS

Fresno State College regularly enrolls a significant number of students from abroad. The Director of the Foreign Student Program and the staff of the Foreign Student Office assist foreign students with academic and personal problems, and housing (see *Student Housing*), as well as governmental and legal aspects of their stay. A special orientation program is planned and required of all foreign students prior to registration. Students should notify the Foreign Student Office of their arrival plans and consult them immediately upon arrival on campus for verification of enrollment, orientation, and assistance (see *Regulations and Procedures—Admissions*).

Students from abroad must have sufficient understanding and proficiency in use of the English language to be successful in their course work at Fresno State College (see *English Proficiency Test for Foreign Students*). A special program of English language and American studies courses is available to assist students whose previous instruction has been in a language other than English. (See *International Studies—Campus Program*). Except for the few who are employed as graduate assistants, students must have sufficient funds so that they will not need employment during the first year at the college and should plan to register for the minimum legal number of courses each semester, which for undergraduate students on "F" or "J" type visas is 12 units and for graduate students is 6 units. These are the minimum-unit loads foreign students must carry in order to keep their student visas valid and to qualify for a partial fee waiver (see *Schedule of Fees*). They are also required to participate in the college health insurance program.

The Foreign Student Office also coordinates campus and community activities for foreign students. These are designed to enhance their educational experiences in the United States. Students should consult the Foreign Student Office for information pertaining to these activities. Foreign graduate students should refer to the *School of Graduate Studies*.

### STUDENT ABSENCES

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

### STUDENT HEALTH SERVICE

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

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

During hours when the offices are closed, a qualified student may secure the services of his own physician, in which case the Student Health Service will allow \$5 toward the cost of one office visit or \$10 toward the cost of one residence visit for any one illness. In addition, an excellent student sickness and accident insurance policy is offered through the Health Service.

### **LANGUAGE, HEARING, AND SPEECH CLINIC**

The Language, Hearing, and Speech Clinic is part of the program of communicative disorders within the Speech Arts Department. Any regular student needing diagnostic or therapeutic assistance with language, hearing, or speech problems may arrange to secure the service of the clinic without charge.

### **PLACEMENT SERVICE**

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

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

The specific functions of the office are: to collect and make available to prospective employers personal data and confidential letters of reference of candidates, to maintain a current record of employment opportunities, to recommend candidates for positions at the request of employers, to arrange for interviews between candidates and employers, to provide guidance to candidates seeking positions, to bring the needs of the employer to those who design and implement the educational program, and to conduct a follow-up program of candidates placed in positions.

Each student and qualified alumnus has the right to participate in the placement program of the college in accordance with established policies. This participation includes the opportunity to meet representatives of business, industry, social agencies, government, all branches of the military, and of education. Employers must be engaged in a legal operation, have bona fide employment opportunities, and agree to adhere to standards of ethical conduct and to participate as stipulated by the Placement Center at Fresno State College.

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

#### **Educational Placement**

Participation in this program is open (1) to anyone who holds or will receive a regular teaching credential in the semester prior to date of employment provided a minimum of 24 semester units of work has been completed at Fresno State College; (2) to anyone who holds or will receive a master's degree in the semester prior to date of employment provided a minimum of 24 semester units has been completed at Fresno State College; (3) to students who have met the Fresno State College conditions for partial fulfillment of requirements for elementary teaching under the credential law, including student teaching; and (4) to those in the internship program who complete requirements for a credential.

#### **Business, Industrial, and Governmental Placement**

Participation in this program is open to all graduating seniors and alumni who desire full-time positions in agriculture, business, industry, governmental agencies, and other related fields. Seniors are urged to complete and file a personal data sheet with the Placement Center early during the year in which they expect to graduate. Close cooperation is maintained with the various divisions and departments in the placement of candidates in these fields.

### **Student Placement**

Participation in this program is open to any enrolled student. Many students earn part of their college expenses. Entering freshmen, however, should be prepared to finance their first semester of college attendance without working; and all students should keep their outside employment to a minimum so that the total program does not endanger either health or academic achievement.

Various types of employment are available. There are a number of hourly jobs in various work areas on campus for which candidates with specific abilities are sought. Other positions of a temporary nature are also available on campus. Active immunization against tetanus (available through the Student Health Service) is required for any student employed on the College Farm. Off-campus positions consist of a variety of jobs ranging from short-term positions to those with scheduled hours for the full year. Students desiring work on or off campus should consult the Student Placement Center. Employed students are expected to reflect credit on the college. (See also *Work-Study Program* and *Graduate Assistantships*.)

### **STUDENT LIFE**

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

### **THE COLLEGE UNION**

The College Union building was designed to serve the entire campus community. This new structure was planned by students and is financed by student funds through the Fresno State College Association. The College Union is the campus community center for students, faculty, staff, and guests. In addition it provides convenient and inexpensive social and recreational opportunities. The building includes conference and meeting rooms, lounge areas, a coffee shop, a barber shop, art display areas, student government and committee offices, auxiliary organization offices, bowling and recreation areas, and numerous service facilities.

### **STUDENT LEADERSHIP**

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

### **STUDENT CONDUCT**

Students are expected to observe college regulations and are held responsible for their personal behavior. Disciplinary action involving expulsion, suspension, probation or lesser sanction will be assessed only after the student involved has been



given a formal hearing before a disciplinary board. However, the President may immediately impose an interim suspension in all cases in which there is reasonable cause to believe that during a campus disturbance a student has interfered with the peaceful conduct of the campus by an act which is a cause for disciplinary action. The following have been identified as unacceptable conduct (*California Administrative Code, Title 5*):

Cheating, plagiarism, or falsification of records; disorderly, unethical, vicious, or immoral conduct; misuse, abuse, theft, or destruction of state property; acts of a criminal nature involving the breaking of a civil law; acts which disrupt the academic function of the college community; possession of alcohol or illegal drugs on the campus.

College, Trustee, and State regulations governing student conduct and college due process policy and procedure are outlined in the *Manual of Student Rights and Responsibilities* and in the *Guide to Campus Rules and Regulations*.

#### FRESNO STATE COLLEGE ASSOCIATION, INC.

All students enrolled at Fresno State College are members of the Fresno State College Association, Inc., a nonprofit corporation chartered by the State of California to operate campus auxiliary services and other association-financed activities. The membership fee is \$10 for students carrying at least seven units and \$5 for students carrying six units or fewer. After payment of the fee at the time of registration, a nontransferable membership card is issued which permits participation in association activities and admission to all association programs either without charge or at a reduced fee. Faculty members are also eligible for membership. Association fees support athletic activities; publications; music, drama, and cultural programs; and student government activities. The Board of Directors, composed of faculty members and students, exerts budgetary control and determines management policy for all association operations, including the bookstore, the cafeteria, the college union program, and other activities involving expenditure of association funds.

#### STUDENT PUBLICATIONS

Membership in the Fresno State College Association, Inc., entitles the holder to copies of the five major student publications. The *Daily Collegian* is the official news publication. A handbook and a directory, appearing soon after the fall semester opens, contain general information about the college and an address list of faculty and students. The college annual, the *Campus*, appears during the final month of the college year or the first month of the fall semester. The college literary magazine, *Backwash*, is published once each semester and is available to students at a nominal charge. These publications are under the general control of a nine-member board of publications composed of faculty and students.

#### STUDENT ORGANIZATIONS

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

#### Honor Societies

In addition to high standards of scholarship expected of all students, special recognition is given to superior scholarship. The honor society of Phi Kappa Phi, a national scholarship organization, was established at Fresno State College in 1953. Most departments of the college sponsor honor societies, many of them national in scope, in which membership is based upon superior college work. The Blue Key National Honor Fraternity for men and the Tokalon Honor Society for women

offer membership to students who have good scholarship, are prominent in college activities, and who have demonstrated leadership in student affairs.

#### ALUMNI ASSOCIATION

The Alumni Association has among its goals the maintenance of relationships between the college and former students, the cultivation of enduring loyalty to the college, the provision of both general and specific support for college activities, and support of student assistance programs. The Association and the college join each year in orientation, homecoming, senior breakfast and award, Alumni Day, and athletic activities.

Each student graduating from Fresno State College automatically becomes a member of the Alumni Association from one year. Also, any student who has attended one or more semesters at Fresno State College may become a member. Annual dues are \$10; life memberships are \$100. A percentage of the funds accruing from memberships, as well as funds received from other sources, are used for scholarships and loans.

#### ESTIMATE OF EXPENSES

The basic expenses for attendance at Fresno State College for a year (two semesters) for students who live away from home will range from \$1,500 to \$2,000. These figures are exclusive of nonresidence tuition fee, but include an estimate of such personal items as clothes, laundry, and incidental expenditures. Students who live at home or share apartments with other students and commute to the campus are able to reduce their expenses considerably below the estimated figure. The cost of board and room may also be reduced by cooperative living arrangements or part-time work in exchange for room and board.

Board and room .....	from \$1200-\$1300
Materials and service fee .....	108
Association fee and health service fee.....	24
Health facilities fee.....	6
College Union Fee .....	20
Books and supplies.....	100 to 150

#### FACILITIES

##### FOOD SERVICE

The Fresno State College Association, Inc., operates the college cafeteria, snack bar, residence hall dining room, staff dining room, College Union coffee shop and automatic food service in the Cafeteria Building. The residence hall dining room and College Union coffee shop are open seven days per week. The Roundup, on Barstow near Maple Avenue, provides snack bar service and sells products of the college farm.

##### STUDENT HOUSING

##### College Residence Halls

The college can accommodate 1,258 students in the residence halls on campus. In addition to room and board the residence halls provide a supervised student life program. The majority of students are housed two to a room. A limited number of single rooms and some suite accommodations are also available to upper division students. A suite consists of three regular double rooms plus a living-study room and private bath. Student rooms are attractively furnished and provide adequate study and living facilities. All halls also provide special lounge areas, recreation rooms, study rooms, and laundry facilities. Linen service is provided, but students are required to furnish their own blankets and towels. Food service is provided by the college cafeteria. For information on residence hall costs, see *Fees and Expenses*.

Students living in the halls are encouraged to take part in group living through experience in self-government and participation in the social and intramural pro-

grams. All students assigned to the residence halls will be required to sign an agreement to live there for the entire college year and are required to observe residence hall rules.

Further information and applications for reservations may be obtained by writing to the Housing Office. Application forms are available after March 15. Students who are applying for accommodations in the halls must also file an application for admission to the college unless already enrolled. For further information on admissions see *Regulations and Procedures*.

#### **Off-Campus Housing**

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

The Housing Office will list any available housing provided the owner will agree to meet the minimum health and safety standards legally established by the City and County of Fresno, and provided the owner agrees not to discriminate on the basis of race, religion, or national origin. The college advises students not to rent facilities which are not listed with the Housing Office.

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

#### **Housing for Married Students**

The college does not maintain housing facilities for married students and their families. However, some low-cost housing is available to married students and their families through application to the Fresno City and County Housing Authority, 2520 E. Clinton Avenue, Fresno, California 93703.

The Student Housing Office also maintains a file of privately owned rentals, some of which are near the campus. These private rentals range from \$85 to \$200 per month depending on size, furnishings, and location.

#### **International Living Center**

The International Living Center, near the campus, is a complex of privately owned apartments which houses both foreign and American students interested in intercultural experience. It provides a unique opportunity for social, cultural, and academic interaction with students from all over the world. Students interested in this type of group living should write to the Director, Foreign Student Program, Fresno State College.

### **FINANCIAL ASSISTANCE**

#### **Scholarships and Grants**

About 300 scholarships and grants totaling approximately \$68,000 will be available for the 1970-71 academic year. About half of these scholarships, ranging from \$50 to \$1,000, are open to new students. The average scholarship is for \$190 for the year and covers the cost of material and service fees, student body fees, and a partial cost of books. Generally, upper division and specialized scholarships are in larger amounts.

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

Scholarships are announced late in May of each year. Students, both entering and enrolled, should file applications with the Director of Financial Aids prior to

March 1st. The applications of new students must be accompanied by transcripts of high school and all college work completed to date. Entering students who wish to be considered for awards of over \$100 must also submit a Parents' Confidential Statement through the College Scholarship Service.

Scholarship applicants should become familiar with the yearly *Financial Aids Bulletin* which lists the various scholarships and their requirements in detail. Requests for this bulletin, for application blanks, and for other information on scholarships should be addressed to the Director of Financial Aids. Students from San Joaquin Valley high schools and junior colleges may obtain information from their principals and counselors. A brochure giving information on financial aids for graduate students may be obtained from the Dean, School of Graduate Studies.

#### **Waivers of Nonresident Fees**

Certain categories of students who are not legal residents of California and would, therefore, normally be assessed a nonresident fee, may receive financial assistance in the form of waivers of part or all of this fee. (See *Schedule of Fees*.)

With verification by the Director of the Foreign Student Program, students holding appropriate visas are regularly assessed the reduced fee indicated in the *Schedule of Fees*.

With verification by the Executive Vice President, *children or spouses of California State College academic or administrative employees*, who are not yet legal residents of California, may be exempted from the nonresident fee.

With verification by the Dean of the School of Education, *certificated California school district employees* who are not yet legal residents of California, may be exempted from the nonresident fee if they are provisionally credentialed and working toward regular credentials, completing postponed requirements, or completing the fifth year required under the *Licensing of Certificated Personnel Law of 1961*.

On formal application to the Dean of the School of Graduate Studies, a limited number of *graduate students* who are not legal residents of California, but who demonstrate superior potential for master's degree study, may be granted waivers of the nonresident fee. Based on scholarship and need, these waivers are granted competitively to not more than twenty-five percent of nonresident graduate students. Any student accepting such a waiver is legally obligated to carry a study program of at least ten units each semester for which he receives the waiver. Because having a waiver of nonresident fee imposes a heavy unit load on the holder of the waiver, Fresno State College recommends that students lacking near-native competence in English not attempt to qualify for the waiver in the first semester of enrollment at the college. For information and application forms consult the Dean of the School of Graduate Studies.

#### **College Association and Foundation Loan Funds**

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

Applications for loans are processed through the Director of Financial Aids, Fresno State College, Fresno, California 93710. For detailed information, see the *Financial Aids Bulletin*.

#### **The Alumni Trust Council Loan Funds**

A number of loan funds are administered by the Fresno State College Alumni Trust Council, Inc. These loans, available in varying amounts, are repaid on terms arranged with the student at the time the loan is made. Further information may be

obtained from the Fresno State College Alumni Association Office on the campus. Loans granted from these loan funds may be repaid after graduation.

#### **National Defense Student Loan Program**

Fresno State College participates in the federal loan program which is provided for in Title II of the National Defense Education Act of 1958. Under this program needy undergraduate students in any field of study may borrow up to \$1,000 a year, for a maximum of \$5,000, and needy graduate students may borrow up to \$2,500 per year, for a combined maximum of \$10,000. Students carrying at least a one-half academic workload are eligible to receive loans. Students entering college for the first time as well as continuing students are eligible to apply for this type of loan.

No interest is charged until nine months after the borrower ceases to be at least a one-half time student. Interest at the rate of 3% of the remaining balance begins at the end of the nine-month grace period and the first payment is due three months later. Payments may extend for a period of not more than ten years, but will be at a rate of not less than \$15 per month.

*A borrower who becomes a full-time teacher in a public or private nonprofit elementary or secondary school or in an institution of higher education may have up to 50 percent of his loan cancelled. A borrower who becomes a teacher in a public or other nonprofit elementary or secondary school in which there is a high concentration of low income families or who becomes a teacher in special education (hard of hearing, mentally retarded, cerebral palsy, etc., classes) may have 15 percent of the loan cancelled for each year of teaching service up to 100 percent of the loan.*

Needy students with a superior academic background should consider the benefits of this program.

Inquiries should be directed to the Financial Aids Office, Fresno State College, Fresno, California 93710.

#### **Law Enforcement Assistance Loans and Grants**

Students working toward a degree in law enforcement or who are actively engaged in law enforcement and wish to return for further training, may apply for a Law Enforcement Assistance Loan of up to \$1800 a year. Loans will be made on a basis of financial need. A loan recipient may have 25% of the loan cancelled up to 100% of the loan for each year of full-time employment by a public, local, state, or federal law enforcement agency. Applications should be made to the Financial Aids Office by March 1st.

Grants of up to \$300 a semester may be made to assist full-time or part-time students in a graduate or undergraduate program who are employees of any publicly funded law enforcement agency and who are in college for professional improvement. Applications should be made to the Financial Aids Office by March 1st.

#### **Nursing Student Loans and Scholarships**

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 \$1500 an academic year or its equivalent, with an aggregate maximum of \$6000. Preference will be given to licensed practical nurses in selecting loan recipients. No interest is charged for periods up to 5 years while the borrower pursues a full-time course of study in a collegiate school of nursing leading to a baccalaureate or graduate degree in nursing, or is otherwise pursuing advanced professional training in nursing, or for a period of 9 months after leaving school. Interest then starts at 3% simple interest and the loan is repaid at not less than \$15 per month. A borrower who enters full-time professional nursing may have up to 50% of the loan cancelled at the rate of 10% for each year of full-time nursing or up to 100% at the rate of 15% for each year of full-time service by the borrower as a professional nurse in a public or other nonprofit hospital in an area determined, in accordance with regulations of the Secretary of the Department of Health, Education, and Welfare, to have a substantial shortage of such nurses at such hospitals. Interest and payments are deferred

for periods up to 3 years of active duty performed by the borrower as a member of the uniformed service or spent as a volunteer under the Peace Corps Act. Applications for these loans should be made by March 1st for the following year.

Students of exceptional financial need accepted for enrollment or enrolled as full-time nursing students will be eligible to receive assistance under this program. Scholarships may be awarded up to \$1500 a year, or the amount of the student's financial need, whichever is less. Applications for these scholarships should be made by March 1st for the following year.

#### **Federally Insured Student Loan Program**

Under this program a student may borrow up to \$1500 yearly from a commercial lending institution with repayment guaranteed by the state. If the adjusted family income is under \$15,000 a year, the federal government will pay the interest during the time the student is in school carrying a full-time load and during the grace period of 9 to 12 months after the student leaves school. Applications for loans are available in the Financial Aids Office.

#### **Work-Study Program**

Fresno State College participates in the federal Work-Study Program as provided in the Economic Opportunities Act of 1964. Students who qualify may be offered employment.

#### **Educational Opportunity Grants**

Fresno State College participates in the Educational Opportunity Grant Program as provided in the Higher Education Act of 1965. Students who qualify will receive grants ranging from \$200 to \$1000. Applications for grants may be obtained from the Financial Aids Office, Fresno State College. The application deadline is March 1.

#### **State and Federal Aid to Veterans**

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

Students planning to enroll and obtain benefits under Public Law 634 or 361 (War Orphans Education Act) should obtain a Certificate For A Program Of Education (VA Form VB22-5493) from the Veterans Administration and present it to the Director of Financial Aids at the time of registration.

Students planning to enroll and obtain benefits under Public Law 358 (Cold War GI Bill) should obtain a certificate for a Program of Education (VA Form 22-1993) from the Veterans Administration and present it to the Financial Aids Office at the time of registration.

The college is also approved for the training of disabled veterans (Public Law 894 or 815). Veterans who plan to attend the college on this program should notify the Veterans Administration of their intentions to enter Fresno State College well in advance of the registration period.

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

Information on the above educational programs at the college may be obtained by writing to the Director of Financial Aids.

#### **State Aid to the Handicapped**

The State of California, through its Vocational Rehabilitation Service, provides financial assistance to students, both civilian and military, who have physical or emotional disabilities. This assistance equals the necessary school expenses and may include an additional amount to help cover the cost of living. Students who may be entitled to this assistance should apply to the Vocational Rehabilitation Service, 2550 Mariposa, Fresno, California 93721.

**Graduate Assistantships**

A limited number of graduate assistantships are available to graduate students who are enrolled at least half time in the master's degree program and whose previous records show outstanding achievement in academic work, outstanding subject matter competence in the major field, and the special qualities necessary to the duties assigned. A beginning graduate assistant may receive a stipend of \$2200 for the academic year. Some assistantships may be for reduced time and carry prorated stipends. For information write to the Dean, School of Graduate Studies, specifying field of graduate study and any special abilities that might justify assignment as a graduate assistant.

**Residence Assistantships**

The college employs a number of students as assistants in its residence hall program. These positions are available to graduate students whose interest and background indicate competence in this type of work. The stipends vary, depending upon the work assignment. Generally they cover the cost of residence hall room and board. Interested graduate students may obtain further information from the Housing Coordinator.

## EDUCATIONAL SERVICES

*Note: Students enrolling in summer session or extension are not required to be officially admitted to the college. Graduate students see also School of Graduate Studies.*

### EXTENSION CLASSES

The college offers a wide variety of extension courses to assist in meeting the educational needs of the five-county service area. Courses are arranged in an area when the student demand is adequate to finance the instruction. Matriculation is not required for enrollment.

#### *Unit Restrictions*

Full-time teachers: Maximum enrollment limited to 6 units per semester.

Baccalaureate degree: Extension and correspondence credit limited to 24 units; transfer credit limited to 12 units.

Master's degree: Extension, transfer, and correspondence credit limited to a maximum of 6 units of the 30 units required for the degree. (Consult the Graduate Office for information concerning the use of specific courses.)

The college permanent records will show extension work only at the request of the matriculated student. For information regarding courses, course fees, and instructional costs, write to the Dean of Educational Services and Summer Sessions, Fresno State College.

### SUMMER SESSIONS

Summer sessions are conducted at Fresno State College beginning at the close of the spring semester. The second session includes classes held on the Fresno campus, at Visalia, and in other valley locations. Completion of a maximum of eleven weeks is possible in a single summer. Only one semester unit may be earned for each week of attendance except that, upon approval of the appropriate college authorities, additional units may be earned at the rate of one-half semester unit for each three units for which a student is registered in a three-week period.

The courses offered are planned to meet the requirements of baccalaureate and master's degree program, credential programs, the needs of in-service professional people, and to provide for intensive practical work in areas such as music, drama, and fields of education.

A Summer Session Bulletin is published each March. For information, write to the Dean of Educational Services and Summer Sessions, Fresno State College.

## PREPROFESSIONAL PREPARATION

Preprofessional programs are available for students who plan to transfer to another institution for the completion of professional curricula in such fields as dentistry, forestry, law, librarianship, medicine, optometry, occupational therapy, pharmacy, physical therapy, theology, and veterinary medicine. Certain of these programs are described below. Students should consult an adviser and the catalog of the school of their choice. Students planning to complete a preprofessional program and degree at Fresno State College must complete a major offered at this college.

### PREDENTAL

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

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

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

### PRELEGAL

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 college offerings (See *Degree Majors and Minors*). Law schools suggest courses, but not necessarily a major, in the following: written and oral English, American and English constitutional history, world history, accounting, elementary logic, mathematics, economics, political science, philosophy, science, and foreign language. For further information consult an adviser and law school catalogs.

### PRELIBRARIANSHIP

Accredited graduate schools of librarianship require a bachelor's degree for admission. A major in any subject is acceptable. A reading knowledge of 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. Students considering librarianship as a career should consult the prelibrary program adviser in the Library.

### PREMEDICAL

A student interested in preparing for medical school may begin by declaring his intent at the time he applies for admission to Fresno State College. He may show his areas of interest through such terms, for example, as premedical-sociology, premedical-zoology, or premedical-general on all application, admittance, and registration papers. A specific major, selected from any approved college major listed in the catalog, should be indicated as soon as possible and no later than the

sophomore year. (See *Degree Programs, Majors, and Minors.*) A premedical program does not constitute a major for purposes of graduation. Each premedical student will be assigned to a member of the college premedical advisory committee who will assist him in planning his program of courses and will advise him concerning preparatory procedures for application to medical school.

Requirements for admission to medical school vary considerably and change from time to time, but usually specify a well-balanced liberal education. Some aptitude and college training in science and English are essential in medicine. The minimum requirements in these subjects specified by most medical schools can be satisfied by the following: biology, 13 units; chemistry, 19 units; physics, 8 units; and English, 6 units. Calculus is now required by some medical schools and a reading knowledge of a modern foreign language is required by a few. Because of competition for admission to medical schools, a B- (2.7) average is highly desirable.

Both freshman and transfer students are advised to attend the premedical student orientation meeting scheduled prior to registration. (See the new-student orientation calendars.)

### PREPHARMACY

The first two years (prepharmacy) of a six-year pharmacy program may be completed at Fresno State College. 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, and either English or speech; one semester of botany; and additional elective courses which are specified in certain areas by some schools. Students may elect to complete more than 60 semester units before applying to pharmacy school. A personal interview may be required of applicants by some schools. For other information see pharmacy school catalogs and consult the prepharmacy adviser in the Department of Biology.

### PRETHEOLOGY

Students planning to attend a theological seminary or school may satisfy the undergraduate requirements at Fresno State College. Seminaries or schools which are members of The American Association of Theological Schools suggest that a pretheological student complete the following courses: English (literature, composition, speech), 6 units; philosophy, 3 units; natural sciences, 2 units; social sciences, 6 units; foreign language, 4 units in Latin, Greek, Hebrew, German, or French; religion, 3 units. The religion requirement may be satisfied at Fresno State College by appropriate sections of Phil 20T, 100T, 150T, Psych 170T, and by Soc 159. Additional courses are advised for students interested in religious education (see *Special Programs—Religious Studies*). The pretheological student is free to choose whatever major he desires. Pretheology faculty advisers will assist in course programming. For further information consult theological school catalogs.

### PREVETERINARY

Students planning to attend a school of veterinary medicine may satisfy the first two years of the program at Fresno State College. Recommended courses are Ag 10, AnSc 10, 11, 70, Bot 10, Chem 1A-B, 8, 104, 105, Phys 2A-B, Zool 1, 103, 160. The School of Agricultural Sciences is equipped to provide valuable experience with large animals through the student project program. Students desiring further information regarding the preveterinary curriculum should consult the Chairman of the Animal Science Department.

# DEGREES AND CREDENTIALS

## GENERAL REGULATIONS

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

It is contrary to college policy to grant to a student two bachelor's degrees or to grant a second bachelor's degree after the student has earned a comparable degree from an accredited institution. A student may, however, complete the requirements for a second major and have this fact noted on his transcript.

## GRADUATION AND COMMENCEMENT

The college holds one Commencement each year, at the end of the spring semester. Students who have completed the work for a degree in the previous summer or in the fall semester of that academic year are eligible to participate with those who complete their work in the spring semester. Students looking forward to meeting degree requirements should complete the following steps: (1) An application for a degree must be obtained and filed in the Evaluations Office at the beginning of the semester or summer session term during which the candidate expects to complete requirements. (See *Election of Regulations*.) Dates and deadlines for filing applications are listed on the *College Calendar*. All applications for degrees filed after the published date incur a fine of \$2.00. Failure to make application before the final deadline will delay the granting of the degree. (2) If the candidate has completed or expects to complete any work in Fresno State College Extension in satisfaction of the requirements for his degree, he must request the Records Office to transfer the record of such work to his permanent record.

The Evaluations Office, considering his prior and current work, will check the student's application for a bachelor's degree against requirements and will report to the student regarding his eligibility for the degree. In the case of graduate degrees, this clearance is given by the Graduate Office.

In order to be eligible for graduation, the student (1) must have been approved for graduation by the faculty, (2) must meet all financial obligations to the college, and (3) must complete with appropriate scholastic standing all courses required for the degree. Students who have completed these requirements are eligible to participate in the Commencement exercises. Graduates will receive their official diplomas by mail.

## POST-BACCALAUREATE CREDIT

Upper division units earned at Fresno State College in the semester or summer session in which the bachelor's degree is granted, provided they are not needed in any way for such a degree and provided the student is in good academic standing (not on academic probation) at the beginning of the final semester, will be listed on the student's record as *post-baccalaureate credit*. This will be possible provided the student is continuously in good academic standing from the beginning of that semester. A course in which a grade of "INC" or "IP" is received must be completed within two calendar weeks of the end of a semester or summer session in order that it may be counted toward the completion of degree requirements in that semester or session. Only credit for courses in which grades A, B, C, or P are earned may be counted. No course may have its credit divided between the baccalaureate and post-baccalaureate programs. If any units of a course are needed for the baccalaureate program, the entire course will be so counted.

Use of such credit for graduate degrees at Fresno State College requires special approval (consult Office of the Dean, School of Graduate Studies). Use of such credit for other purposes is to be determined by the appropriate authority.

## BACHELOR'S DEGREES

### EVALUATIONS

Transfer students are provided with an advanced standing evaluation as part of the admissions process. Upon completion of approximately 90 semester units, each student should request a degree evaluation from the Evaluations Office which will show all requirements completed and any remaining degree requirements. Due to staff limitations only one degree evaluation can be made for each student. Each student should keep his personal copy current.

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

### ELECTION OF REGULATIONS

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

### RESIDENCE REQUIREMENTS

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

For special residence requirements see *Public School Credentials* and *School of Graduate Studies*.

Extension credit and credit by examination may not be used to fulfill the minimum residence requirement. (*California Administrative Code, Title 5, Chapter 5, Section 4043.*)

### SCHOLARSHIP REQUIREMENTS

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

See also *School of Education—Application for Admission to Credential Programs* and *School of Graduate Studies*.

### SPECIAL COURSE REQUIREMENTS

Entering undergraduate students should note the following specific requirements:

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

In accordance with *Title 5 of the Administrative Code, Section 40404*, a student, in order to graduate, must demonstrate his competence with respect to the Constitution of the United States, American History, and in the principles of state and local government of California. This may be done by passing examinations or by

completing appropriate courses. (See *History Department—American History Requirement* and *Political Science Department—United States Constitution Requirement*.) Attention is called to the fact that under *Election of Regulations*, if a student chooses to graduate in accordance with courses stated in the catalog prior to the 1969-70 General Catalog, he must satisfy requirements for elementary algebra and plane geometry.

#### FOREIGN LANGUAGE REQUIREMENT

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

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

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

1. Students who have no foreign language credit from high school complete two years of satisfactory collegiate study in one foreign language.
2. Students who have high school credit or other experience in a foreign language and who wish to continue in the same language are required to take a foreign language placement test before enrolling in a foreign language class. Normally students beginning a new language will enroll in the 1A class. College credit may be earned in the class in which the student is placed. (See *Credit Allowance in Foreign Language*.)

Successful completion of a 2B foreign language course will be accepted as fulfillment of the foreign language requirement. Students taking the foreign language placement test and placing beyond the 2B level will be certified as having met the foreign language requirement. Consult the *Schedule of Courses* for dates of placement tests.

3. Students who do not have the prescribed high school or college credit may elect to meet the foreign language requirement by passing a competence examination. Usually only lower division courses in foreign language may be passed by examination. Credit by examination will be granted in foreign language only prior to the completion of the first upper division course in the same foreign language and may be obtained only in languages taught at the college. See the chairman of the Foreign Language Department.
4. Students seeking a second bachelor's degree major or a master's degree will be held for any foreign language requirement in the field.
5. Unless the major specifies the language to be used, a foreign student may offer English to meet the requirement, provided his native language is not English and provided he has come to this country primarily to pursue academic work and expects to return to his home after completing his course of study.

#### GENERAL EDUCATION

Through its general education program, Fresno State College attempts to ensure that each student shall have an opportunity to enlarge his awareness of areas which he may be unable to explore in depth but which are likely to enhance his appreciation of life experiences and his contributions to society.

Prior to 1969, the *California Administrative Code, Title 5* required for general education the completion of a specified number of units in certain subject matter areas, and also specified the completion of units in certain subjects. In September 1969, new requirements removed the specific subject requirements, modified the areas in which courses must be taken, and reduced the total number of units required. The General Education-Breadth Requirements provide for a minimum of 40 units with a minimum of 32 units in 4 named areas and 8 units of electives

determined by the college. Fresno State College interprets the requirements as outlined in this section; they are applicable to all undergraduate degree programs. See *School of Education* for information on somewhat different and additional general education requirements for credentials.

#### Transfer Students

*Title 5* provides that general education-breadth requirements completed at an accredited college by a student who transfers to Fresno State College shall be accepted to the extent stated in the certification provided by that college. Transfer students who have all of their general education requirements or a portion thereof certified as being complete and who change their majors after being admitted to Fresno State College are advised that additional general education courses may be required for graduation. This possibility arises from the fact that major requirements and general education requirements are exclusive of each other.

#### Selection of Courses

The general education program requires the student to exercise responsibility in the selection of courses. This selection should be made in such a way as to complement the major as well as to provide for an introduction to other areas and disciplines. The student is urged to consult with his adviser in constructing his program of studies to ensure that his selection of courses is compatible with his educational objectives.

General education requirements are in addition to degree major requirements; no units used to satisfy the requirements of the degree major may also be used to satisfy any part of the 40 units in the general education-breadth requirement. This regulation extends to those 4-unit art and philosophy courses which include 1 unit of composition credit. Only those students not majoring in the field in which such a 4-unit course is given may apply the composition credit toward the completion of the basic subject area requirement. Appropriate general education courses may be used toward completion of a minor or toward any additional requirements for the degree major.

Courses used to satisfy the state requirement in American history and in federal, state, and local government, as described in the section on *Special Course Requirements*, may not be used to satisfy general education requirements. Courses used to satisfy the graduation requirement in physical education may not also be used for general education credit. Although physical education courses are listed in the general education program, these courses cannot be counted for both general education credit and graduation credit. Students who are completing a credential program must satisfy a special composition requirement. (See *School of Education—General Education*)

### GENERAL EDUCATION REQUIREMENTS

At least 2 courses and a minimum of 6 units shall be selected in each of the first 4 areas to make a minimum 32 units. Additional electives shall be selected from the 5 areas to make a minimum of 40 units. The courses whose completion will satisfy each of the area requirements are:

#### Area I. NATURAL SCIENCES

Animal Science: An Sc 10

Anthropology: Anthro 1

Biology: Biol 10, 20, 120

Botany: Bot 1, 10

Black Studies: BLST 42

Chemistry: Chem 1A-B, 2A-B, 4A, 4B, 8

Communicative Disorders: CD 104

Geography: Geog 5, 7, 8, 109, 171, 182

Geology: Geol 1, 1L, 2, 10, 12A, 189, 189L

Physical Science: P Sci 10, 12, 21  
 Physics: Phys 2A-B, 4A, 4B, 22A-B, 55  
 Physiology: Physio 1, 22, 23  
 Plant Science: Pl Sc 30  
 Psychology: Psych 10  
 Zoology: Zool 1, 10

## Area II. SOCIAL SCIENCES

Anthropology: Anthro 2, 3, 102, 103, 104, 109, 114, 120, 122, 123, 124, 125, 126, 131, 150T  
 Black Studies: BLST 60, 80, 143, 160, 180  
 Business Administration: Bus Ad 18, 110, 118, 137, 151  
 Criminology: Crim 1, 120, 132, 153  
 Economics: Econ 1A, 1B  
 Geography: Geog 3, 4, 103, 104, 116, 120, 177  
 History: Hist 3, 6, 7, 8, 167, 168, 176, 177  
 Home Economics: H Ec 39, 131  
 International Studies: IS 93  
 Journalism: Jour 182, 184  
 La Raza Studies: LRST 5A  
 Marketing: Mkt 100  
 Political Science: Pol Sc 1, 10T, 120, 121, 122, 151  
 Psychology: Psych 60T, 145, 160T  
 Recreation: Rec 60  
 Social Welfare: S Wel 20  
 Sociology: Soc 1, 2, 25, 111, 112, 130, 143, 145, 151, 152, 155, 157, 159, 162, 163, 169  
 Speech: Spch 7, 8, 142, 160

## Area III. HUMANITIES

*Note: In Art 5, 6, and 105T, Engl 20, and Phil 20T and 100T three units will be applied in this area; one unit of each course will be applied in Area IV.*

Art: Art 1, 5 (3 units), 6 (3 units), 20T, 30, 60, 105T (3 units), 160  
 Black Studies: BLST 21, 25, 121  
 Communicative Disorders: CD 101  
 Drama: Drama 15, 22, 33, 34, 62, 115, 122, 137, 138, 139, 184, 185, 186, 187  
 English: Engl 20 (3 units), 41, 43, 44, 50T, 112-116, 146-148, 150-156, 161, 163, 164, 169T, 175T  
 French: Fren 109A-B, 110A-B, 111A-B, 112A-B, 118A-B, 148A-B, 160T  
 German: Germ 112A-B, 114, 116A-B, 118A-B, 146T, 160T  
 Greek: Grk 148  
 History: Hist 1, 110, 111, 112, 121, 131, 132  
 La Raza Studies: LRST 30, 31, 44, 130B  
 Latin: Latin 131, 132, 141, 142, 148  
 Linguistics: Ling 134, 135, 137, 138  
 Music: Music 9, 76T, 101T, 102T, 110T, 176T  
 Philosophy: Phil 20T (3 units), 100T (3 units)  
 Physical Education: PEC 11, 16, 17, 18, 52, 53, 58  
 Radio-Television: R-TV 40, 128, 140, 143, 160, 173  
 Russian: Russ 110A-B-C, 118A-B, 148A-B  
 Spanish: Span 103A-B, 104A-B, 105, 106, 107, 108, 148A-B  
 Speech: Spch 146, 148

## Area IV. BASIC SUBJECT

*Note: In Art 5, 6, and 105T, Engl 20, and Phil 20T and 100T one unit will be applied in this area; three units will be applied in Area III.*

Art: Art 5 (1 unit), 6 (1 unit), 105T (1 unit)  
 Black Studies: BLST 30

Business Administration: Bus Ad 62A-B, 65  
 English: Engl 1, 20 (1 unit)  
 French: Fren 1A-B, 2A-B, 50A-B  
 Geography: Geog 3EC, 4EC, 5EC, 7EC, 99EC  
 German: Germ 1A-B, 2A-B, 50A-B  
 International Studies: IS 10, 21  
 La Raza Studies: LRST 3A, 4A  
 Latin: Latin 1A-B, 3A-B  
 Library Usage: Lib 11, 101  
 Linguistics: Ling 142, 143  
 Mathematics: Math 29, 30, 40, 41, 51, 71, 72, 75, 76, 103, 141  
 Office Administration: O Ad 105  
 Philosophy: Phil 20T (1 unit), 25, 100T (1 unit)  
 Psychology: Psych 25  
 Russian: Russ 1A-B, 2A-B, 50A-B  
 Spanish: Span 1A-B, 2A-B, 50A-B  
 Speech: Spch 3

#### Area V. ELECTIVES

Animal Science: An Sc 70  
 Black Studies: BLST 34, 50, 70, 81, 122, 131, 133, 144, 151, 161, 181, 182  
 Business Administration: Bus Ad 8, 10, 50, 143, 144, 162, 165, 180  
 Drama: Drama 188T  
 Enology: Enol 15  
 Food Science: FS 1  
 History: Hist 2, 136, 141, 142, 145, 146, 147, 171, 172, 173, 174, 178, 183  
 Health Science: H Sc 90  
 Home Economics: H Ec 40, 42, 132  
 Honors: HP 170  
 Industrial Arts: IA 133, 162, 177, 179  
 Journalism: Jour 1, 2, 17, 113, 185, 186  
 La Raza Studies: LRST 155  
 Linguistics: Ling 140T, 144  
 Marketing: Mkt 140, 150  
 Music: Music 4T, 117T  
 Philosophy: Phil 150T  
 Physical Education: PEM, C, W, SC, SM, SW series, except PEC 11, 16, 17, 18, 52, 53, 58  
 Physical Science: P Sci 106  
 Plant Science: Pl Sc 10, 15, 25, 40  
 Psychology: Psych 66, 111, 170T  
 Radio-Television: R-TV 188T  
 Speech: Spch 167

#### BACHELOR OF ARTS DEGREE

The bachelor of arts degree requires a minimum of 124 semester units, of which at least 40 must be upper division. Upper division courses taken before the student has earned 45 units may not be applied on this 40-unit requirement.

General degree requirements, general education requirements, and one major must be satisfactorily completed. Units used to meet the general education requirements may not apply on the degree major. If a second concurrent major is desired, general education courses accepted for the first major may be used to satisfy requirements of the second major. Electives may be used to fulfill or to apply on requirements for a credential or for one or more minors, or they may be free electives selected with help of an adviser. A minor is not required for graduation, but students are encouraged to study departmental offerings and consult their advisers concerning the advisability of using one or more minors to complement

their college programs. A graduating senior may request that the completion of any approved minor be recorded on his transcript.

### BACHELOR OF SCIENCE DEGREE

Depending on the major field, the bachelor of science degree requires a minimum of 124 to 132 semester units except in engineering, which requires from 128 to 136 semester units. The general degree requirements, general education requirements, and one major must be satisfactorily completed. Courses used to meet the general education requirement may not apply on the major. If a second major is taken concurrently or consecutively, general education courses accepted for the first major may be used to satisfy requirements of the second major.

### BACHELOR OF VOCATIONAL EDUCATION DEGREE

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

### DEGREE PROGRAMS, MAJORS, AND MINORS

Fresno State College offers the majors indicated below for the bachelor of arts (BA), bachelor of science (BS), bachelor of vocational education (BVEd) degrees, and offers programs leading to the master of arts (MA), master of science (MS), master of business administration (MBA), master of city and regional planning (MCRP), and master of social work (MSW) degrees. Minors are also offered in the areas listed below, with the exception of those marked with an asterisk (\*). Requirements for approved undergraduate majors and minors are listed in the appropriate department or school sections of the *General Catalog*; for master's degree programs, see *Graduate Bulletin*.

Accounting * .....	BS	Electrical and electronics engineering * .....	BS
Aerospace studies .....	minor only	English * .....	BA, MA
Agribusiness * .....	BS	French .....	BA, MA
agricultural mechanics, animal science, business, plant science		Geography .....	BA, MA
Agricultural engineering * .....	BS	elementary education	
Agriculture .....	BS, MS	Geology .....	BA, MA
agricultural inspection and services, agricultural mechanics, agricultural science (animal science, plant science), agronomy, animal husbandry, dairy science (dairy husbandry) (dairy industry), general agriculture (general, food science), horticulture, ornamental horticulture, poultry science, viticulture and enology (enology) (viticulture)		German .....	BA, MA
Anthropology .....	BA	Health science .....	BA, MS
Art .....	BA, MA	health and safety, public health, sanitation	
Biology .....	BA, MA	History .....	BA, MA
Botany * .....	BA	Home economics .....	BA, MS
(see Biology MA)		Industrial arts .....	BA, BVEd, MA
Business .....	MS	Industrial engineering * .....	BS
Business administration * .....	BS, MBA	Industrial technology * .....	BS
Chemistry .....	BA, BS, MS	manufacturing industries, construction	
Child development * .....	BS	Journalism .....	BA
City and regional planning .....	MCRP	advertising, news-editorial, public relations, R-TV news communication, technical writing and editing	
Civil engineering * .....	BS	Latin .....	minor only
Criminology * .....	BS, MS	Latin-American studies * .....	BA
corrections, law enforcement		Linguistics .....	minor, MA
Drama .....	BA	Marketing * .....	BS
(see Speech MA)		Mass Communications .....	MA
Economics .....	BA, MA	printed media, electronic media	
Education * .....	BA, MA	Mathematics .....	BA, MA, MS
		Mechanical engineering * .....	BS
		Microbiology * .....	BA, BS, MA
		(see Biology MA)	

Music ..... BA, MA I, II, III	Radio-television broadcasting ..... BA (see Speech MA)
Nursing * ..... BS, MS	Recreation ..... BS
Office administration ..... BS	Russian ..... BA
Performing arts administration ..... minor only	Social science * ..... BA
Philosophy ..... BA	Social welfare * ..... BA
Philosophy-psychology * ..... BA	Social work * ..... MSW
Physical education—men ..... BA, MA	Sociology ..... BA
Physical education—women ..... BA, MA general, dance I and II	Spanish ..... BA, MA
Physical science ..... minor only	Special ..... BA (see below)
Physics ..... BA, BS, MA, MS	Special Education ..... MA
astronomy	Speech ..... BA, MA public address-communication, communica- tive disorders
Political science ..... BA, MA	Zoology * ..... BA (see Biology MA)
Psychology ..... BA, MA	
Public administration ..... BA (see Political science MA)	

### SPECIAL MAJOR FOR THE BACHELOR OF ARTS DEGREE

The special major for a bachelor of arts degree provides an opportunity for students to engage in an individualized course of study leading to a degree when legitimate academic and professional goals are not accommodated by standard degree majors. The special major consists of correlated studies in two or more fields. It is not intended as a means of bypassing normal graduation requirements or a means by which students may graduate who fail to complete the degree major in which they are enrolled.

The special major must be approved by the Academic Vice President, with approval based upon a case-by-case justification. A candidate for a special major must have more than one full year of academic work (more than 30 units) still to be completed to meet minimum degree requirements. The minimum requirement for the special major is an approved program of at least 24 semester units of upper division work; units applied to satisfy general education requirements may not be counted.

A student requesting a special major must: 1) Prepare a statement giving his reasons for desiring a special major in terms of his academic and professional goals and why he cannot meet these goals through a standard major; 2) Develop a specific list of courses which would, in his opinion, lead to the academic and professional goals stated above; 3) Secure the signed approval of the department chairman in the areas from which the special major courses are drawn, and 4) Submit the foregoing material to the Office of the Academic Vice President for final approval.

### PUBLIC SCHOOL CREDENTIALS

Fresno State College is authorized by the State Board of Education to recommend candidates for public school service credentials in elementary and secondary teaching, administration, supervision, pupil personnel services and special education. Courses leading to specializations in administration, supervision, and junior college teaching are also offered.

All students must meet certain minimum requirements prior to admission to a credential program. The requirements are listed in the *School of Education*. Holders of bachelor's degrees must complete a minimum of 15 semester units of postgraduate work in residence at Fresno State College to qualify for a college recommended teaching credential. Candidates for the administration, supervision, and pupil personnel services credential must complete at least one half of the required postgraduate work in residence.

Admission to Fresno State College does not in itself include admission to credential programs, nor does it determine the catalog by which admission and

program requirements shall be evaluated. Students planning to prepare for school service credentials, see *School of Education*.

The revised credential structure under the *Licensing of Certificated Personnel Law of 1961*, effective January 1, 1964, reduces the number of public school credentials to five basic types (*California Education Code, Section 13187*). Candidates for a standard teaching credential must complete major and minor requirements in accordance with one of the options described under *School of Education*. For a detailed outline of major-minor options, see *School of Education—Major and Minor Requirements for Standard Teaching Credentials*.

The *California Education Code, Section 13188*, presently defines academic subject matter areas as the natural sciences, the social sciences, the humanities, mathematics, and the fine arts. To determine whether a proposed major or minor field is included within the requirement that it be commonly taught in the public schools, consult the school or department in which the subject is offered.

For requirements for the following credentials see the *School of Education*:

- The Standard Teaching Credential With a Specialization in Elementary Teaching, Secondary Teaching, or Junior College Teaching.
- The Standard Designated Subjects Teaching Credential.
- The Standard Designated Services Credential.
- The Standard Supervision Credential.
- The Standard Administration Credential.

# COURSES OF INSTRUCTION

## ORGANIZATION

Courses of instruction are offered as indicated by the schools and departments shown below; designations, descriptions, and unit values appear in the school and department sections of the Catalog. For innovative course groupings see *Special Programs, School of Graduate Studies—Interdisciplinary Graduate Study, and Ethnic Studies*.

### *School of Agricultural Sciences*

Agricultural Industry and Education  
Department  
Agriculture (Ag)  
Agricultural Education (AgEd)  
Agricultural Mechanics (AgM)  
Dairy Industry (DI)  
Enology (Enol)  
Food Science (FS)  
Animal Science Department (AnSc)  
Plant Science Department (PlSc)

### *School of Arts and Sciences*

Anthropology Department (Anthro)  
Art Department (Art)  
Biology Department  
Biology (Biol)  
Botany (Bot)  
Entomology (Ent)  
Microbiology (Mcrb)  
Physiology (Physio)  
Zoology (Zool)  
Chemistry Department (Chem)  
Economics Department (Econ)  
English (Engl)  
Ethnic Studies  
Black Studies (BLST)  
La Raza Studies (LRST)  
Native American Studies (NAS)  
Oriental American Studies (OAST)  
Foreign Language Department  
Chinese (Chin)  
French (Fren)  
German (Germ)  
Greek (Grk)  
Italian (Ital)  
Japanese (Jap)  
Latin (Lat)  
Portuguese (Port)  
Russian (Russ)  
Spanish (Span)  
Geography Department (Geog)  
Geology Department (Geol)  
History Department (Hist)

Linguistics Department (Ling)  
Mathematics Department (Math)  
Music Department (Mus)  
Philosophy Department (Phil)  
Physical Education and Recreation  
Department  
Physical Education (PE)  
Recreation (Rec)  
Physical Science (P Sci)  
Physics Department (Phys)  
Political Science Department  
(Pol Sc)  
Psychology Department (Psych)  
Social Science  
Sociology Department (Soc)  
Speech Arts Department  
Communicative Disorders (C D)  
Drama (Drama)  
Radio-Television Broadcasting  
(R-TV)  
Speech (Spch)  
Urban and Regional Planning Depart-  
ment (URP)

### *School of Business*

Accounting (Acct)  
Business (Bus)  
Business Administration (Bus Ad)  
Marketing (Mkt)  
Office Administration (O Ad)  
Accounting and Quantitative Studies  
Department  
Finance and Industry Department  
Management and Marketing  
Department  
Office Administration Department

### *School of Education*

Elementary Education Department  
(E Ed)  
Secondary Education Department  
(S Ed)  
Advanced Studies Department  
(A Ed)

*School of Engineering (Engr)*Home Economics Department  
(H Ec)*School of Graduate Studies*Computer Sciences (C Sc)  
Mass Communications (M Com)  
Rehabilitation Counseling (R C)Industrial Arts and Technology  
Department (IA)  
Journalism Department (Jour)  
Nursing Department (Nurs)*School of Professional Studies*Aerospace Studies Department (A S)  
Allied Health Studies  
Criminology Department (Crim)  
Health Science Department (H Sc)*School of Social Work*Social Welfare Department (S Wel)  
Graduate Department of Social  
Work (S W)**COURSE NUMBERING SYSTEM****DEFINITIONS AND ELIGIBILITY****Lower Division Courses**

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

**Upper Division Courses**

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

**Graduate Courses**

Numbers 100G-199G designate courses which combine and intensify material normally offered in undergraduate courses. Designed for use in the first year of two-year master's degree programs, these courses are open only to graduate students.

Numbers 200-299 designate *graduate courses* designed for use on masters' degree programs. They are open only to holders of bachelor's degrees and to second-semester seniors with superior preparation and ability who are admitted by the instructor. Courses in the 200 series are generally conducted as seminars, requiring original research; some are lectures based upon instructors' research; all involve originality, initiative, and independence of judgment. Course number 290 designates *independent study* at the graduate level; 299, a master's degree thesis or project. See *Regulations and Procedures; Degrees and Credentials*; and specific course prerequisites. When 200 series courses are taught by extension and carry the designation E after the number, they are counted as upper division courses (100 series) in master's degree programs. For limitation of credit in these courses, see *School of Graduate Studies—Program Requirements*.

Numbers 300-399 designate courses designed to meet professional needs not served by established undergraduate or graduate offerings. Completion of the bachelor's degree and professional competence in their professional service is assumed for students enrolling in these courses. Although primarily for purposes other than use on degrees and credentials, in individual cases and subject to prior departmental approval, 300 series courses may be applied toward degree or credential programs for which the course work is appropriate. If applied on credential programs, the approval of the Dean of the School of Education is required. Only the titles appear in the *General Catalog*; for course descriptions, see *Extension and Summer Session Bulletins*.

**OTHER DESIGNATIONS**

Symbols appearing after a course number have the following reference:

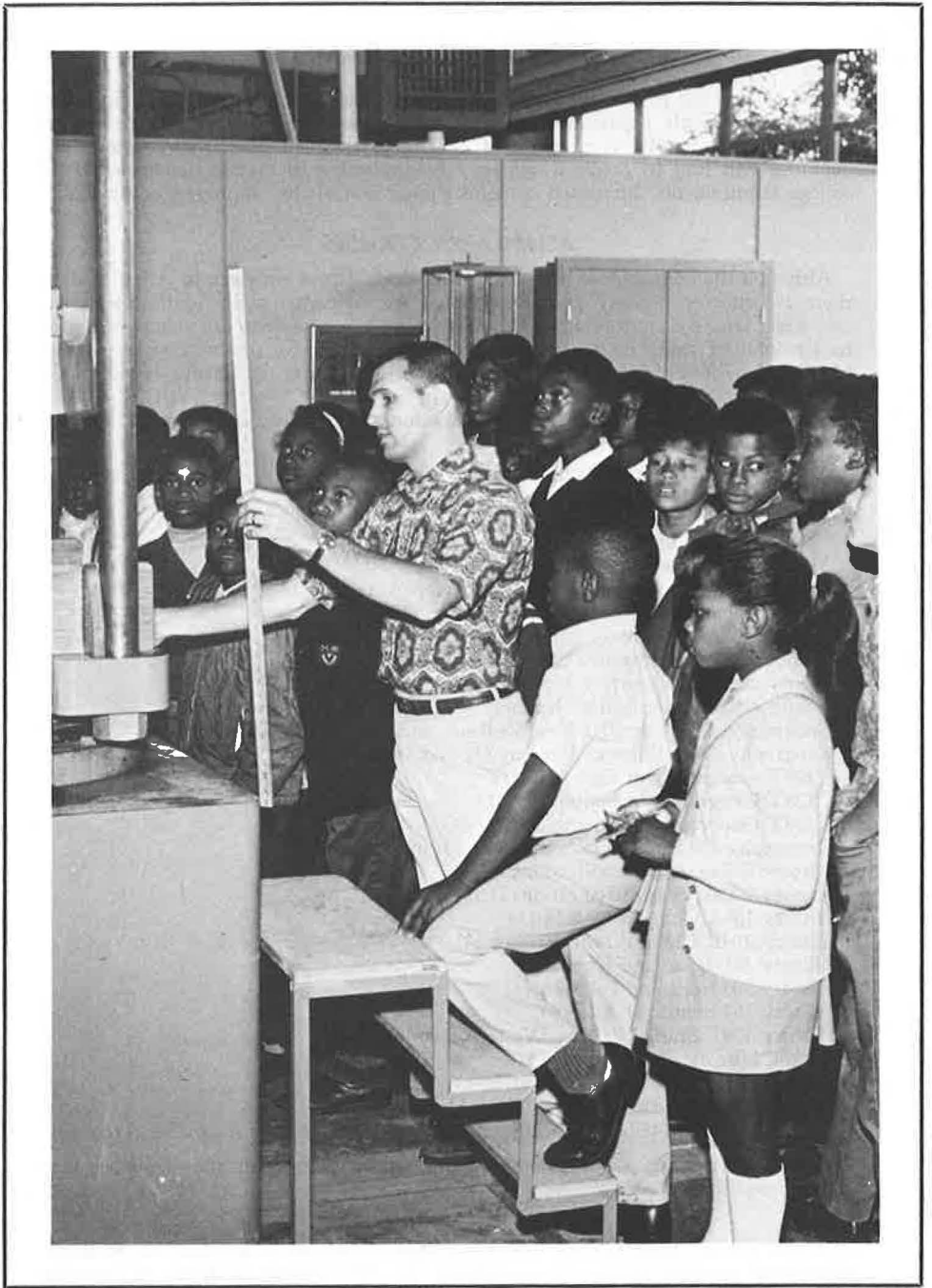
- A-B, a two-semester course taken in sequence;
- A, B, listed as separate courses, may be taken independently;
- E, extension courses, used on transcripts, other documents, and *Extension Bulletin*;
- EC, a course offering one unit of general education composition credit, taken concurrently with the related subject matter course;
- F, a field course;
- G, an intensive upper division course limited to graduate students;
- HD, HP, honors courses;
- ISA, overseas international program course;
- ISC, campus international program course;
- L, laboratory associated with another course;
- ML, Moss Landing Marine Laboratories course;
- S, course listed only in *Summer Sessions Bulletin*;
- T, topics course, varied area subject matter, repeatable for credit;
- EXP, experimental course listed in the *Schedule of Courses* and *Experimental College Bulletin*.

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

*Course prerequisites* are listed at the beginning of the course description; students should check prerequisites before enrolling.

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





**SPECIAL PROGRAMS**

## SPECIAL PROGRAMS

The college has certain programs whose organization or administration does not fall within a single department. These programs are described or referred to in this section. Successful completion of courses in these programs, with minor exceptions, will lead to credit which may be applicable to certain departmental or college requirements. Interested students should consult the appropriate advisers.

### ASIAN AREA COURSES

Although the college does not offer a bachelor's degree program in Asian studies, there are courses in many disciplines which are concerned with South, Southeast, and East Asia. By appropriate selection of electives a student can secure a useful background of study in this area as preparation either for graduate study or for his vocation. The faculty advisers for this program are: S. Chang, History; G. Nasse, Geography; and S. M. Oppen, Art.

The following list includes the upper division and graduate courses most directly concerned:

- Anthropology 103 Acculturation (3)
- Anthropology 123 Civilizations of Southeast Asia (3)
- Art 105T Topics in Art History (4)
  - 105T History of Chinese Art (4)
- Art 260 Seminar in Art History (3)
- Economics 114 Economics of Underdeveloped Areas (3)
- Foreign Languages
  - Chinese 1A Elementary Chinese (4)
  - Chinese 2A Intermediate Chinese (4)
  - Japanese 1A Elementary Japanese (4)
  - Japanese 2A Intermediate Japanese (4)
- Geography 126 Australia, New Zealand, and the Pacific Islands (3)
- Geography 128T Eurasian Regions (3; max total 9)
  - 128T Geography of East Asia (3)
  - 128T Geography of South Asia (3)
  - 128T Geography of Southeast Asia (3)
- Geography 270 Seminar in South Asia (3; max total 6)
- History 6 East Asian Civilizations I (3)
- History 7 East Asian Civilizations II (3)
- History 104A China 1800-1928 (3)
- History 104B China 1928 to Present (3)
- History 105 Japan and Korea (3)
- History 106 India and Pakistan (3)
- History 107 Southeast Asia (3)
- History 109T Studies in Non-Western History (1-3)
  - 109T History of Buddhism (3)
  - 109T History of Taoism (3)
- History 205T Seminar in Far Eastern History (3)
- Political Science 145T Area Studies in Asia (1-4; max total 8 if no area repeated).

Consult the appropriate departmental section of this catalog for course descriptions and prerequisites.

### EXPERIMENTAL COLLEGE

Within Fresno State College the Experimental College is designed to facilitate educational experimentation. It encourages the development of kinds of learning which may involve departures from current methods of instruction and scheduling, unit allocations, discipline boundaries, and relations between students and instructors.

The program is under the supervision of an Experimental College Committee which is composed of both students and faculty. Courses instituted under it may not continue longer than three years. On the basis of an evaluation within that time, for which the committee and relevant departments are responsible, a course must either be accepted for catalog listing by regular procedures or be dropped.

Proposals for the program may be initiated by faculty members, by departments, by members of the administration, and by students. The committee gives priority to those proposals which appear to have the greatest merit as potential contributions to the total program of the college and which show some special need for immediate implementation or preliminary testing.

Experimental College courses count toward the unit requirement for graduation. Applicability to major and general education requirements is determined by the appropriate agency in each case.

Courses in the Experimental College appear in the *Schedule of Courses* with an EXP prefix. Normally, a special bulletin published each semester will provide course descriptions and other information concerning the program since they do not appear in the *General Catalog* until they are accepted as regular course offerings.

### HONORS PROGRAM

Fresno State College has replaced the honors program begun in 1964 with a new one. It is designed to provide the superior undergraduate student with additional opportunities for the challenging academic experiences provided by interaction with superior students from other disciplines, consideration of broad and interdisciplinary topics of current and classical interest, and the opportunity to partially satisfy the requirements of his major through special work in his department which has been adapted to his advanced interests and capabilities.

The honors program provides for graduation with departmental honors for students who complete a 12-unit departmental program and, in addition, complete at least two interdisciplinary honors seminars for a total of at least three units. Admission to the program is limited to students having a grade-point average of 3.25 or better and who have completed 45 units. These limitations may be waived in exceptional cases. Enrollment in the interdisciplinary seminars is by application to the Coordinator of the Honors Program. Enrollment in a departmental program is by application to the Department Chairman. Consult the Coordinator for further information.

### HONORS SEMINARS

*Note: Honors seminars will meet requirements of general education, Area V.*

#### **HP 170. Honors Seminar (1; max total 3)**

Prerequisite: permission of the Honors Program Coordinator. A seminar for honors students, designed to explore the interdisciplinary aspects of general topics which are selected each semester by the Honors Committee. Specific topics will be listed in the *Schedule of Courses*.

### DEPARTMENTAL HONORS PROGRAM

Programs in participating departments will become available in the 1971-72 academic year and will consist of 12 units of special work replacing a portion of the major requirements. This work will emphasize the student's independent pursuit of knowledge and a working association with a faculty member of the department. Special seminars or sections of existing courses may be used to augment independent work. Admission will be based upon an evaluation of the student's ability to undertake independent and advanced work.

## INTERNATIONAL PROGRAMS

The college offers two programs under this heading. A campus program is intended for students who are admitted to the college from foreign countries but who had their education in some other language than English. The California State Colleges offer an overseas program which provides an opportunity for American students to study abroad.

**CAMPUS PROGRAM**

The International Program (Campus) provides courses intended to help the foreign student whose previous instruction has been in a language other than English gain adequate skill in the use of the English language and sufficient familiarity with American customs and tradition to obtain maximum benefit from his experience at an American college. The following program is required of all entering foreign students, unless excused from part or all of it by the Admissions Committee on the advice of the persons concerned with the instruction and administration of the program. This decision will be based on a consideration of test scores and other data supplied by the student with his application. (See *Regulations and Procedures—Entrance Examinations*) *All foreign students should, therefore, make application early enough so that they can attend the summer orientation program if they are admitted to the college and are not excused from that part of the program.* After arrival at the college, examinations and an interview may lead to the student's being excused from certain courses.

*Summer Orientation Program:* An eight-week program, to terminate about September 1, consists of intensive work in the English language and a general orientation to American society. It consists of ISC 1, 2, and 3 as described below.

*First Semester Program:* Successful completion or waiver of the Summer Orientation Program will lead to enrollment in ISC 10, 21, and 93 in the first semester of residence. With permission of his adviser, a student may enroll in other regular courses.

*Other Undergraduate Courses:* Two other English language courses, ISC 110 and 121, will be taken during the second semester of residence unless the foreign student is advised that they are unnecessary for him. During his last year in college he will enroll in ISC 195.

*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 above-listed undergraduate courses, including the Summer Orientation, when considered necessary by his advisers. Application for admission should be made early enough to permit attendance at the Summer Orientation Program, if it is required. Graduate students may elect to take ISC 193, but will be required to enroll in ISC 293 and 295.

**COURSES (ISC)****1. Oral English (2)**

Prerequisite: permission of instructor. The phonemic contrasts, stress, and intonation of American English. Sentence pattern drills. Offered in summer only.

**2. Reading and Composition for Foreign Students (2)**

Prerequisite: permission of instructor. Practice in reading for comprehension, vocabulary development, and speed. Short compositions, spoken and written, based on reading assignments. Offered in summer only.

**3. Orientation to American Society (2)**

Prerequisite: permission of instructor. Examination of American customs and institutions designed to give the foreign student familiarity with and deeper insight into his new environment. Includes sections on social relations, the family, the community, the arts, religion, education, government, and the economy.

**10. English Composition for Foreign Students (3)**

Prerequisite: permission of instructor. Study and practice of complex sentence types, including embedding, permutation, expansion, etc. Vocabulary development; critical reading; paragraph and essay composition.

**21. Introduction to Public Speaking for Foreign Students (3)**

Prerequisite: permission of instructor. Advanced drills in articulation, intonation, rhythm, and word and sentence stress. Speech composition including organization, delivery, and support.

**30. Basic Typing for Foreign Students (2)**

Prerequisite: permission of instructor. Development of basic typewriting techniques. Use of the typewriter as a communication tool.

**93. Problems in Contemporary American Society (3)**

Prerequisite: permission of instructor. Examination of problems in contemporary American society designed to familiarize the foreign student with political and social ideas and ideological conflicts he will encounter in his new environment. Individual student projects.

**110. Advanced Composition for Foreign Students (3)**

Prerequisite: permission of instructor. Research techniques; rhetorical theory; critical reading.

**121. Advanced Public Speaking for Foreign Students (3)**

Prerequisite: permission of instructor. Advanced practice in expository and persuasive speaking. Analysis of propaganda. Study of techniques of persuasion; group discussion.

**193. Introduction to American Culture (3)**

Prerequisite: permission of instructor. Analysis and discussion of major figures and movements which represent the American tradition in social-intellectual history, literature, and the arts (painting, architecture, jazz, folk, and concert music).

**195. Interpretation and Analysis (3)**

Open only to undergraduate students from abroad. Prerequisite: permission of instructor. Individual analysis of the knowledge and skills of the student's field of study; application to problems in the country in which the knowledge and skills are to be applied. Scholarly paper.

**GRADUATE COURSES****293. Contemporary America (3)**

Open only to students from abroad. Prerequisite: graduate standing and permission of instructor. Seminar including studies from areas of anthropology, economics, history, literature, political science, psychology, sociology, and related fields. (See *School of Graduate Studies*.)

**295. Interpretation and Analysis (3)**

Open only to graduate students from abroad. Prerequisite: permission of instructor. Individual analysis of the knowledge and skills of the student's field of study; application to problems in the country in which the knowledge and skills are to be applied. Scholarly paper. (See *School of Graduate Studies*.)

**INTERNATIONAL PROGRAM (OVERSEAS)**

The California State Colleges offer academic year programs of study at a number of distinguished universities abroad. For 1970-71 the cooperating universities are: University of Aix-Marseille, France; Free University of Berlin and University of Heidelberg, Germany; The Hebrew University of Jerusalem and Tel Aviv University, Israel; University of Florence, Italy; Waseda University, Tokyo, Japan;

University of Granada and University of Madrid, Spain; University of Stockholm and University of Uppsala, Sweden; National University, Taiwan. Academic work successfully completed at the cooperating universities abroad may be applied toward the degree requirements of the college in accordance with college regulations.

A selection among applicants from all California State Colleges is made on the basis of academic, linguistic, and personal qualifications. The criteria are:

- (a) Upper division or graduate standing by the beginning of the academic year abroad;
- (b) Academic achievement;
- (c) Proficiency in the language of instruction;
- (d) Faculty recommendations.

Cost to the student includes round trip transportation from San Francisco to the host university, room and board for the academic year, and medical insurance. Incidental expenses, individual travel, etc., must be borne by the participant. In 1970-71 these costs are: France, Germany, Spain, \$2,300; Israel, Taiwan, \$2,000; Italy, Japan, Sweden, \$2,500. Payments may be scheduled throughout the year.

Programs in Israel, Italy, Japan, Sweden, and Taiwan do not require previous linguistic preparation; applicants for all other programs must demonstrate adequate facility in the language of instruction at the host university.

Application for the 1971-72 academic year should be made early in the fall semester 1970. Detailed information may be obtained at the office of the Dean of Students, or by writing to the Office of International Programs, The California State Colleges, 1600 Holloway Avenue, San Francisco, California 94132.

#### **COURSES (ISA)**

Fresno State College students under the California State Colleges International Programs register concurrently at Fresno State College and at the host institution abroad, with credit assigned in terms of Fresno courses. Undergraduate students who find appropriate study opportunities at the host institution but no counterpart course at Fresno State College may use Independent Study (190), and International Study Abroad 92 or 192. Graduate students may use Independent Study (290), and International Study 292.

#### **92. Projects in Study Abroad: (Subject) (1-3; max total 6)**

Open only to students in California State Colleges International Programs. Study undertaken in a university abroad under the auspices of the California State Colleges.

#### **192. Projects in Study Abroad: (Subject) (1-3; max total 6)**

Open only to students in California State Colleges International Programs. Study undertaken in a university abroad under the auspices of the California State Colleges.

#### **292. Projects in Study Abroad: (Subject) (1-3; max total 18)**

One- to three-unit registrations. Prerequisite: admission to master's degree program; written plan approved by Fresno State College instructor, department chairman, Dean of the School of Graduate Studies. May require one or more papers and oral or written examination on student's return, pending which In Progress (IP) grade will be recorded.

#### **LATIN AMERICAN STUDIES**

The Latin American Studies major and minor are designed to meet the needs of students interested in an academic interdisciplinary major, those who wish to broaden their studies in a given discipline with a background in the Latin American area, and those who are interested in obtaining a teaching credential. Students following this program will be assigned to a faculty adviser in the Foreign Language or History Department.

Students who wish to major or minor in Latin American Studies must meet the following foreign language prerequisites: Port 1A-B (6 units); Span 2A-B (6 units), required for emphasis on Spanish America; and Port 2A-B (6 units), required for emphasis on Brazil. Lower division prerequisites for required courses listed below include Hist 2, 3, or 8, Anthro 2, and Pol Sc 1 or 2.

**MAJOR**

	<i>Units</i>
Anthro 120, Geog 142, 143 .....	9
Hist 160A-B, 162A-B-C, 165, 166 or 169T, Pol Sc 146T.....	12
Span 104A-B .....	6
Approved Latin American Studies electives.....	12
	—
	39

**MINOR**

A minor in Latin American Studies is recommended for a student who is completing a recognized college major in another discipline and wishes to indicate on his transcript a background in Latin American Studies.

	<i>Units</i>
Geog 142 or 143 .....	3
Hist 162A-B-C, 165, 166 or 169T.....	3
Pol Sc 146T .....	3
Span 104A, 101 .....	6
Approved Latin American Studies electives.....	8
	—
	23

**LIBRARY USE COURSES**

In addition to the work of the reference department and other assistance to students in the course of the library's regular activities, members of the library staff offer some formal instruction in the application of bibliographic skills and library facilities in connection with academic work of the student.

**COURSES****Lib 11. Library Use (1)**

Techniques of library use; analysis of basic bibliographic sources; methodology of library research.

**Lib 101. Library Resources and Research Techniques (2)**

Major scholarly reference works and the bibliography of major fields of study; report and thesis preparation.

**MOSS LANDING MARINE LABORATORIES (ML)**

The California State Colleges 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 five cooperating state colleges (Fresno, Hayward, Sacramento, San Francisco, and San Jose). It offers full-time course work in marine biology, oceanography, and other marine sciences for majors in either the biological (botany, biology, zoology) or physical sciences whose objectives include further graduate study, teaching the sciences, or research in the marine sciences. Properly qualified upper division and graduate students may enroll on the Fresno State College campus for a term of instruction at Moss Landing and earn resident credit for such course work. Since enrollment is limited, interested students should make early application. Consult the chairman of the Biology Department for details. See *Geology Department* for on-campus course work in general oceanography and geology courses related to marine science.

**COURSES**

*Note: The following courses are taught at the Monterey Bay location of the Moss Landing Marine Laboratories. For course descriptions see Biology Department.*

- 101. General Oceanography (4)
- 111. Zoology of Marine Vertebrates (4)
- 121. Marine Invertebrate Zoology (4)
- 131. Marine Algology (3)
- 133. Micropaleontology (3)
- 141. Geological Oceanography (4)
- 161. Marine Ecology (3)
- 180. Special Problems in the Marine Sciences (1-3)
- 181. Literature of the Marine Sciences (1)
- 185T. Topics in Marine Science (1-6)
- 282. Seminar in the Marine Sciences (1; max total 2)
- 283. Advanced Studies in the Marine Sciences (3) (Former ML 281)
- 285T. Advanced Topics in Marine Sciences (1-6)
- 298. Research in the Marine Sciences (1-3)

**RELIGIOUS STUDIES**

Although the college does not offer a bachelor's degree program in religious studies, several departments offer courses appropriate to the area. By choosing from among the courses listed below, a pretheological student can fulfill the entrance requirements of any school affiliated with the American Association of Theological Schools, or of any graduate school of religion from which an advanced degree may be sought. Students wishing to enroll in courses in religious studies, either for use as electives or as pretheological preparation, should consult the pretheological adviser.

**COURSES**

- Anthropology 150T. Topics in Anthropology: Anthropological Approaches to Religion.
- Art 150T. Topics in Art History: Oriental Art; Medieval Art
- English 115. Bible as Literature (4) (Former Engl 159T)
- English 116. Old Testament (4) (Former Engl 159T)
- History 119T. Studies in Ancient and Medieval History
- History 120. Byzantine History
- History 121. Formation of the Medieval Order
- History 122. Disintegration of the Medieval Order
- History 132. Reformation
- History 179T. Studies in United States History: Religious Factor in the United States History
- Philosophy 20T. Introductory Topics in Philosophy: Religion and Ethics
- Philosophy 150T. Special Topics: Comparative Religions; Philosophy of Religion
- Psychology 170T. Topics in Applied Psychology: Psychology of Religion
- Sociology 159. Sociology of Religion



SCHOOL OF GRADUATE STUDIES

# SCHOOL OF GRADUATE STUDIES

Phyllis Welch Watts, Dean

Assistant Dean..... Robert L. Shacklett

The School of Graduate Studies embraces all graduate programs and activities in the college, including programs leading to the master of arts degree in 23 fields, the master of science degree in 9 fields, the master of business administration, the master of social work, and the master of city and regional planning. Graduate degree curricula are designed both as the first graduate degree for students contemplating doctoral study and as terminal degrees for persons engaged in business administration, public school teaching including junior college, social work, and other fields in which the master's degree is ordinarily the highest degree earned.

The Office of the Dean of the School of Graduate Studies is responsible for the general administration of graduate degree programs in accordance with the policies developed by the Graduate Council. Curricula and requirements are detailed in the *Graduate Bulletin*. Inquiries should be directed to the Dean, School of Graduate Studies, Fresno State College.

Student advisement and the instructional program in specific master's degree curricula are generally the responsibility of the department or school graduate committees, and are administered by the chairman of the graduate committee in that area.

Fresno State College is authorized to grant the master's degrees listed below.

- |                                  |                         |
|----------------------------------|-------------------------|
| Agriculture, MS                  | Industrial Arts, MA     |
| Art, MA                          | Linguistics, MA         |
| Biology, MA                      | Mass Communications, MA |
| Business, MBA, MS                | Journalism, R-TV        |
| Chemistry, MS                    | Mathematics, MA, MS     |
| City and Regional Planning, MCRP | Microbiology, MA        |
| Criminology, MS                  | Music, MA               |
| Economics, MA                    | Nursing, MS             |
| Education, MA                    | Physical Education, MA  |
| English, MA                      | Physics, MA, MS         |
| French, MA                       | Political Science, MA   |
| Geography, MA                    | Psychology, MA          |
| Geology, MA                      | Social Work, MSW        |
| German, MA                       | Spanish, MA             |
| Health Science, MS               | Special Education, MA   |
| History, MA                      | Speech, MA              |
| Home Economics, MS               |                         |

## ADMISSION TO GRADUATE STANDING

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

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

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

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

### GRADUATE ADMISSION PROCEDURES

Graduate admission is a two-step process. *Unclassified graduate standing*, the first step, is required of all holders of bachelor's degrees, regardless of objective. *Classified graduate standing*, the second step, is required only of students working toward master's degrees. Students from abroad see *Foreign Graduate Student Programs*.

### UNCLASSIFIED GRADUATE STANDING

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

1. *A graduate of Fresno State College who has taken no subsequent collegiate work elsewhere* may be admitted to *unclassified graduate standing* upon the filing of the application for graduate standing.

2. *A graduate of another accredited institution, or a Fresno State College graduate who has subsequently attended another institution*, may be admitted to unclassified graduate standing upon the filing of the application and two copies of official transcripts showing the highest degree earned and good standing in all work taken subsequent to that degree. A third copy of the transcript may be required in some fields.

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

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

## MASTER'S DEGREES

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

### GENERAL REGULATIONS

Applicants for all master's degrees gain admittance to graduate standing, construct their programs, and receive advancement to candidacy under standard college-wide policies. Most departments, however, impose additional requirements for admission to specific programs, advancement, and completion.

### CLASSIFIED GRADUATE STANDING

A graduate student who expects to have his course work apply toward a master's degree should clearly indicate his master's degree objective on the application for graduate standing which he sends to the Admissions Office. As soon as his admission to the college has been processed, the Dean, School of Graduate Studies, will inform him of the procedures for obtaining admission to the degree program with *classified status*. Minimum criteria for *classified standing* include satisfactory undergraduate scholarship, including demonstrated potential for graduate work in the major field, satisfactory scores on the Graduate Record Examinations Aptitude Test (or Admission Test for Graduate Study in Business), and other criteria which the department may prescribe. For specific minimum acceptable scores consult the Office of the Dean, School of Graduate Studies.

Not more than 10 units (including transfer credit) completed before achieving classified standing at Fresno State College may be applied to the master's degree program. Work taken during the semester of classification is considered to be completed in classified standing. In two-year programs the above limitation applies only to the last 30 units.

### ADVANCEMENT TO CANDIDACY

Classified graduate standing gives a student permission to work toward qualifying for candidacy. Advancement to candidacy gives a student permission to proceed toward qualifying for the degree. At least 9 units must be completed after advancement. Requirements for advancement to candidacy include the following:

1. Classified graduate standing.
2. Completion of any undergraduate prerequisites which the adviser specifies on the declaration of intent form.
3. Satisfactory completion of a scholastic aptitude test for graduates and such departmental and scholastic achievement tests as may be required. (See *Examinations*.)
4. A minimum grade point average of 3.0 (both overall and at Fresno State College) on all upper division and graduate course work from the date of embarking on the first course of the proposed master's degree program.
5. Approval by the appropriate departmental graduate committee. Ordinarily upon receipt of examination scores the Dean, School of Graduate Studies, sends to the department committee a transcript and a report of grades and examination scores and requests departmental recommendation. In making this recommendation, the department takes into account professional and personal standards as well as scholastic achievement as revealed by grades and performance on examinations. The student is responsible for ensuring that the adviser has sufficient information other than grades and scores on which to make this recommendation. A student who does not qualify at this time has the responsibility for initiating the procedure in the Office of the Dean, School of Graduate Studies, when he has removed deficiencies.

6. Satisfactory completion of the foreign language requirement for those programs having such a requirement. (See departmental *Foreign Language Requirement*.)
7. Completion at Fresno State College of at least 9 units of the proposed program with a 3.0 average on all completed work appearing on the program.
8. As soon as possible after the completion of steps 1 through 7, submission to the Office of the Dean, School of Graduate Studies, of a properly signed petition for advancement to candidacy, including a departmentally approved contract program of graduate study for the master's degree.

#### PROGRAM REQUIREMENTS

(See *Course Numbering System*)

The program requirements for the master of arts and master of science degrees assume substantial undergraduate preparation in the field. See school and department statements in this catalog or in the *Graduate Bulletin* for particulars. A student lacking this preparation will find it necessary to exceed the minimum requirements indicated below. (Consult departments for MBA, MSW, and MCRP minima.)

The contract program for the master's degree is a coherent pattern of (1) courses specified for an approved field of concentration and (2) additional courses selected to meet the student's particular needs. It consists of at least 30 units completed after the bachelor's degree and within seven years just preceding the granting of the master's degree. Only graduate courses (200 series) and such upper division courses (100 series) as are recommended by the schools or departments and approved by the Graduate Council are acceptable on the unit requirement. Only in individual cases and subject to departmental and Graduate School approval, may 300 series courses be applied toward unit requirements of master's degree programs. Other courses are counted in calculating the student's study load, but cannot be counted toward the unit requirement for the master's degree. The total contract program must include the following:

1. At least 24 units of the program must be Fresno State College residence credit, 6 units of which must have been taken on the Fresno campus prior to enrolling for the thesis or project or for a seminar alternative to the thesis.
2. Of the 30 units for the degree, not more than 6 units may consist of any combination of approved student teaching, extension courses, or transfer credit. Student teaching credit is not ordinarily used on master's degree programs. In unusual circumstances, if student teaching is demonstrably appropriate to a program, up to 3 units of such work may be approved by the Graduate Council. Credit by examination may be used to fulfill prerequisites, but may not apply toward the 30 units. Extension credit is not regularly used on master's degree programs; special cases, however, may be ruled upon by the appropriate college authorities. Transfer extension and correspondence credit may be used toward a master's degree only if the institution offering the work would use it on a comparable master's degree program and if it is judged by appropriate college authorities to be particularly relevant to the individual student's program.
3. With approval of departmental graduate adviser, post-baccalaureate credit allowed for work taken in the semester or summer in which the baccalaureate degree is granted may be applied toward a master's degree, if it meets master's degree criteria in all respects. See *Post-Baccalaureate Credit*.
4. At least 12 units must be in courses designed primarily for master's degrees (numbered in the 200 series). Most programs require more than 12 units of 200 series course work.
5. At least 9 units must be completed after advancement to candidacy. Work taken during the semester or summer of advancement may apply on this requirement.

6. Appropriate course work from a field other than the major may be required at the discretion of the major department.
7. Appropriate provision must be made for a thesis, a project, or, when permitted, an alternative to the thesis.

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

#### THESIS, PROJECT, AND THESIS ALTERNATIVE

Most master's degree curricula at Fresno State College require the preparation of a thesis or a project. A few departments permit thesis alternatives. (See *Graduate Bulletin* for definition and standards of thesis, project, and thesis alternative and instructions for microfilming.)

1. To be eligible to enroll for thesis or project (299), a student must have
  - (a) been advanced to candidacy for the master's degree.
  - (b) maintained a B (3.0) average on his contract program.
  - (c) completed at least six units of his contract program on the Fresno campus.
  - (d) completed any course in research techniques required by his major department.
  - (e) secured a thesis committee, consisting of a chairman and at least two other members.
  - (f) secured approval of his thesis plan from the division or department graduate committee and filed in the Office of the Dean, School of Graduate Studies, an official thesis committee assignment.
2. Registration for thesis requires authorization by the Dean, School of Graduate Studies, and may be processed during the first two weeks of any semester after the requirements listed in (a) through (f) above have been met. If, however, a student fails to enroll within one semester (excluding summer sessions) after his official acceptance by a thesis committee, the committee is dissolved and a new committee must be appointed before registration can be processed. A student planning to register for thesis after a break in regular session attendance must be readmitted to the college. (See *Regulations and Procedures—Registration*.)
3. A student whose thesis is planned to extend over more than the semester in which he first enrolls in 299 may receive an In Progress (IP) grade. If at the end of one full year after the recording of the IP grade the thesis has not been completed, the thesis committee and the library are relieved of any further thesis obligation to the student. The student must re-enroll and apply for a new committee in each subsequent semester or summer session during which he uses the library or draws on faculty time in connection with his thesis. The new committee will not necessarily be composed of the same personnel and is not necessarily bound by the decisions of the former committee. Since a continuing IP grade does not represent enrollment, reregistration may require readmission to the college. (See *Regulations and Procedures—Registration*.)
4. The student and his thesis chairman should set a deadline for the completion of the semifinal draft, no later than four weeks before the last day of scheduled final examinations. This date should be early enough so that the chairman and the other members of the committee can clear the draft before the student must meet the deadline for clearance by the Dean of the School of Graduate Studies.
5. Before a thesis is officially accepted by the Graduate School, it must meet Graduate School criteria on matters of format, documentation, and quality of writing. The semifinal draft, initialed by the thesis chairman as acceptable with

technical corrections, should be submitted to the Office of the Dean of the School of Graduate Studies at least three weeks before the last day of scheduled final examinations. This deadline has been set as late as possible in the semester to accommodate the student; late manuscripts will not be accepted until the following semester or summer session. Students are urged to follow meticulously *Specifications and Instructions for the Master's Thesis or Project*; copies are available in the Office of the Dean, School of Graduate Studies.

6. Four copies (three to be retained by the college) signed by the thesis chairman and ready for binding, together with the school or departmental clearance must be submitted to the Office of the Dean, School of Graduate Studies, no later than one week before the last day of scheduled final examinations. A fee for binding is due and payable at the Fresno State College Association Office on the date of final submission. A student who wishes to retain more than one bound copy may arrange for the extra binding by paying an additional fee. (See *Schedule of Fees*.)
7. A student may arrange to have his thesis published in microfilm form, with an abstract of the thesis published in the quarterly periodical, *Masters Abstracts*. This form of publication is encouraged by the college. Further details of the microfilming and copyright procedure may be obtained from the Office of the Dean, School of Graduate Studies.

#### **REQUEST THAT MASTER'S DEGREE BE GRANTED**

A request that the master's degree be granted must be filed in the Office of the Dean, School of Graduate Studies and the diploma fee must be paid in the first two weeks of a semester or first week of a summer session in which the work is to be completed. (For dates see *Academic Calendar* or *Schedule of Courses*; see also *Schedule of Fees*.) Diplomas for those completing degree requirements during summer sessions and at midyear will be awarded at the following June Commencement.

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

#### **FOREIGN LANGUAGE REQUIREMENT**

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

#### **MAXIMUM STUDY LOAD**

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. Students employed full time may take a maximum of 6 units. For maximum units for summer session see the *Summer Session Bulletin*.

#### **GRADE REQUIREMENTS**

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

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

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

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

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

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

#### EXAMINATIONS

The Graduate Record Examination Aptitude Test (or the Admission Test for Graduate Study in Business) is required for classified standing. Preferably it should be taken prior to enrollment, but special arrangements may be made to meet the requirement. A satisfactory score in The Graduate Record Examinations Advanced Test in the student's major field (or a departmental qualifying examination) is required for advancement to candidacy.

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

#### EXTENSION OF TIME

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

#### FINANCIAL ASSISTANCE

A limited number of graduate assistantships and other types of financial assistance are available to graduate students. Write to the Dean, School of Graduate Studies, for a descriptive brochure and application forms.

#### FOREIGN GRADUATE STUDENT PROGRAMS

Fully qualified graduate students coming to Fresno State College with the ultimate goal of a master's degree should allow approximately two years for accomplishing this objective. Graduate students regularly devote most of their time to studies in their major field; however, during the first semester at Fresno State College, foreign students whose native language is not English and who are studying in this country for the first time, are expected to enroll in International Studies 293 and appropriate work in English as a foreign language. International Studies Campus 295 is required during the last semester or at any time after half the work of the master's degree has been completed. Both courses apply toward degrees. For further information, see *International Programs—Graduate Courses*.

Depending on the quality of his work in the first semester and his ultimate purpose, the foreign graduate student may at the end of the first semester continue in one of the following directions: (1) If he has chosen a new field or if his undergraduate work was not equivalent to a Fresno State College bachelor's degree, he may petition to complete bachelor's degree requirements. (2) If he wishes to select only those courses which have greatest value for him, regardless of degree requirements, he may follow an individually planned and approved sequence of

courses leading to a Certificate of Attendance. (3) If his first semester's work gives evidence of probable success in master's degree study, he may seek admission to a master's degree program. Whichever alternative the student from abroad selects, appropriate course work taken during the first semester may be accepted for credit toward this goal.

#### FOREIGN GRADUATE STUDENT ADMISSION

Graduate students from abroad follow the same procedures as all other graduate students except that, beginning in spring 1968, the Test of English as a Foreign Language (TOEFL) is required of all students whose native language is not English. Exception may be made for students transferring from American colleges and universities with grades that demonstrate full competency in English. TOEFL scores, applications, and academic documents should reach the Fresno State College Admissions Office at least four months before the semester for which admission is desired. TOEFL is administered at various centers throughout the world. For further information, write to the Test Office, Fresno State College.

Graduate students with a total score of less than 500 on TOEFL will not ordinarily be admitted to graduate study at Fresno State College. Exception may be made for students who are otherwise admissible and who satisfactorily complete an approved intensive program in English as a foreign language.

#### INTERDISCIPLINARY GRADUATE STUDY

The School of Graduate Studies provides administrative coordination for graduate interdisciplinary programs and courses. Fresno State College is currently authorized to offer one interdisciplinary graduate program as well as several groups of courses which are interdisciplinary in scope.

#### MASS COMMUNICATIONS

The master of arts degree in mass communications is based on the equivalent of an undergraduate major in journalism or radio-television broadcasting. Options in printed media and electronic media are administered by the Journalism and the Speech Arts Departments, respectively. Fifteen of the 30 required units for the degree must be in graduate mass communications courses; 12 units must be core courses. For specific requirements, consult the departmental graduate advisers or see the *Graduate Bulletin*.

#### GRADUATE COURSES (M Com)

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

##### 201. Seminar in Theory and Research (3)

(Core) Theory of the mass media, its development and application; basic research methodologies applicable in the various areas of the mass media.

##### 202. Seminar in Literature of Mass Communications (3; max total 6)

(Core) Critical examination of the literature in the field of mass communications. Exploration of the concepts in various areas through a study of primary, secondary, and tertiary literary resources.

##### 204T. Seminar in Journalism (3; max total 9)

Seminar in a printed media topic: government information policy, news media and urban affairs, social responsibility in public relations, magazine influence in America.

##### 205T. Seminar in Radio-Television-Film (3; max total 9)

Seminar in an electronic media topic: current regulatory issues, quantitative research, ETV/ITV problems, film as social comment.

##### 230. Criticism of Broadcasting and Film (3)

Development of ethical, artistic, and critical standards for broadcast and motion picture evaluation. Principles of criticism are traced from an historical to a contemporary context. Research papers and reports required.

**250. Comparative and International Broadcasting (3)**

Formal study of national systems of broadcasting and the social, geographic, and political forces that have shaped national roles in international communications. Research papers required.

**290. Independent Study (1-3; max total 6)**

See *Regulations and Procedures-Independent Study*.

**299. Thesis (2-6)**

(Core) Prerequisite: see *Master's Degrees-Thesis Requirement*. Preparation, completion, and submission of an acceptable thesis for the Master's degree.

**BEHAVIORAL SCIENCE COURSES**

Certain graduate courses have been grouped to provide an interdisciplinary approach to the planning and implementation of change. Emphasis is on the development and application of planned change techniques to groups in business, education, social welfare, and governmental organizations. The selected graduate courses are from areas such as business, education, psychology, social work, and speech. They are designed to provide a knowledge of behavioral science principles and skills to students who wish to apply such knowledge within their own graduate areas. Courses currently applicable include: Business 223 Seminar in Organizational Behavior, Psychology 270T Seminar in Applied Behavioral Science, Social Work 273T Seminar in Social Work Practices, and Speech 215 Seminar in Speech Arts. For further information about courses available, consult the office of the Dean of the School of Graduate Studies.

**COMPUTER SCIENCE COURSES (CSC)**

In addition to the graduate courses listed below, several undergraduate courses dealing with computers are offered by various departments of the college. They are grouped here for the convenience of students who are interested in the study of computer science or computer applications in specific fields. (See departmental listings for undergraduate course descriptions.)

- Psych 140.1 Computer Applications in Psychology (3)**
- Bus Ad 62A Automation and Computer Languages—FORTRAN (3)**
- Bus Ad 62B Automation and Computer Languages—COBOL (3)**
- Bus Ad 162 Advanced Computer Programming (3)**
- Bus Ad 166 Applied Computer Systems (3)**
- Bus Ad 168 Data Processing Management (3)**
- Bus Ad 169 Machine Language Programming (3)**
- Bus Ad 173 Computer Configuration (3)**
- Engr 70 Computer Programming (2)**

**GRADUATE COURSES (CSC)**

*Note: Prerequisite to all graduate courses: Math 72 and 110, Bus Ad 62A or B, 162, and 169 or equivalent, or permission of instructor.*

**210. Information Structures (3)**

Structural representation of information; linear lists, strings, arrays, and orthogonal lists; tree and graph structures; multilinked structures; storage systems; storage allocation and utilization; symbol tables; searching and sorting techniques.

**220. Programming Languages (3)**

Syntax and semantics specification of languages; parsing; properties of algorithmic languages; list processing, string manipulation, multipurpose, and simulation languages.

**230. Organization of Computing Systems (3)**

Logic and memory elements; Boolean functions and minimizations; digital arithmetic, storage, control, and input-output facilities; system organization, multi-programming, multiprocessing, and real-time features.

**250. Systems Programming (3)**

Prerequisite: CSC 210, 220, and 230. Batch processing programs, characteristics, and limitations; multiprogramming and multiprocessing systems; addressing techniques, core management, file system design and management, system accounting, and operating system behavior.

**REHABILITATION COUNSELING COURSES (RC)**

Courses in rehabilitation counseling are designed to provide advanced training for persons in the field interested in professional advancement. Holders of baccalaureate degrees in related fields having an interest in counseling the handicapped may also find these courses of value.

**201. Seminar in Rehabilitation Counseling (3)**

The fundamental concepts and ethics of rehabilitation counseling; historical, philosophical, and organizational principles.

**211. Seminar in Clinical Procedures (3)**

Analysis and methodology of disability. Theoretical and practical aspects of corrective procedures. (3 class hours, field trips.)

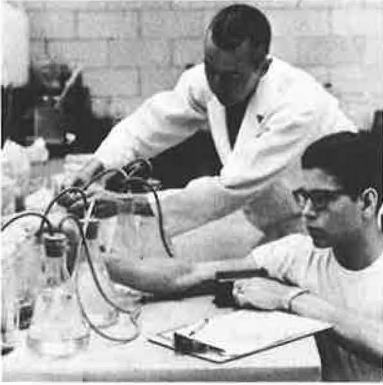
**221. Evaluation in Rehabilitation (3)**

Observation and analysis of the techniques used in rehabilitation evaluation. (2 lecture-demonstration, 3 lab hours)

**251. Seminar in Special Problems (3)**

Preparation, analysis, and presentation of case studies which involve rehabilitation of the disabled; emphasis on techniques employed and evaluation procedures.





SCHOOL OF AGRICULTURAL SCIENCES

## SCHOOL OF AGRICULTURAL SCIENCES

O. J. Burger, Dean

Assistant Dean ..... George F. Ilg

*Department* ..... *Chairman*

Agricultural Industry and Education ..... Clarence D. Jensen

Animal Science ..... Jesse T. Bell

Plant Science ..... Harry P. Karle

The School of Agricultural Sciences provides degree curricula preparatory to professions and occupations in agriculturally related industries. For information concerning preveterinary medicine, see *Preprofessional Preparation*. The college farm is organized and operated to provide experience and practical training. Eleven hundred and ninety acres serve as a laboratory and production unit where students carry on supervised farming programs in animal and plant science. In addition, livestock, vineyards, orchards, and crop land are maintained for laboratory use. For information on supervised projects see *Animal and Plant Science Departments*.

The school offers programs leading to the bachelor of science degree in agriculture with fourteen specialized majors and in agricultural engineering; an agriculture minor; short courses for those not enrolled in the college program but engaged in farming or allied occupations.

Students desiring to qualify for teaching credentials should consult the Dean of the School of Agricultural Sciences or credential advisers. For credential structure, see *School of Education*.

The master of science degree in agriculture with concentrations in animal science and plant science was authorized on May 5, 1967. See the *Graduate Bulletin*.

A Department of Agricultural Economics has been established in the School of Agricultural Sciences. The faculty of this department will design a curriculum in agricultural economics which will prepare students to assume leadership roles in a wide variety of management positions in agriculture and agriculturally related industries. Students interested in pursuing this curriculum are urged to consult the Dean of the School of Agricultural Sciences.

### BACHELOR OF SCIENCE DEGREE IN AGRICULTURE

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

### BACHELOR OF SCIENCE DEGREE IN AGRIBUSINESS

The bachelor of science degree with a major in agribusiness is granted upon completion of a four-year curriculum consisting of 128 semester units selected from one of the agribusiness major options in the *Agricultural Industry and Education*, *Animal Science*, or *Plant Science Departments*, or the *School of Business*. The general education and general requirements for the bachelor of science degree must be completed (see *Degrees and Credentials*).

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

### TECHNICAL AGRICULTURE

The program in technical agriculture leading to the three-year technical agricultural certificate is no longer available. No new students will be admitted to the program after August 1970. As an alternative, students may meet certain educational needs through special programming and in seminars, short courses, workshops, conferences, and educational television. Students seeking additional information are urged to consult the Dean of the School of Agricultural Sciences.

### MINOR

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

### CREDENTIAL PROGRAM

For information on the current credential program, consult departmental advisers and the School of Education; see the section on *Public School Credentials*.

### MASTER OF SCIENCE DEGREE

The master of science degree in agriculture is designed to extend competence for agricultural research, agricultural field work, and the teaching of agriculture, and to provide the first graduate degree for students anticipating advanced graduate study in animal or plant sciences. For detailed information about the graduate program at Fresno State College, see the *Graduate Bulletin*, available in the Office of the Dean, School of Graduate Studies.

### GENERAL EDUCATION REQUIREMENTS

The following courses will satisfy general education requirements. *Area I: AnSc 10, PISc 30. Area V: AnSc 70, Enol 15, FS 1, PISc 10, 15, 25, 40.* (See *General Education—Courses*)

**GRADUATE COURSES (Ag)***(See Course Numbering System—Definitions and Eligibility)***200. Experimental Methods (3)**

Prerequisite: Math 40 or equivalent; permission of instructor. Principles of research emphasizing procedures, collection of data, summarization and publication of results. Design, conduct, and analysis of experiments in agriculture.

**220. Readings in Agriculture (2-3)**

Prerequisite: permission of instructor. Individually directed readings in a field of special concern to the student's graduate program; appropriate reports and evaluation required.

**240T. Topics in Animal Science (3; max total 12)**

Prerequisite: upper division animal science appropriate to study topic; permission of instructor. Investigation of topic in animal science: anatomy, physiology, pathology, nutrition, genetics, or economics.

**241. Endocrine and Reproductive Physiology (3)**

Prerequisite: Chem 8. 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: AnSc 100, 110; Chem 2A; permission of instructor. A study of environmental factors affecting domestic animals under field and controlled conditions.

**243. Metabolism and Energy Physiology (3)**

Prerequisite: Chem 8. Current aspects of the integral processes involved in metabolism and energy physiology of laboratory and farm animals. Application of the principles concerned in intermediary metabolism. Selected readings in the current literature within the field.

**244. Vitamin and Mineral Nutrition (3)**

Prerequisite: AnSc 70. A survey of the biochemical and physiological importance of vitamins and minerals in the nutrition of man and his animals. Included is the diagnosis, prevention and treatment of both vitamin and mineral deficiencies.

**245. Advanced Animal Breeding (3)**

Prerequisite: AnSc 100, 110; Chem 2A; permission of instructor. The application of genetic principles to the breeding of livestock and poultry. The study of applied selection and measurements of the results.

**250T. Topics in Plant Science (3; max total 12)**

Prerequisite: upper division plant science appropriate to study topic, permission of instructor. Advanced studies in a given area: crop physiology, plant breeding, plant pathology, plant nutrition, or economics.

**251. Physiological Aspects of Herbicides (3)**

Prerequisite: PISc 131, Bot 104, Chem 8. Modes of action of herbicides in plant growth. Absorption and translocation of herbicides. Mechanisms of herbicide specificity. Interaction with soil and soil microbes. Methods of herbicide investigations (biological assay, instrumental detection, chemical assay, chemical and microbial degradation). (2 lecture, 3 lab hours)

**252. Plant Nutrition (3)**

Prerequisite: Bot 104. Mineral requirements of plants; the acquisition and translocation of nutrients by higher plants and the role of nutrient elements in plant development. (2 lecture, 3 lab hours)

**255. Advanced Plant Breeding (3)**

Prerequisite: PISc 140. Principles and techniques of plant improvement, breeding methods, combining ability, sterility systems, quantitative genetic analysis, heritability estimates, experimental designs for plant breeding.

**256. Plant-Water Relationships (3)**

Prerequisite: Bot 104. Physicochemical properties of water and solutions; movement of water, solutes, and growth regulators in plants; study of moisture-sensitive periods of various crops; factors affecting water absorption and retention.

**260. Seminar in Animal Science (1; max total 4)**

Prerequisite: permission of instructor. Written and oral reports on selected areas of research on problems in animal science.

**270. Seminar in Plant Science (1; max total 4)**

Prerequisite: permission of instructor. Reviews and reports on recent literature and problems in agronomy, horticulture, irrigation, soils, ornamental horticulture, or viticulture and enology.

**280. Seminar in Agriculture (1-3; max see below)**

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

**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.

**287. Organization, Administration, and Supervision of Agricultural Education (3)**

Prerequisite: graduate standing. A study of the California and federal plans for vocational education as they pertain to agricultural education. The VEA Act of 1968 and the preparation of district plans.

**289. Adult and Continuation Education in Agriculture (2) (Former AgEd 189)**

Prerequisite: graduate standing. Organization, history, philosophy, administration; teaching out-of-school youth and adults; development of rural and urban adult education programs, Young Farmer programs; techniques and methods of leadership.

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

See *Regulations and Procedures—Independent Study*.

**299. Thesis (2-6; max total 6)**

Prerequisite: see *Master's Degrees—Thesis Requirements*. Preparation, completion, and submission of an acceptable thesis for the master's degree.

## AGRICULTURAL INDUSTRY AND EDUCATION DEPARTMENT

Professors: C. Jensen (Chairman), Ball, Dowler, Nury

Associate Professors: De Tar, Pflueger

Assistant Professors: H. Martin, Norton

Lecturer: From

Part-time: Cheney, A. Johnson, Simmons, Skofis

The Agricultural Industry and Education Department offers majors in agribusiness, agricultural mechanics, dairy science, general agriculture, and viticulture and enology.

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

The *agricultural mechanics major* is designed to qualify students for positions in such fields as farm equipment sales and service, farm structures, rural electrification, teaching vocational agriculture, and farming. Students are trained in the selection, operation, construction, maintenance, and repair of equipment and structures used in modern agriculture.

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

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

The *general agriculture major* has been classified as academic for credentialing purposes. The requirements are flexible and have been adapted to meet the needs of students interested in teaching vocational agriculture. The general agriculture major also prepares students for other occupations, including farming. Many graduates have found positions with county, state, and federal agencies, or in business and services related to agriculture. The general agriculture major also prepares students for employment opportunities with governmental agencies engaged in regulatory work. The *general agriculture major with food science option* prepares students for career opportunities in the food industry, including dehydration, canning, freezing, and food packing industries as well as governmental agencies.

The *viticulture and enology major with enology option* prepares students for positions in the California wine industry. Typical positions include laboratory technicians, plant sanitarians, wine chemists, processing department supervisors, and production managers.

### MAJOR REQUIREMENTS

#### **Agribusiness (Agricultural Mechanics Option) Units**

AgM 15, 17, 18A, 25, 81, 91, 111, 115, 116, 151A-B, 158A, 159; Ag 10, 31, 112;  
Acct 1A-B; Mkt 100; Bus Ad 18, 65, 110, 118, 133, 151; business elective  
(3 u.d.) ..... 65

*Additional Requirements:* PlSc 30, 50, 110 or 150; Chem 2A; Phys 2A; Econ 1A-B; Bot 10 or Zool 10; Math 29, 30.

#### **Agricultural Mechanics**

AgM 15, 17, 18A-B, 25, 81, 91, 111, 115, 116, 121, 151A-B, 158A, 159; Ag 10,  
151 ..... 36

*Additional Requirements:* PlSc 30, 50; Chem 2A; Phys 2A; animal and/or plant science electives (6 un); IA 74; Econ 1A; Bot 10 or Zool 10; Math 29, 30.

**Dairy Science (Dairy Industry Option)**

Units

DI 53, 103, 113, 123, 133, 143, 153, 163, 173; Ag 1; AnSc 12; AgM electives  
(6 un) ..... 37

*Additional Requirements:* Chem 2A-B, 8; Bot 10, Zool 10; Econ 1A; Bus Ad 110; Acct 1A; Math 29 or equivalent; Mcrb 20.

**Agribusiness Major with emphasis in Dairy Industry** (See *Animal Science Department*).

**General Agriculture**

A major in general agriculture consists of a minimum of 47 units (18 units upper division) including 15 units in animal science (animal husbandry, dairy husbandry and/or poultry husbandry), 15 units in plant science (agronomy, ornamental horticulture, horticulture, and/or viticulture), 10 units in agricultural mechanics, or 40 units in food science and related electives; and Ag 10, 31, 151. Selection of courses by consultation with the student's adviser..... 47

*Additional Requirements:* PlSc 30, 171; Bot 10 or Zool 10; Biol 120; Bot 1 or Zool 1; Chem 2A-B, 8; Econ 1A; Math 29 or equivalent.

**General Agriculture (Food Science Option)**

The food science option consists of a minimum of 47 units (18 units upper division) including 40 units in food science and related electives, and Ag 10, 31, 151. Selection of courses by consultation with the student's adviser 47

*Additional Requirements:* PlSc 30, 171; Bot 10 or Zool 10; Biol 120; Bot 1 or Zool 1; Chem 2A-B, 8; Econ 1A, Math 29 or equivalent.

**Viticulture and Enology (Enology Option)**

Enol 15, 115, 165, 175; FS 1, 130, 170; AgM 158A-B; PlSc 17, 117, 127..... 39

*Additional Requirements:* Mcrb 20 or 104; Acct 1A-B; Bus Ad 110; Chem 2A-B, 8, 104, 105, 109; Econ 1A-B; Bot 10; Math 29; Phys 2A-B.

**Courses**

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

**AGRICULTURE (Ag)**

**10. Dimensions in Agriculture (1)**

Survey of current social and economic developments and employment opportunities in modern agriculture and related agribusiness areas. Individual career planning.

**27. Agribusiness Mathematics (3)**

Not open to students with credit in Bus Ad 21 or Math 29, or equivalent. Fundamental operations, percentage and interest, bank account reconciliation, equations, ratio and proportion, averages, areas and volumes, square root, measurement systems; applications to milk mixtures, fields, rations, tanks, silos, soils, lumber, concrete, personal buying and loans.

**31. Agricultural Economics (3)**

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

**80. Undergraduate Research (1-4; max total 4)**

Open to freshmen and sophomores with permission of instructor. May not be substituted for course requirements in major. Exploratory work on a suitable agricultural problem in agricultural education, agricultural mechanics, dairy industry, enology, or food science.

**112. Farm Management (3)**

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

**151. Farm Accounting (3)**

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

**180. Undergraduate Research (1-4; max total 4)**

Open to juniors or seniors with permission of instructor. May not be substituted for course requirements in major. Exploratory work on a suitable agricultural problem in agricultural education, agricultural mechanics, dairy industry, enology, or food science.

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

See *Regulations and Procedures—Independent Study*.

**AGRICULTURAL EDUCATION (AgEd)****135. Introduction to Agricultural Education (2)**

Survey of agricultural education; vocational surveys; occupational analysis; relationship of agriculture to occupational opportunities; qualifications for teaching agriculture.

**186. Methods of Teaching Vocational Agriculture (3) (Former Ag 186)**

Prerequisite: E Ed 105; S Ed 163 or permission of instructor. Philosophy and teaching techniques in general agriculture; organization of teaching materials; professional standards for teachers.

**187. Vocational Education (2)**

Prerequisite: AgEd 186. Philosophy and organization of vocational education; educational principles for agriculture.

**188. Group Study in Agricultural Mechanics (2)**

Agricultural mechanics in the vocational agriculture program; organization of course of study and implementation of program; demonstration and analysis of teaching techniques.

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

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

**17. Farm Tractors (2)**

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

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

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

**25. Agricultural Drafting (2)**

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

**81. Farm Structures and Equipment (2)**

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

**91. Farm Surveying (2)**

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

**111. Rural Electrification (2)**

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

**111L. Rural Electrification Laboratory (1)**

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

**115. Farm Machinery (2)**

Prerequisite: AgM 15. Study and operation of tillage tools, interaction of the soil and tool; cotton, grain, and specialized harvesting machinery and equipment. (1 lecture, 3 lab hours)

**116. Farm Machinery (2)**

Prerequisite: AgM 15. A study of farm machinery used in spring and summer operations. Orchard and field spraying equipment, field and row crop planters, cultivating tools, and haying machinery. (1 lecture, 3 lab hours)

**121. Advanced Agricultural Welding (2)**

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

**131. Agricultural Fluid Power (2)**

Prerequisite: junior standing or permission of instructor. 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. (1 lecture, 3 lab hours)

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

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

**158A-B. Unit Operations I and II (3-3) (Former V 158A-B)**

Prerequisite: permission of instructor. Basic principles of plant operations in the food industry. Application of chemistry and physics to transformation of energy, heat transfer, flow of fluids, evaporation, heat exchange equipment, distillation, and drying. (2 lecture, 3 lab hours)

**159. Pumps and Motors (3)**

Prerequisite: AgM 15, PISc 50. 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)

**DAIRY INDUSTRY (DI)****23. Dairy Foods and Man (3)**

The history and geography, processes and processing of dairy products; their description, composition, and nutritive values; current role of the dairy industry and dairy foods.

**53. Market Milk (3) (Former DS 53)**

Prerequisite: AnSc 12 or permission of instructor. Principles of market milk production, processing, and distribution; modern processing methods and equipment. (2 lectures, 3 lab hours)

**103. Manufacturing Dairy Products (3) (Former DS 111)**

Prerequisite: junior standing or permission of instructor. Making common varieties of cheese, mix making and freezing desserts, churning butter, and culturing dairy products. (1 lecture, 6 lab hours)

**113. Manufactured Dairy Products (3) (Former DS 112)**

Prerequisite: DI 53 or 103, or permission of instructor. Chemistry, physics, and mathematics applicable to the production of butter, concentrated products, cheese, and ice cream.

**123. Dairy Bacteriology (3) (Former DS 151)**

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

**133. Dairy Plant Management (3) (Former DS 154)**

Prerequisite: DI 53. Principles, practices, and problems in management of modern dairy plants.

**143. Marketing Milk Products (3) (Former DS 156)**

Prerequisite: DI 53. Practices and principles of marketing and pricing dairy products.

**153. Dairy Inspection (3) (Former DS 165)**

Prerequisite: AnSc 12, DI 53. Application of the California Agricultural and the United States Public Health Codes to the inspection of dairies, dairy plants, and dairy products.

**163. Dairy Chemistry and Testing (3) (Former DS 185)**

Prerequisite: Chem 2A-B. Milk constituents and application of chemical laboratory tests as used in food plants. (2 lecture, 3 lab hours)

**173. Evaluation of Dairy Products (3) (Former DS 189)**

Prerequisite: DI 103. Evaluation, scoring, and grading dairy products; methods of defect control. (2 lecture, 3 lab hours)

**ENOLOGY (Enol)****15. Enology (3) (Former V 15)**

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

**115. Wine Analysis and Production (5) (Former V 116)**

Prerequisite: Chem 109, Enol 15, Mcrb 20 or 104, PISc 127. Principles and practices of preparation and analysis of dessert and table wines; operation of plant equipment; controlled tests. (3 lecture, 6 lab hours)

**165. Wine Technology (3) (Former V 160)**

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

**175. Winery Management (3) (Former V 171)**

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

**FOOD SCIENCE (FS)****1. Food Science and World Food Problems (3)**

Modern food processing; world food problems; basic characteristics of processed foods.

**110. Food Chemistry (3)**

Prerequisite: Chem 8 (or concurrent), or permission of instructor. Composition, structure, and properties of food; chemistry of changes occurring during processing and utilization.

**120A-B. Food Engineering (3-3)**

Prerequisite: Phys 2A-B, physical chemistry, or permission of instructor. (A) Laws of thermodynamics, closed and open (control volume) systems; thermodynamic properties; thermodynamic cycles, phase, and chemical equilibria; gas dynamics. (B) Fluid flow, heat transfer, convection, radiation, heat exchangers. (2 lecture, 3 lab hours)

**130. Food Analysis (3)**

Prerequisite: 1 year of general chemistry, qualitative analysis. Principles of food analysis; sampling, separation, physical measurements, chemical and biochemical techniques. (2 lecture, 3 lab hours)

**140A-B. Food Processing (3-3)**

Prerequisite: FS 110; Chem 8 (or concurrent), or permission of instructor. (A) Food preservation by heat, low temperature, dehydration, fermentation, and radiation. (B) Sanitation and control of microbiological problems involved in processing and storing foods; case studies. (B: 2 lecture, 3 lab hours)

**170. Food Microbiology I (3)**

Prerequisite: Mcrb 20. Control of microorganisms in production and handling of foods; microbiological methods of examining foods.

**171. Food Microbiology II (2)**

Food spoilage organisms and microbiological methods of examining foods. (1 lecture, 3 lab hours)

**191. Food Science Literature (1)**

Prerequisite: senior standing. Review of recent literature.

**ANIMAL SCIENCE DEPARTMENT**

Professors: Bell (Chairman), Glim, Hixson, Ilg, Rousek, Selkirk

Associate Professors: D. D. Nelson, D. M. Nelson

Assistant Professor: Briggs

Lecturer: Kelly

Part-time: Axtell, Benyo, B. Campbell, Clapp, Larsen, Lucas, Lynam, W. Smith

The Animal Science Department offers majors in agribusiness, agricultural science, animal husbandry, dairy husbandry, poultry science, and preprofessional training for veterinary medicine.

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

The *agricultural science major with an option in animal science* prepares students for highly science-oriented job objectives and provides the necessary undergraduate courses for students seeking advanced degrees.

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

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

The *poultry science* major prepares students for occupations in commercial egg production, fryer operations, breeder flock management, hatchery, processing, and sales positions with feed companies. Many graduates operate their own turkey and poultry farms. The poultry plant includes a central hatchery with cold storage facilities for egg handling, grading and candling; commercial egg production and pedigree pens; brooding facilities for conventional type houses and wire floor cage houses.

The *preveterinary program* provides the first two years of training required in veterinary medicine (see *Preprofessional Programs*).

The dairy industry option of the dairy science major is described under the Agricultural Industry and Education Department.

**SUPERVISED PROJECTS**

The agriculture program is unique in that it provides opportunity for students to gain both theoretical training and practical experience in farming while pursuing their college programs. The supervised project experience is designed to supplement the lecture and laboratory assignments, giving students greater opportunity to develop the practical side of farming. The college owns all of the necessary equipment for student projects. A rental fee is charged for use of equipment. Proficiency in operating equipment must be demonstrated before projects may be undertaken. Students sign contracts with the Fresno State College Agricultural Foundation wherein they agree to perform the labor required in caring for their projects. The Agricultural Foundation serves as a banking agency in providing the money a student will or may need for project materials. Students must submit records on each enterprise to the Agricultural Foundation and share the profit or loss with the Foundation according to established percentages.

In the Animal Science Department, students may feed out steers, lambs, pigs, fryers or turkeys, or have commercial egg production projects. Students may bring lambs or steers from their home farms and feed them out at the college, provided feed is purchased from the college feed mill and a pen rental fee is paid monthly.

### MAJOR REQUIREMENTS

#### **Agribusiness (Animal Science Option)**

Units

AnSc 10, 12, 14, 70, 120, 170, 171; elect 15 units from the following—animal husbandry, dairy husbandry, dairy industry, and/or poultry science, 9 of which must be completed in one major; Acct 1A-B; Mkt 100; Bus Ad 18, 65, 110, 118, 133, 151; elect Bus Ad 171, 172, 177, or 179..... 66

*Additional Requirements:* Ag 10, 31, 112; PISc 30; Zool 10; Chem 2A-B, 8; Econ 1A-B; two years of high school algebra or equivalent.

#### **Agricultural Science (Animal Science Option)**

AnSc 10, 21, 31, 41, 70, 170, 171; elect 15 units (12 u.d.) from courses in animal science ..... 36

*Additional Requirements:* Ag 10, 112; Mcrb 20; Bot 10, 120; Chem 1A-B, 8, 104, 105, 109; Phys 2A; Zool 1; Bot 116 or Zool 103; Math 40 or equivalent.

#### **Animal Husbandry**

AnSc 10, 11, 21, 31, 41, 70, 100, 110, 120, 170; Ag 112; animal husbandry electives (4 un; 3 u.d.) ..... 37

*Additional Requirements:* Ag 10, 151; PISc 30; AgM electives (4 un); Mcrb 20; Chem 2A-B, 8; Bot 10; Biol 120; Zool 1; Econ 1A; two years of high school algebra or equivalent.

#### **Dairy Science (Dairy Husbandry Option)**

AnSc 12, 62, 70, 100, 110, 112, 120, 122, 170; DI 53, 153; dairy husbandry or dairy industry electives (6 un) ..... 38

*Additional Requirements:* Ag 10, 151; PISc 30; AgM electives (4 un); Mcrb 20; Chem 2A-B, 8; Bot 10; Biol 120; Zool 1; Econ 1A; two years of high school algebra or equivalent.

#### **Poultry Science**

AnSc 14, 70, 104, 110, 154, 164, 170, 174; animal science electives (9 un) ..... 36

*Additional Requirements:* Ag 10, 151; PISc 30; AgM electives (4 un); Mcrb 20; Chem 2A-B, 8; Bot 10; Biol 120; Zool 1; Econ 1A; two years of high school algebra or equivalent.

### Courses

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

### ANIMAL SCIENCE (AnSc)

#### **10. Animal Science (3) (Former AH 1)**

Types and breeds of farm animals and poultry in the United States; world distribution, adaptation, production methods; foods and products produced by farm animals, their use by humans. (2 lecture, 3 lab hours)

#### **20. Animal Science Practicum (2)**

Development of skills in applying animal science theories, principles, and practices; discussion, demonstration, participation. (2 2-hour lecture-labs; field trips)

**70. Comparative Nutrition (3) (Former AH 71)**

Prerequisite: Chem 2A-B, Bot 10 or Zool 10. Principles of nutrition; nutrients and their metabolism; comparison of qualitative nutrient requirements of monogastric and ruminant animals and man; role of animal food products in human nutrition.

**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 animal science.

**100. Animal Reproduction (3) (Former AH, DS 106)**

Prerequisite: Biol 120, AnSc 10 or 12. Principles of physiology and heredity as applied to the breeding of farm animals; application of genetics to a livestock breeding program.

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

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

**120. Livestock Sanitation and Diseases (3) (Former AH 116)**

Prerequisite: AnSc 110 or permission of instructor. Sanitation practices and use of disinfectants; cause, symptoms, prevention, and treatment of common diseases of livestock. (2 lecture, 3 lab hours)

**130. Feed Mill Management (2) (Former AH 73)**

Prerequisite: AnSc 70. Operation and maintenance of feed mills; compiling rations; mixing, buying, and selling feeds; participation in management and operations of college feed mill. (1 lecture, 3 lab hours)

**150. Animal Husbandry Seminar (1; max total 2) (Former AH 170)**

Open to seniors majoring in animal husbandry. Latest developments in research; assigned research papers in animal husbandry to be presented in both oral and written form.

**160T. Topics in Animal Science (1-4; max total 4)**

Prerequisite: junior standing, permission of instructor. Anatomy, physiology, pathology, nutrition, genetics, economics.

**170. Applied Animal Nutrition (3) (Former AH 172)**

Prerequisite: AnSc 70 or permission of instructor. Quantitative nutrient requirements and allowances for domestic animals; feedstuffs and methods of processing; feeding systems and ration formulation for profitable livestock production.

**180. Undergraduate Research (1-4; max total 4)**

Open to juniors and seniors. Exploratory work on a suitable agricultural problem in animal science.

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

See *Regulations and Procedures—Independent Study*.

**ANIMAL HUSBANDRY (AnSc)****11. Livestock Selection and Evaluation (3) (Former AH 2)**

Basic factors involved in selection and evaluation of beef cattle, horses, sheep, and swine; relationships of live market animal traits to carcass desirability. (2 lecture, 3 lab hours)

**21. Beef Husbandry (3) (Former AH 22)**

Prerequisite: AnSc 10. Management of purebred and commercial beef herds; selection of breeding stock; management practices in fattening cattle; marketing slaughter and purebred cattle. (2 lecture, 3 lab hours)

**31. Swine Husbandry (3) (Former AH 30)**

Prerequisite: AnSc 10. Principles and practices of purebred and commercial swine husbandry; breeding, feeding, and management program. (2 lecture, 3 lab hours)

**41. Sheep Husbandry (3) (Former AH 40)**

Prerequisite: AnSc 10. Breeding, feeding management, and marketing of commercial and purebred sheep; breeds, setting up a program of breeding, housing, and equipment requirements; feeding and care of ewes and lambs; docking, castrating; shearing, tying, sacking, storing wool. (2 lecture, 3 lab hours)

**51. Horse Husbandry (3) (Former AH 50)**

Prerequisite: AnSc 10, 11. Breeds, selection, care, and feeding of light horses; their use and place in California agriculture. (2 lecture, 3 lab hours)

**101. Livestock Judging (2; max total 4) (Former AH 3, 103)**

Prerequisite: AnSc 10, 11, or permission of instructor. Advanced course in selection and appraisal of breeding and market livestock; animal form and its relation to function; development of accurate and precise presentation of reasons; comparative judging; conducting judging contests; selection of livestock judging team from course enrollees. (1 lecture, 3 lab hours; field trips)

**111. Advanced Beef Husbandry (3) (Former AH 122)**

Prerequisite: AnSc 21. Research material in breeding, nutrition, diseases and management; records of performance, pedigrees, purebred sales, show herd management. (2 lecture, 3 lab hours; 1 week-end field trip)

**121. Meats (3) (Former AH 10)**

Prerequisite: AnSc 10. Evaluation of live animals and carcasses; selection and preparation of meats and meat products; survey of the meat industry in the United States. (2 lecture, 3 lab hours)

**151. Advanced Horse Husbandry (3) (Former AH 150)**

Prerequisite: AnSc 10, 51. Advanced principles of horse husbandry; management of horse breeding farms, breeding systems, training and selling horses, western equitation. (1 lecture, 6 lab hours; 1 week-end field trip)

**161. Animal Science Technology (3)**

Prerequisite: junior standing or permission of instructor. Techniques used in applying theories and principles of the disciplines encountered in the animal sciences.

**171. Marketing Livestock and Meat (3) (Former AH 175)**

Prerequisite: junior standing and permission of instructor. Economic principles in marketing livestock and livestock products; demand, supply, distribution; markets and marketing procedures; classifying, grading, evaluating livestock for marketing. (2 lecture, 3 lab hours)

**DAIRY HUSBANDRY (AnSc)****12. Dairying (3) (Former DS 11A-B)**

Survey of all important branches of the dairy industry; principles and practices in milk production; basic principles of processing market products. (2 lecture, 3 lab hours)

**62. Dairy Cattle Selection and Evaluation (3) (Former DS 56)**

Correlation of production and pedigree records with type classifications in evaluating dairy cattle; techniques in selecting, fitting, and showing dairy cattle. (2 lecture, 3 lab hours)

**102. Physiology of Lactation (2)**

Prerequisite: AnSc 12, 110. Physiological factors of mammary gland development and function.

**112. Dairy Cattle Management (3) (Former DS 102)**

Prerequisite: AnSc 12, Econ 1A. Basic ideas, costs, and concepts necessary for the successful operation of a modern dairy production unit.

**122. Advanced Dairy Cattle Selection (2; max total 4) (Former DS 55, 105)**

Prerequisite: AnSc 12. Practice in judging and selection of dairy cattle; detailed scoring of cattle according to breed types and characteristics; training in oral justification of comparative placings. Intercollegiate judging competition. (1 lecture, 3 lab hours; field trips)

**152. Artificial Insemination (2) (Former DS 110)**

Prerequisite: AnSc 12, 110, Biol 120. Basic principles of artificial insemination of dairy cattle; semen collection, processing, evaluation and use. (1 lecture, 3 lab hours)

**POULTRY SCIENCE (AnSc)****14. Poultry Production (3) (Former PH 1)**

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

**104. Poultry Anatomy, Physiology, and Pathology (3)**

Prerequisite: AnSc 14. Structure, function, and diseases of domestic poultry. (2 lecture, 3 lab hours)

**154. Poultry Meat (4)**

Prerequisite: AnSc 14, 104. Principles, practices, and problems in the production and marketing of poultry meat. (3 lecture, 3 lab hours)

**164. Egg Production and Marketing (4) (Former PH 34)**

Prerequisite: AnSc 14, 104. Principles, practices, and problems in production and marketing eggs and egg products. (3 lecture, 3 lab hours)

**174. Poultry Reproduction (4) (Former PH 181)**

Prerequisite: AnSc 14, 104, Biol 120. Principles, practices, and problems involved in the breeding, hatching, and marketing of chicks and poults. (3 lecture, 3 lab hours)

## PLANT SCIENCE DEPARTMENT

Professors: Karle (Chairman), Biehler, Burger, Petrucci, Strong

Associate Professors: Brownell, R. D. Harrison, Hewitt, Ishimoto, Ritenour, Van Elswyk

Assistant Professor: A. Olney

Part-time: Dokoozlian, Engleman, Frencer, Norlyn, J. Olney, Shasky

The Plant Science Department offers majors in agribusiness, agricultural inspection and services, agricultural science, agronomy, horticulture, ornamental horticulture, and viticulture and enology.

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

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

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

The *agricultural science major with an option in plant science* prepares students for a highly science-oriented job objective and provides the necessary undergraduate courses for students seeking advanced degrees.

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

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

The *ornamental horticulture major* prepares students for the nursery industry, landscaping and grounds work, and sales positions.

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

## SUPERVISED PROJECTS

The agriculture program is unique in that it provides opportunity for students to gain both theoretical training and practical experience in farming while pursuing their college programs. The supervised project experience is designed to supplement the lecture and laboratory assignments, giving students greater opportunity to develop the practical side of farming. The college owns all of the necessary equip-

ment for student projects. A rental fee is charged for use of equipment. Proficiency in operating equipment must be demonstrated before projects may be undertaken. Students sign contracts with the Fresno State College Agricultural Foundation wherein they agree to perform the labor required in caring for their projects. The Agricultural Foundation serves as a banking agency in providing the money students may need for the project materials. Students must submit records on each enterprise to the Agricultural Foundation and share the profit or loss with the Foundation according to established percentages.

In the Plant Science Department, each of the major programs provides opportunity for project participation, usually limited to five-acre plots. Under certain conditions, reduced or expanded acreage may be allowed. Students prepare seed beds, plant, cultivate, irrigate, control insect pests and weeds, and harvest and market their crops, in addition to making all managerial decisions necessary to completion of the enterprise.

#### **Agribusiness (Plant Science Option)**

*Units*

PlSc 30, 50, 121, 131, 151, 171; elect 15 units from one of the following: agricultural inspection and services, agronomy, horticulture, ornamental horticulture, or viticulture; Acct 1A-B; Mkt 100; Bus Ad 18, 65, 110, 118, 133, 151; business elective (3 u.d.) ..... 64

*Additional Requirements:* Ag 10, 31, 112; Bot 10, 104; Chem 2A-B, 8; Econ 1A-B.

#### **Agricultural Science (Plant Science Option)**

PlSc 30, 50, 121, 151, 171; Ag 112; elect 18 (9 u.d.) units from one of the following: agronomy, horticulture, ornamental horticulture, or viticulture..... 31

*Additional Requirements:* Ag 10, Mcrb 20; Zool 10; Biol 120; Bot 1, 104; Chem 1A-B, 8, 104, 105, 109; Math 40; Phys 2A; Zool 103, 116.

#### **Agricultural Inspection and Services**

PlSc 14, 16, 17, 21, 25, 30, 50, 91, 101, 111, 121, 127, 131, 151, 171; elect PlSc 166, 174, or 177; Mcrb 20..... 52

*Additional Requirements:* Ag 10, 151; Bot 1, 104; Econ 1A; Chem 2A-B, 8; Zool 10; Biol 120; AgM electives 4 units.

#### **Agromony**

PlSc 13, 14 or 34, 30, 50, 121, 131, 140, 171; Ag 112; agronomy electives (12 un) 40

*Additional Requirements:* Ag 10, 151; Bot 1, 104; Econ 1A; Chem 2A-B, 8; Zool 10; Biol 120; AgM electives 8 units.

#### **Horticulture**

*Units*

PlSc 16, 16L, 30, 50, 116, 121, 126, 131, 141, 166, 171, 186; viticulture electives (6 un); horticulture elective (3 un) ..... 44

*Additional Requirements:* Ag 10, 151; Bot 1, 104; Econ 1A; Chem 2A-B, 8; Biol 120; Zool 10; AgM electives 6 units.

#### **Ornamental Horticulture**

PlSc 15, 20, 25, 30, 35, 50, 115, 121, 125, 131, 151, 165, 171, 175, 185; Mcrb 20..... 50

*Additional Requirements:* Ag 10, 151; Bot 1, 104; Econ 1A; Chem 2A-B, 8; Zool 10; Biol 120; AgM electives 6 units.

#### **Viticulture and Enology (Viticulture Option)**

PlSc 17, 27, 30, 50, 117, 121, 127, 131, 141, 171, 177, 187, 197; Enol 15; horticulture electives (6 un) ..... 49

*Additional Requirements:* Ag 10, 151; Bot 1, 104; Econ 1A; Chem 2A-B, 8; Zool 10; Biol 120; AgM electives 6 units.

### Courses

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

#### PLANT SCIENCE (PISc)

##### 10. Plant and Man (3)

Principles of plant structure, physiology, heredity, and environment in relation to growth, adaptation and management of crops. Techniques of research; future developments in plant sciences.

##### 20. Plant Propagation (3) (Former OH 3)

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

##### 30. Soils (3) (Former Ag 136)

Prerequisite: Chem 2A-B. Physical and chemical properties of soils influenced by climate, parent material, topography, organisms, and time; use, interpretation, and evaluation of soil practices and research including soil maps, field experiments, fertilizers, physical and chemical analysis. (2 lecture, 3 lab hours; 1 Saturday field trip)

##### 40. Water and Man (3)

Problem approach to man's need for and use of water; his management of water supply, allocation, use, disposal, and quality control for domestic, aesthetic, agricultural, industrial, power, navigation, and recreational uses.

##### 50. Irrigation (3) (Former Ag 146)

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

##### 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.

##### 110. Advanced Irrigation (3) (Former Ag 184)

Prerequisite: PISc 50 or equivalent. Evaluation of the equipment design, operation, soil and crop response of methods of irrigation, sprinkler methods; pipe line and other methods featuring water control, soil and water conservation. (2 lecture, 3 lab hours; 1 week end field trip)

##### 120. Soil Classification and Survey (2)

Prerequisite: PISc 30. Influence of environmental factors on soil development; description and identification of soil profiles and mapping, interpretation of survey data. (Saturday field trips)

##### 130. Saline and Alkaline Soils (2)

Prerequisite: Chem 2A-B. Problems in the evaluation, classification, reclamation, and management of salt-affected soils; salt tolerance and sensitivity of native and crop plants. Water quality studies in relation to irrigation and soil reclamation.

##### 140. Plant Breeding (3) (Former CP 150)

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

**150. Soil Management (3) (Former Ag 182)**

Prerequisite: PISc 30. Factors affecting soil fertility, management of soils, attaining continuous maximum productivity. Physical, chemical, and field tests on soil fertility and crop management. (2 lecture, 3 lab hours; 1 Saturday field trip)

**160. Plant Science Seminar (1; max total 2)**

Undergraduate seminar for advanced students in junior or senior year.

**170T. Topics in Plant Science (1-6; max total 6 if no topic repeated. Geog 114)**

Prerequisite: junior standing. Plant science, agronomy, horticulture, and other associated areas.

**180. Undergraduate Research (1-4; max total 4)**

Open to juniors and seniors. Exploratory work on a suitable agricultural problem in plant science.

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

See *Regulations and Procedures—Independent Study*.

**PLANT PROTECTION (PISc)****21. Principles of Plant Protection (3) (Former Ag 13)**

Recommended for students not planning to take advanced courses in these areas. Survey of the pest control field, insects, plant diseases, rodents, and weeds.

**91. Apiculture (2) (Former Ag 113)**

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

**101. Plant Quarantine (3) (Former Ag 105)**

Prerequisite: PISc 121. The biological, economic, and administrative aspects of plant quarantine; study of the plant pests under federal and state quarantine laws.

**111. Fruit and Vegetable Standards (3) (Former Ag 114)**

State and federal standards and regulations for packing, processing, and shipping fruits and vegetables. (2 lecture, 3 lab hours)

**121. Economic Entomology (3) (Same as Ent 106. Former Ag 106)**

Prerequisite: Bot 10 or Zool 10. General and economic entomology; taxonomy of the principal orders of insects; life histories, habits, recognition, and control of the principal agriculture insect pests of the San Joaquin Valley. (2 lecture, 3 lab hours; field trips)

**131. Weeds (3) (Former CP 60)**

Prerequisite: Bot 1, Chem 2A-B. Weeds common to the San Joaquin Valley, their identification and control. (2 lecture, 3 lab hours)

**141. Fruit Diseases and Pests (3) (Former V 110)**

Fruit diseases and pests; identification and control; application of sprays, insecticides; establishment of control programs. (2 lecture, 3 lab hours)

**151. Properties of Pesticides (3) (Former Ag 159)**

Prerequisite: Chem 8. Physical and chemical properties of the principal insecticides, fungicides, and nemotocides; formulations, regulations, and typical uses.

**161. Plant Nematology (3)**

Prerequisite: Zool 10 or equivalent. Morphology, life history, parasitic activity, and control of economically important nematodes with emphasis of plant-parasitic forms. (2 lecture, 3 lab hours)

**171. Plant Pathology (4) (Former Ag 130)**

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

**181. Soil Microbiology (3)**

Isolation, population studies and biochemical activities of soil organisms related to organic matter and agricultural chemicals decomposition, including their effects on plant growth. (2 lecture, 3 lab hours)

**AGRONOMY (PISc)****13. Agronomy (3) (Former CP 11)**

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

**23. Forage Crops (3) (Former CP 51)**

Prerequisite: PISc 13 or permission of instructor. Irrigated forage crops of California as related to livestock enterprises; cultural methods, harvesting, marketing, quality, insect and disease control. (2 lecture, 3 lab hours)

**33. Fiber and Oil Crops (3) (Former CP 52)**

Prerequisite: PISc 13. Fiber and oil crops, cotton, flax, ramie, castor beans, safflower, common to the San Joaquin Valley; cotton production; varieties and improvement, cultural methods, harvesting and marketing. (2 lecture, 3 lab hours)

**43. Cereal Crops (3) (Former CP 53)**

Prerequisite: PISc 13. Cereal crops common to the San Joaquin Valley; varieties and cultural practices, harvesting and marketing. (2 lecture, 3 lab hours)

**113. Seed Production (3) (Former CP 103)**

Prerequisite: PISc 13 or permission of instructor. Principles and practices in the culture of vegetable and field crops for seed production; harvesting, storage, yields, quality, seed laws, certification, seed cleaning, and marketing. (2 lecture, 3 lab hours)

**123. Cotton Technology (3) (Former CP 105)**

Prerequisite: PISc 33 or equivalent. Cotton harvesting, processing, marketing, utilization, and testing; cotton fiber technology. (2 lecture, 3 lab hours)

**173. Range Management (3) (Former CP 118)**

Prerequisite: PISc 13 or permission of instructor. Identification of range forage; estimating carrying capacity; methods of range conservation, controlled grazing, water development, rodent control, fertilization, reseeding, brush removal; identification of poisonous plants. (2 lecture, 3 lab hours; 1 Saturday field trip)

**183. Cotton Classing (2) (Former CP 152)**

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

**VEGETABLE CROPS (PISc)****14. Vegetable Crops (3) (Former CP 12)**

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

**34. Vegetable Field Crops (3) (Former CP 56)**

Prerequisite: PISc 14. Methods of production, harvesting, grading, storing, and processing vegetable crops common to the San Joaquin Valley; potatoes, tomatoes, sweet potatoes, carrots, melons, and lettuce. (2 lecture, 3 lab hours; 3-day field trip)

**174. Physiology of Vegetable Crops (3)**

Prerequisite: PISc 14, Bot 104. Principles of plant physiology related to factors associated with maturity, quality, pest resistance, development of new varieties, and production of vegetables. (2 lecture, 3 lab hours)

**ORNAMENTAL HORTICULTURE (PISc)****15. Principles of Landscape Gardening (3) (Former OH 22)**

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

**25. Plant Identification (3) (Former OH 33)**

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

**35. Principles of Nursery Operation (3) (Former OH 53)**

Prerequisite: PISc 20. Nursery structures; practice in production of ornamental, fruit, nut, annual, perennial, bedding, vegetable, and pot plants; retail and wholesale nursery practices. (2 lecture, 3 lab hours)

**55. Introductory Landscape Design (3)**

History and development in the field of landscape design. A study of the need for landscaping in modern man's environment. Consideration of landscaping practices for the modern home and their effect on the home microenvironment.

**65. Introductory Floral Design (3)**

Principles of floral design and floral arrangement. Emphasis on corsages and floral arrangements for the home. (1 lecture, 6 lab hours)

**115. Production of Ornamental Plants (3) (Former OH 123)**

Prerequisite: PISc 35, Bot 1. Production of ornamental trees, shrubs, vines and groundcovers by budding, grafting, bare rooting, and layerage; growth habits, landscape use, identification, cultural requirements. (2 lecture, 3 lab hours)

**125. Ornamental Trees (3) (Former OH 125)**

Prerequisite: Bot 1, PISc 20. Trees grown in California for landscaping, shade and ornamentation; identification, habits of growth, cultural requirements, landscape use. (2 lecture, 3 lab hours)

**145. Floriculture (3)**

The construction, operation, and management of greenhouses and other forcing structures. The greenhouse environment and its relationship to the production of commercial florist crops. (2 lecture, 3 lab hours)

**155. Plant Hormones (3)**

The effects of plant hormones and other growth regulating chemicals on the physiology, growth, and development of horticultural plants. (2 lecture, 3 lab hours)

**165. Turfgrass Production and Management (3) (Former OH 132)**

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)

**175. Nursery Management (3) (Former OH 162)**

Prerequisite: PISc 15, 25, 115. Design, construction and utilization of nursery structures; control of temperatures and lighting; business organization. (2 lecture, 3 lab hours)

**185. Landscape Design (3) (Former OH 163)**

Prerequisite: senior standing. The analysis and solution of construction problems as they relate to design and site development.

**HORTICULTURE (PISc)****16. Principles of Fruit and Nut Growing (3) (Former H 11)**

Origin, history, distribution, and adaptation of fruit and nut plants; flowering and fruiting, physiological responses to the environment and cultural modifications.

**16L. Principles of Fruit and Nut Growing Laboratory (1)**

Prerequisite: PISc 16 (concurrent). Application and demonstration of the principles of fruit growing. (3 lab hours)

**56. Citrus and Other Subtropical Fruits (3) (Former H 52 and H 55)**

Production of subtropical fruits including dates, avocados, figs, and especially citrus; cultural operations and management practices. (2 lecture, 3 lab hours)

**66. Fruit Varieties (3) (Former H 57)**

Prerequisite: PISc 16 or permission or instructor. Deciduous fruit and nut varieties common to California; species identification, adaptation, and use. (2 lecture, 3 lab hours)

**116. Principles of Fruit Production (3) (Former H 12)**

Adaptation of fruits to their environments; fundamentals of fall cultural practices; species and varietal differences for peach and nectarine, plum, apple, pear, and apricot. (2 lecture, 3 lab hours)

**126. Principles of Fruit Production (3)**

Prerequisite: PISc 16 or equivalent. Floral and vegetative development, pollination, and nutrition; fundamentals of spring cultural practices; species and varietal differences for almond, sweet cherry, prune, and walnut. (2 lecture, 3 lab hours)

**136. Principles of Citriculture I (3)**

Prerequisite: Bot 1 or equivalent. A study of the history and botany of citrus and citrus relatives; citrus varieties, flowering, and fruiting. (2 lecture, 3 lab hours)

**146. Principles of Citriculture II (3)**

Prerequisite: Bot 1, PISc 136. Commercial variety adaptation to environment (soil and climate), cultural practices, rootstocks, propagation, production and economics. (2 lecture, 3 lab hours)

**166. Postharvest Physiology and Marketing of Fruits (3) (Former H 112)**

Prerequisite: PISc 16, 126. Fundamentals of fruit handling (harvesting, grading, packing, cooling, storage, and transportation); marketing principles; principles concerned with fruit maturity. (2 lecture, 3 lab hours)

**186. Orchard Management (3) (Former H 186)**

Prerequisite: PISc 116, 126. Practices and principles in planning, establishing, and maintaining fruit and nut crops. (2 lecture, 3 lab hours)

**VITICULTURE (PISc)****17. General Viticulture (3) (Former V 11)**

Production of grapes; history, structure, and climatic requirements of the vine; grape judging; study of wine, raisin and table grapes; practice in fall and winter cultural operations with emphasis on pruning. (2 lecture, 3 lab hours; 3 on-campus field trips)

**27. Raisin Production and Processing (3) (Former V 13)**

Prerequisite: PISc 17 or permission of instructor. Principles and practices of raisin production, dehydration and processing operations; utilization of the college vineyard and raisin processing laboratory. (2 lecture, 3 lab hours)

**117. Vineyard Operations (4) (Former V 16)**

Application of spring vineyard operations with emphasis on planting and propagation; effects of growth regulators, vine behavior, physiology, and vine training. (3 lecture, 3 lab hours)

**127. Grape Varieties (3) (Former V 50)**

Prerequisite: PISc 17. Grape varieties common to California; rootstocks and species, identification, adaptability, use and acreage; taste testing fresh grapes.

**177. Postharvest Physiology of Grapes (4) (Former V 101)**

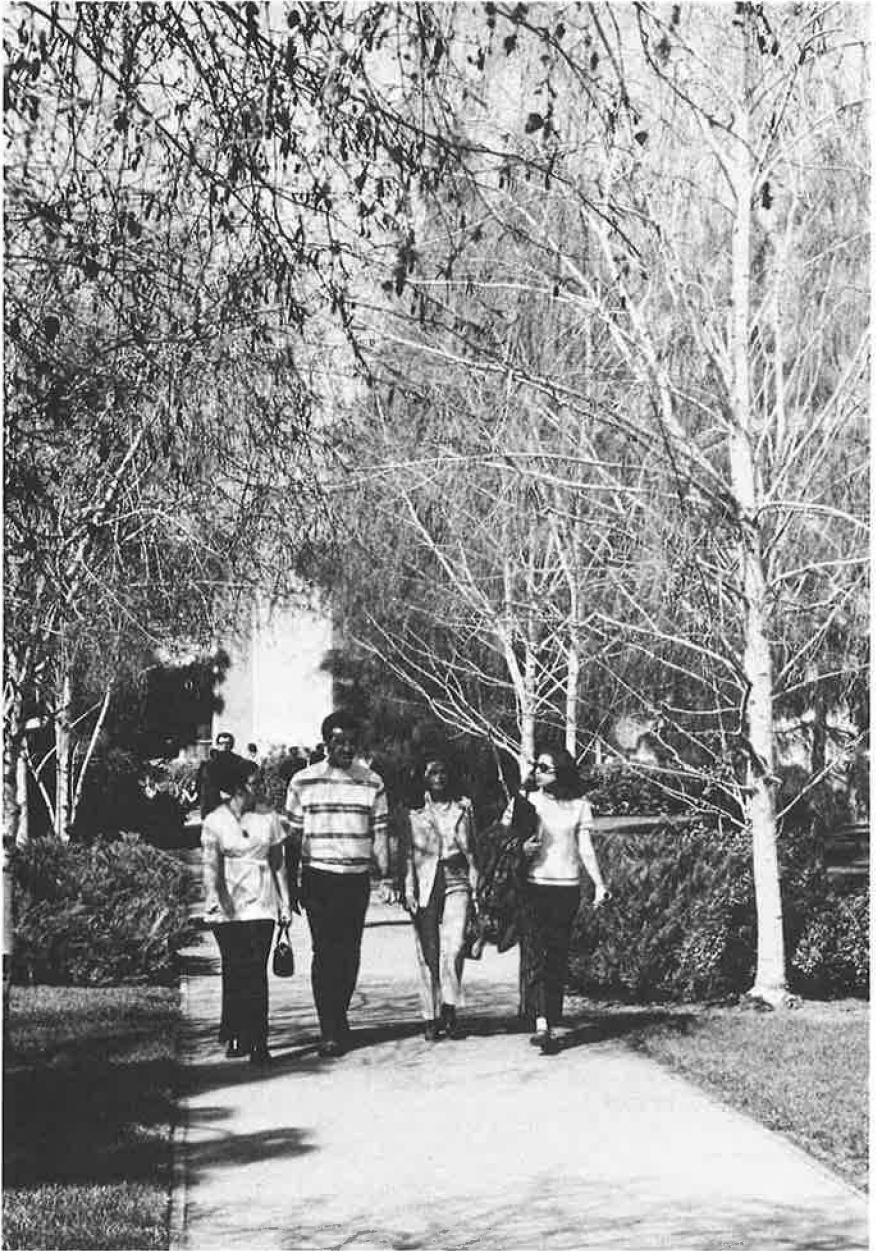
Prerequisite: Bot 1, 104, PISc 117. Effects and changes incurred in grapes when subjected to various environments and treatments, transit, and marketing variables and their control. (3 lecture, 3 lab hours; 3-day field trip)

**187. Advanced Viticulture (3) (Former V 166)**

Prerequisite: permission of instructor. Relating the various cultural techniques to the physiology of the grape vines; effect of these techniques on vine health and vigor; economics and management of vineyards. (2 lecture, 3 lab hours; 3-day field trip)

**197. Viticulture Seminar (1; max total 2) (Former V 170)**

Open to seniors majoring in viticulture and enology. Latest developments in research; assigned research paper in viticulture or enology, oral and written presentation.



SCHOOL OF ARTS AND SCIENCES

# SCHOOL OF ARTS AND SCIENCES

Phillip N. Walker, Acting Dean

<i>Department</i>	<i>Chairman</i>
Anthropology.....	Sydney R. Story
Art.....	Heinz N. Kusel
Biology.....	Keith M. Standing
Chemistry.....	Richard P. Ciula
Economics.....	Robert A. Minick, Jr.
English.....	Eugene E. Zumwalt
Foreign Language.....	Edgar A. List
Geography.....	Chester F. Cole
Geology.....	Bruce A. Blackerby
History.....	Peter J. Klassen
Linguistics.....	Edward R. Gammon
Mathematics.....	Burke Zane
Music.....	Wilson W. Coker
Philosophy.....	James Marvin Smith
Physical Education and Recreation.....	Cecil N. Coleman
Physics.....	Frederic A. Scott (fall), Michael J. Zender (spring)
Political Science.....	John A. Rotstan
Psychology.....	James Mitchell Smith
Sociology.....	William C. Beatty
Speech Arts.....	Gaylord O. Graham (acting)
Urban and Regional Planning.....	Harold H. Tokmakian

The School of Arts and Sciences, as the academic core of the college, provides a complete spectrum of the academic disciplines normally found in a liberal arts college. The broad fields covered include ethnic studies, fine arts, humanities, natural sciences, social sciences, and physical education. Instruction in these areas is designed with two primary aims: that of producing a liberally educated person, one who will take his place in society with independence of mind and a devotion to free inquiry; and that of professional training in depth for those who wish to pursue one of these disciplines as a life's work.

The school discharges these two obligations by providing the major portion of the college general education program and by providing both graduate and undergraduate majors or fields of concentration in its various departments and in certain interdisciplinary areas. Students seeking career and educational information related to the School of Arts and Sciences are urged to consult directly those identified with the area of interest.

## ANTHROPOLOGY DEPARTMENT

Professor: W. Beatty

Associate Professor: Story (Chairman)

Assistant Professors: Bowen, Jennings, van der Elst

Part-time: Hiebert

The department offers a major for bachelor of arts degree in anthropology and a minor for students majoring in other departments. The major is designed to provide a broad liberal arts background, as well as an adequate basis for graduate education.

The department cooperates with other departments in providing for a concentration in Asian Studies and Latin American Studies. (See *Special Programs—Asian Area Courses, Latin American Studies*)

## FOREIGN LANGUAGE REQUIREMENT

Two years of satisfactory collegiate study (or equivalent) in one modern foreign language are required of students majoring in anthropology. Reading knowledge of the language is emphasized. See *Degrees and Credentials—Foreign Language Requirement* for equivalents and alternative ways of meeting the requirement.

## MAJOR

The following degree major requirements are in addition to general education requirements.

<b>Anthropology</b>	<i>Units</i>
Anthro 1, 2, 3, 104, 115.....	15
Anthropology electives (ud).....	18
Elementary statistics, Ling 135, Biol 120.....	10
	—
	43

## MINOR

The following minor requirements are in addition to the general education requirements.

<b>Anthropology</b>	
Anthro 1, 2, 3, 104.....	12
Electives in anthropology (ud).....	9
	—
	21

## CREDENTIAL PROGRAM

For information on the current credential program consult the departmental advisers and the School of Education; see the section on *Public School Credentials*.

## GENERAL EDUCATION REQUIREMENTS

The following courses will satisfy general education requirements: *Area I*: Anthro 1. *Area II*: Anthro 2, 3, 102, 103, 104, 114, 120, 122, 123, 124, 125, 126, 131, 150T. (See *General Education—Courses*)

*Courses*

## ANTHROPOLOGY

## 1. Introduction to Physical Anthropology (3)

Relation of man and the animals; evolution of man, fossil man, race and racial classification; racial theories.

**2. Introduction to Cultural Anthropology (3)**

The nature of culture; culture growth and history; survey of cultural phenomena; cultural theory; applied anthropology.

**3. Introduction to Prehistory (3)**

Prerequisite: Anthro 2. Development of archaeology and its basic concepts; general sequences of cultural development in the Old and New Worlds.

**102. Ethnology (3)**

Prerequisite: Anthro 2 or permission of instructor. Major theories of culture; survey of culture types and their distribution; ethnological problems.

**103. Acculturation (3)**

Prerequisite: Anthro 2 or permission of instructor. Impact of western civilization upon nonwestern societies; social and cultural adjustments to impact; disintegration; reinterpretation, and reintegration; place of anthropology in international relations and colonial administration.

**104. Social Anthropology (3)**

Prerequisite: Anthro 2 or permission of instructor. The place of anthropology in the social sciences; theories and schools in social anthropology; community studies, integration, functionalism, psychological aspects.

**109. Seminar in Theory of Prehistory (3)**

Prerequisite: Anthro 2, 3, or permission of instructor. Current problems of prehistory, application to anthropology; theoretical approaches to archaeology.

**110. Archaeological Laboratory Field Methods (4)**

Prerequisite: Anthro 2, 3, 109, permission of instructor. Application of archaeological techniques to the solution of an archaeological problem; field excavation, laboratory processing, and analysis of artifactual material. (2 lecture, 1 6-hour lab)

**112. Comparative Societies and Social Organizations (3)**

Prerequisite: Anthro 2 or 104 (concurrent) or permission of instructor. Empirical ethnographic examples of preliterate, peasant, and urban societies; classification of prehistoric, classical, and contemporary societies; theories derived from comparison of social organizations; processes of social organizational change.

**114. Seminar in Psychological Anthropology (3)**

Prerequisite: Anthro 2 and Anthro 1 or Psych 10. Influence of culture on perception, motivation, decision-making, autonomy, and personality. Directed library research and reports. Cross-cultural analyses of socialization, relative and absolute deviance, value alternatives, and related topics.

**115. Seminar in Cultural Anthropology (3)**

Prerequisite: Anthro 2, 104. Method and theory in cultural anthropology; reading and analysis of major contributions to modern cultural anthropological thought.

**120. Indians of North America and Meso-America (3) (Former Anthro 105)**

Prerequisite: Anthro 2 or permission of instructor. American Indian peoples and cultures north of the Isthmus of Panama.

**121. South American Indians (3)**

Prerequisite: Anthro 2 or permission of instructor. American Indian peoples and cultures south of the Isthmus of Panama.

**122. Peoples and Cultures of the Pacific Islands (3)**

Prerequisite: Anthro 2 or permission of instructor. The peoples of Polynesia, Melanesia, and Micronesia. Migration theories; contemporary social and political systems; European contacts and culture change.

**123. Civilizations of Southeast Asia (3) (Former Anthro 107)**

Prerequisite: permission of instructor. The peoples and culture of Southeast Asia.

**124. Civilizations of East Asia (3) (Former Anthro 108)**

Prerequisite: permission of instructor. The peoples and cultures of China, Japan, and Korea.

**125. Peoples and Cultures of the Middle East (3)**

Prerequisite: Anthro 2 or permission of instructor. Historical backgrounds and contemporary cultures of the Middle East.

**126. Peoples and Cultures of Africa (3)**

Prerequisite: Anthro 2 or permission of instructor. Historical backgrounds and contemporary cultures of Sub-Saharan Africa; modern social forces and cultural change.

**127. Cultural Adaptations of the New World Negro (3)**

Prerequisite: Anthro 2 and either 126 or permission of instructor. The cultural continuum from tribal societies through peasantry to urbanization. Examination of culture-historic factors such as slavery, stratification, change.

**131. Seminar in North American Prehistory (3)**

Prerequisite: Anthro 2, 3. Aboriginal cultural developments in the New World north of the Isthmus of Panama; major library research projects and reports.

**150T. Seminar in Anthropology (3; max total 9)**

Prerequisite: Permission of instructor. Subspecialties current in anthropology: e.g., ethnohistory, cultural ecology, human population genetics.

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

See *Regulations and Procedures—Independent Study*.

## ART DEPARTMENT

Professor: W. Williams

Associate Professors: Kusel (Chairman), Aiken, Laury, Lund, Maughelli, Minschew

Assistant Professors: Bertoldi, D. Brewer, Delaney, Dolarian, Gaines, Gerowitz, Hui, Lockwood, McDougall, Minnich, Opper, Slusarski, Smalley, G. Thompson, Titelman

Part-time: Dupzyk, Odorfer, Samuelian

The Art Department offers a major in art which leads to a bachelor's degree and a program leading to the master's degree. The program for art majors and minors is designed to provide a liberal arts education and is not directed toward providing terminal vocational or professional training at the undergraduate level.

The department reserves the right to hold projects completed by a student for class credit for a period of three years and to retain for the permanent collection of its gallery such examples as may be selected.

The department cooperates with other departments in providing for a concentration in Asian Studies and Latin American Studies. (See *Special Programs—Asian Area Courses; Latin American Studies*)

### MAJOR

The major in art for the bachelor of arts degree provides for the study of art in history, practice, and appreciation. It is designed to prepare a student for post-graduate training leading toward vocational goals. The major consists of 26 upper division units in art (at least 3 of which must be in Art 105T) and the presentation of a satisfactory senior exhibit. The student will propose a program which is appropriate to his needs and interests in consultation with his adviser. The courses listed below indicate the general approach to be taken in respect to history, theory, and studio areas. Consult the department for specific content of course sections.

### MINOR

The minor consists of 20 upper division units (at least 3 of which must be in Art 105T). The student will propose a program in consultation with his Art Department adviser.

### CREDENTIAL PROGRAM

For information on the current credential program consult departmental advisers and the School of Education; see the section on *Public School Credentials*.

### MASTER OF ARTS DEGREE

The graduate program for the master of arts degree in art is based upon the equivalent of the undergraduate major in art at Fresno State College. The program provides specifically for certain nonvocational areas of concentration; design, drawing, painting, ceramics, sculpture, art history, and theory. For specific requirements consult the chairman of the departmental graduate committee; for general requirements see *School of Graduate Studies*. For detailed information about the graduate program at Fresno State College, see the *Graduate Bulletin*, available in the Office of the Dean, School of Graduate Studies.

### GENERAL EDUCATION REQUIREMENTS

The following courses will satisfy general education requirements. *Area III*: Art 1, 5 (3 units), 6 (3 units), 20T, 30, 60, 105T (3 units), 160. *Area IV*: Art 5 (1 unit), 6 (1 unit), 105T (1 unit). (See *General Education—Courses*.)

*Courses***ART****1. Art Forms (3)**

Description and investigation of traditional and contemporary art forms; discussion and studio projects. (6 lecture-lab hours)

**5. History of Art I (3-4) (Former Art 119, to 12th Century)**

Art history from prehistoric times to the 12th century. Assigned writing in the 4-unit offering will consist of a minimum of 3,000 words. (6 lecture-lab hours, plus 1 hour arranged)

**6. History of Art II (3-4) (Former Art 119, since 12th Century)**

Art history from the 12th century to the present. Assigned writing in the 4-unit offering will consist of a minimum of 3,000 words. (6 lecture-lab hours, 1 hour arranged)

**20T. Studio Processes (3; max total per studio area)**

May be repeated for credit in different areas. Corresponding areas not open to students with credit in Art 3, 9, 11, 14, 18, 40, 50, 55A, 55B, 101, 114, 116, 144. Basic studio processes. (6 lecture-lab hours)

**20.0. Drawing****20.4. Photography****20.1. Painting****20.5. Printmaking****20.2. Ceramics****20.6. Design****20.3. Sculpture****20.7. Crafts****30. Philosophies of the Visual Arts (3)**

Philosophies in past and present art movements.

**60. Art Tours (3)**

Students with more than 60 units should enroll in Art 160. Directed trips to galleries, museums, and other places of interest to the student of art; assigned papers, projects, and discussion. Chartered travel costs will be approximately \$50.

**105T. Topics in Art History (3-4 per area)**

Corresponding areas not open to students with credit in Art 119. Prerequisite: permission of instructor. Assigned writing in the 4-unit offering will consist of a minimum of 3,000 words. (6 lecture-lab hours)

**105.0. The Ancient World****105.4. The Nineteenth Century****105.1. The Middle Ages****105.5. The Twentieth Century****105.2. The Renaissance****105.6. Oriental Art****105.3. The Modern World****105.7. American Art****120T. Studio (3; max total see below)**

Maximum of 12 units in one area may be applied to major. Prerequisite: corresponding Art 20T area or permission of instructor. Advanced study in content and expression; application of studio processes; special sections in methods for elementary and secondary schools. (6 lecture-lab hours)

**120.0. Drawing****120.5. Printmaking****120.1. Painting****120.6. Design****120.2. Ceramics****120.7. Crafts****120.3. Sculpture****120.8. Education****120.4. Photography**

**160. Art Tours (3; max total see below)**

May be repeated for credit by nonmajors. Prerequisite: permission of instructor. Directed trips to galleries, museums, and other places of interest to the student of art; assigned papers, projects, and discussion. Chartered travel costs will be approximately \$50.

**180A-B. Scene Design and Theatre (3-3) (See Drama 180A-B)****181A-B. Costume Design for the Stage (3-3) (See Drama 181A-B)****182A-B. Stage and Television Lighting (3-3) (See Drama 182A-B)****190. Independent Study (1-3; max see reference)**

See *Regulations and Procedures—Independent Study*.

**GRADUATE COURSES**

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

**225. Seminar in Art Education (3; max total 9)**

Prerequisite: permission of instructor. Curriculum development; implications of recent research and philosophic inquiry on the subjective dimensions of art education.

**230. Seminar in Art Theory (3; max total 9)**

Prerequisite: permission of instructor. Theory and concepts in the visual arts; patterns and technique of art criticism; preparation, oral presentation, and defense of critical papers.

**240. Seminar in Art Studio (3; max total 15, max 9 in one area of specialization)**

Prerequisite: permission of instructor. Opportunity to work individually with selected staff in areas of specializations: sculpture, design, ceramics, photography, drawing and painting. Concurrent obligation to periodic seminars as scheduled by the instructor.

**260. Seminar in Art History (3; max total 9)**

Prerequisite: six units of art history or permission of instructor. Research problems in art history. Group or individual inquiry as determined by instructor.

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

See *Regulations and Procedures—Independent Study*.

**298. Exhibition (2-6; max total 6)**

Prerequisite: permission of department graduate committee chairman. Preparation and exhibition of original works under the supervision of an Exhibition Committee of three faculty members. Students must pass an oral examination based on the work to be exhibited.

**299. Thesis (2-6; max total 6)**

Prerequisite: permission of chairman of Art Department Graduate Committee; see *Master's Degrees—Thesis Requirement*. Preparation, completion, and submission of an acceptable thesis for the master's degree.

**IN-SERVICE COURSES**

*Note: In-service courses (300 series) are not intended for use on degrees except by special, prior approval. See Extension and Summer Session Bulletins for course descriptions.*

## BIOLOGY DEPARTMENT

Professors: Standing (Chairman); Arce, J. Carr, D. Falk, Hadsall, Hawbecker, Latimer, McClintic, Rees, P. Smith, Staebler, Woodwick

Associate Professors: Burdick, Daubs, R. L. Evans, Harmon, Pigg, Tribbey, Weiler

Assistant Professors: Buckley, Haas, Hersey, Hsu, Mallory, Meyer, Moyle, Spieler

Lecturers: Heckmann, LaBar, N. Zender

Part-time: Eissingner, Isaak, G. Johnson, Kirkhart, MacDonald, L. Smith, Toffoli, Zellmer

The Biology Department includes the following fields: biology, botany, entomology, microbiology, physiology, and zoology. Courses in each of these fields may be found under these headings. Courses are provided for general students, for those who are training for vocational and preprofessional work in biological fields, for students planning to become teachers, and for those who plan to enter the biological services of government agencies.

In addition to the general education offerings, the department offers majors and minors for the bachelor of arts degree; the bachelor of science degree; and master of arts degrees in biology and microbiology.

Five of the California State Colleges, including Fresno State College, cooperate in the management of the Moss Landing Marine Laboratories on Monterey Bay, an establishment which offers regular course work and opportunities for research which are applicable to graduate and undergraduate programs. Consult the Biology Department. See *Special Programs—Moss Landing Marine Laboratories*; course descriptions follow Zoology courses.

### PREPROFESSIONAL PREPARATION

For preprofessional program in dentistry, medicine, and pharmacy, see *Preprofessional Preparation*.

### ADVANCED PLACEMENT

Students who earn a composite score of "4" or "5" on the advanced placement examination in biology administered by the College Entrance Examination Board will be allowed 3 units of credit for Biology 10. A score of "2" or "3" may receive similar credit, subject to the approval of the department. A score of "1" will receive neither credit nor advanced placement.

### FOREIGN LANGUAGE REQUIREMENT

One year of satisfactory collegiate study (or equivalent) in one foreign language is required for the bachelor of arts degree majors in biology, botany, microbiology, and zoology. See the general statement under *Degrees and Credentials—Foreign Language Requirement* for equivalents and alternative ways of meeting the requirement. Any student planning advanced study is advised also to meet the foreign language requirement of the school he plans to attend.

### BACHELOR OF ARTS DEGREE MAJORS

The Biology Department offers majors for the bachelor of arts degree in biology, botany, microbiology, and zoology for students planning to enter graduate schools and research, professional schools, and biological field work. These majors consist of 32 to 40 units of which 24 must be upper division. Students must be reasonably prepared in physics, inorganic, and organic chemistry.

See bachelor of science degree in microbiology.

<b>Biology Major for BA</b>	<i>Units</i>
Bot 1 or equivalent.....	3-5
Zool 1 or equivalent.....	3-5
Biol 100, 120 .....	6
Field course in biological science (see below).....	3
Biological science electives (incl 7 units in botany and 7 units in zoology-entomology-physiology) .....	21-25
	40

*Additional Requirements:* Chem (including organic), Phys 2A or PSci 10, statistics. See *Foreign Language Requirement*.

*Approved Field Courses:* Biol 112, 133, 208, Bot 106, 107, Ent 101, Zool 113, 114, 134, 135, 137, 138, 140, 165.

<b>Botany Major for BA</b>	
Bot 1 .....	5
Biol 100, 120 .....	6
Biological science electives.....	3
Botany electives (ud).....	22
	36

*Additional Requirements:* Zool 1; Chem (incl organic) 8-9 units, plus a minimum of 10 units selected from the following: Phys 2A-B, Geol 109, statistics, or additional foreign language.

<b>Microbiology Major for BA</b>	
Mcrb 104, 117, 118, 161, 185, 189 .....	26
Biol 100, 120.....	6
	32

*Additional Requirements:* Bot 10 or 1; Zool 10 or 1; Chem 1A-B, 28, 104, 105, 109, 128; Physics 2A-B. See foreign language requirement.

<b>Zoology Major for BA</b>	
Bot 1, Zool 1, 160, 164; Zool 114 or Ent 101.....	21
Biol 100, 120 .....	6
Approved biological science electives (at least 6 units zoology-entomology-physiology) .....	9
	36

*Additional Requirements:* at least 8 units chemistry (incl organic), 6 units physics, 3 units statistics. See *Foreign Language Requirement*.

#### BACHELOR OF SCIENCE DEGREE

The bachelor of science degree in microbiology is offered for students preparing for careers in laboratory technology, especially medical technology. This degree requires a total of 128 units. The general degree regulations and general education requirements must also be fulfilled.

<b>Microbiology Major for BS</b>	<i>Units</i>
Mcrb 104, 117, 118, 150, 185 .....	22
Biol 100 .....	3
Physio 1 .....	4
Zool 108, 158 .....	8
	37

*Additional Requirements:* Bot 10, Zool 1, Chem 2A-B, 8, 104, 105, 109, 150, 151, 153, 154.

**SUGGESTED SEQUENCE OF COURSES FOR BACHELOR OF ARTS DEGREE MAJORS**

In addition to the specific courses listed below, general education requirements and electives should be included to bring total to 15-17 units per semester. A total of 124 units must be completed for the bachelor of arts degree. Electives may include minor and credential requirements. (See *Degrees and Credentials*.)

**Biology**

1st Year: Chem 2A-B, Bot 1, F Lang

2nd Year: Chem 8, Physics 2A, Zool 1  
(Recommended: Geol 1, Physics 2B)

3rd & 4th Years:  
Biol 100, 120, statistics; complete major requirements  
(Recommended: Chem 109)

**Botany**

1st Year: Bot 1, Zool 1, Chem 1A or 2A-B, F Lang

2nd Year: Physics 2A-B, Chem 8

3rd & 4th Years:  
Complete upper division botany courses, Biol 100, 120, Biol Sc electives

**Microbiology**

1st Year: Bot 1 or 10, Chem 1A-B, F Lang

2nd Year: Mcrb 104, Chem 28, 109, 128, Physics 2A-B

3rd & 4th Years:  
Biol 100, 120, Mcrb 117, 118, 161, 185, 189, Chem 105, elective

**Zoology**

1st Year: Zool 1, Chem 1A or 2A-B

2nd Year: Bot 1, Physics 2A-B, Chem 8, Biol 120, F Lang

3rd & 4th Years:  
Major electives, Biol 100; Ent 101 or Zool 114, statistics, Zool 160, 164

**SUGGESTED SEQUENCE OF COURSES FOR BACHELOR OF SCIENCE DEGREE MAJORS**

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

**Microbiology**

1st Year: Zool 1, Bot 10, Chem 2A-B

2nd Year: Mcrb 104, Zool 108, Chem 8, 109, Physio 1

3rd & 4th Years:  
Mcrb 117, 118, 150, 185, Biol 100, Zool 158, Chem 105, 150, 151, 152

**BIOLOGY MINOR**

The biology minor consists of 20 units of which 12 must be upper division.

	<i>Units</i>
Bot 10 and Zool 10 or equivalent.....	6-10
Biol 112 or an approved field course (see below) .....	3
Biol 120 .....	3
Biology electives (6 units ud) .....	6-8

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20-22

*Approved Field Courses:* Biol 112, 133, 208, Bot 106, 107, Ent 101, Zool 113, 114, 134, 135, 137, 138, 140, 165.

*Additional Requirements:* PSci 10 and Chem 2A or 1A.

**CREDENTIAL PROGRAM**

For information on the current credential program, consult departmental advisers and the School of Education; see the section on *Public School Credentials*.

**MASTER OF ARTS DEGREES**

The Biology Department offers master of arts degrees in biology and microbiology.

**Biology**

The graduate program for the master of arts degree in biology is based on the equivalent of a Fresno State College undergraduate major in biology, botany, or zoology. Eighteen of the 30 units required for the degree must be in biological science. For specific requirements consult the department graduate adviser; for general requirements see *School of Graduate Studies*. For detailed information about the graduate program at Fresno State College, see the *Graduate Bulletin*, available in the Office of the Dean, School of Graduate Studies.

**Microbiology**

The master of arts degree program in microbiology provides advanced educational opportunities for certain in-service people (e.g. medical technologists) as well as those newly completing the baccalaureate degree. The curriculum is also designed to meet the needs of those seeking the master of arts degree as a terminal graduate degree for professional advancement and those planning further education leading to the doctorate in bacteriology, microbiology, or molecular biology.

**GENERAL EDUCATION REQUIREMENTS**

The following courses will satisfy general education requirements. *Area I: Biol* 10, 20, 120, *Bot* 1, 10, *Physio* 1, 22, 23, *Zool* 1, 10. (See *General Education—Courses*.)

*Courses***BIOLOGY****1A**

(See *Bot 10*.)

**1B**

(See *Zool 10*.)

**10. Life Science (3) (Former Biol 2A)**

Not open to students with credit in *Bot 1* or *Zool 1*. Principles of biology related to the cell, maintenance, and relation of living organisms, heredity and elementary processes of evolution. (2 lecture, 2 lab hours)

**20. Biology and Society (3)**

Impact of recent biological discoveries upon society, now and for the future; man's animal inheritance, human genetics, genetic engineering, organ transplants, and population problems.

**66. General Human Anatomy (3)**

Recommended: an introductory college biology course. Structure of the human body. (2 lecture, 3 lab hours)

**100. Biological Systems (3)**

Prerequisite: organic chemistry, college botany and zoology or equivalent. Principles of bioenergetics, cybernetics and homeostasis at the cellular, organismic, and ecosystem level.

**101. Nature Study (2)**

Concurrently with Biol 102. Prerequisite: 9 units of natural science including a general biology, botany, or zoology course. Choice and development of natural science materials for elementary schools.

**102. Nature Study Laboratory (1)**

Concurrently with Biol 101. Problems and projects for elementary school. (3 lab or field hours)

**112. Field Biology (3)**

For biology minors only. Prerequisite: Bot 10, Zool 10 or equivalent. Local environmental and biotic interdependencies. (2 lecture, 3 lab or field hours)

**120. Genetics (3)**

Prerequisite: college zoology or botany. Principles of biological inheritance, including gene structure, gene function, statistical methods, problem solving, and human genetics.

**120L. Genetics Laboratory (2)**

Prerequisite or concurrently: Biol 120. Experimental studies on inheritance in plants and animals, including man. (6 lab hours)

**125. Organic Evolution (3)**

Prerequisite: Biol 120 or equivalent. The study of evolutionary processes and patterns. (2 lecture, 1 discussion hour)

**133. Aquatic Biology (4)**

Prerequisite: one year college biology, one semester college chemistry. Geology, chemistry, physics of inland waters as related to biology; community structure, ecological interactions, adaptations, and identification of aquatic organisms. (2 lecture, 6 lab or field hours)

**150. Electron Microscopy (4)**

Prerequisite: permission of instructor. Preparation and examination of biological specimens. Basics of electron microscopy and interpretation of electronographs. (2 lecture, 6 lab hours)

**157. Conservation of Natural Resources (3) (Same as E Ed 157)**

Prerequisite: biological and physical science. Problems in conservation of natural resources in the United States; water supply, soils, minerals, metals, petroleum, natural gas, grasslands, forests, fisheries, wildlife, and recreational areas; local, state, and national plans and organizations for conservation; educational implications and techniques.

**162. Biological Techniques (3)**

For credential candidates only. Prerequisite: upper division in biology, permission of instructor. Collection and preparation of biological materials and specimens for instruction in secondary schools. (1 lecture, 6 lab hours)

**173. Great Men of Science (2)**

Prerequisite: college botany or zoology. Men from all fields of science and their contributions.

**180. Cytology (4)**

Prerequisite: college biology course and a physiology or chemistry course. Methods of cell research; cellular ultrastructure, cell function as an expression of structure. (3 lecture, 3 lab hours)

**185T. Topics in Biology (1-4)**

Prerequisite: permission of instructor. Investigation of selected areas in the field of biology.

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

*See Regulations and Procedures—Independent Study.*

**GRADUATE COURSES (BIOLOGY)**

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

**200. Principles and Great Experiments in Biology (2)**

Development and influence of current biological thought.

**204. Biology of Speciation (2)**

Prerequisite: major in the Biology Department, Biol 120, and an approved field course. Evolution as a process with emphasis on evolutionary mechanisms in plants.

**206. Principles of Taxonomy (2)**

Zoological nomenclature and related fields.

**208. Field Work in Biology (1-6; max total 6)**

Prerequisite: permission of instructor. Botanical and zoological field studies.

**220. Insect Toxicology (3)**

Prerequisite: Ent 101, Chem 8. Mode of action of insecticides and other toxicants in insects and other animals; physical and chemical properties. (2 lecture, 3 lab hours)

**225. Insect Taxonomy (2; max total 4)**

Prerequisite: Ent 101, 115. Identification and classification of major and specific groups of family and generic status. (6 lab hours)

**250. Scientific Research Reporting (2)**

Prerequisite: permission of instructor. Techniques of scientific drawing and writing, illustrating emphasized. (1 lecture, 3 lab hours)

**255T. Topics in Botany (2-3; max total 8)**

Prerequisite: permission of instructor. Investigation of selected areas in the field of botany.

**255.1. Basic Metabolism****255.2. Evolution of Cultivated Plants****255.3. Instrumentation****255.4. Plant Ultrastructure****255.5. Plant Symbiotic Association****265T. Topics in Physiology (2-3; max total 8)**

Prerequisite: permission of instructor. Investigation of selected areas in the field of physiology.

**265.1. Endocrines****265.2. Chemical Physiology****270T. Topics in Zoology (2-3; max total 8)**

Prerequisite: permission of instructor. Investigation of new fields, areas not in current courses, or advanced studies in a given area.

**270.1. Protozoology****270.2. Quantitative Zoology****270.3. Cytogenetics**

**281T. Seminar in Biological Science (1; max total 5, max 2 in one field)**

Prerequisite: permission of instructor. Reviews and reports on current literature in the various phases of biology.

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

See *Regulations and Procedures—Independent Study*.

**299. Thesis (2-4; max total 4)**

Prerequisite: see *Master's Degrees—Thesis Requirement*. Preparation, completion, and submission of an acceptable thesis for the master's degree.

**IN-SERVICE COURSES**

*Note: In-service courses (300 series) are not intended for use on degrees except by special, prior approval. See Extension and Summer Session Bulletins for course descriptions.*

**302. Topics in Biology (3; max total 6)****BOTANY****1. General Botany (5)**

Students with credit Bot 10 will receive only 2 units of credit. Prerequisite to most upper division botany courses. Fundamentals of structure and function in seed plants; survey of plant kingdom. (3 lecture, 6 lab hours)

**10. Plant Biology (3) (Former Biol 1A)**

Not open to students with credit in Bot 1. Structure, function, and development of plants, including topics in heredity, ecology, and evolution. (2 lecture, 2 lab hours)

**104. Plant Physiology (4)**

Prerequisite: college botany, Chem 1A or 2A-B. General metabolism and related processes. (2 lecture, 6 lab hours)

**106. Plant Taxonomy (4)**

Prerequisite: college botany. Principles of plant classification; local flora. (1 lecture, 9 lab or field hours)

**107. Plant Ecology (3)**

Prerequisite: one year college biology. Interrelations of plants and environment. (2 lecture, 3 lab or field hours)

**116. Plant Microtechnique (3)**

Not open to students with credit in Biol 116. Prerequisite: college botany or equivalent. Preparation of plant tissues for histological examination. (9 lab hours)

**134. Plant Anatomy (4)**

Prerequisite: college botany. Initiation, development and structure of cells, tissues and tissue systems in roots, stems and leaves. (2 lecture, 6 lab hours)

**135. Morphology of Non-vascular Plants (3)**

Prerequisite: college botany. Comparative structure and phylogeny of the fungi, algae, mosses, and liverworts. (2 lecture, 3 lab hours)

**136. Morphology of Vascular Plants (4)**

Prerequisite: college botany. Comparative structure and phylogeny of ferns and seed plants. (2 lecture, 6 lab hours)

**137. Plant Morphogenesis (4)**

Prerequisite: Bot 1 or 10. Genetic, physiologic, and morphogenetic factors involved in the organization and development of plants. (2 lecture, 6 lab hours)

**140. General Mycology (4)**

Prerequisite: college botany or college microbiology. Structure, development, physiology, classification, and economic importance of representative genera and species of the fungi. (2 lecture, 6 lab hours, including field trips)

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

See *Regulations and Procedures—Independent Study*.

**200 series.** Graduate courses are listed under *Biology*.

**ENTOMOLOGY****101. General Entomology (3)**

Prerequisite: college zoology or one year of biology. Anatomy, physiology, life history, and classification of insects and other arthropods. (2 lecture, 3 lab or field hours)

**106. Economic Entomology (3) (See Pl Sc 121)****107. Medical Entomology (3)**

Prerequisite: junior standing. Arthropod-borne diseases of man and animals and arthropod vectors of the diseases.

**107L. Medical Entomology Laboratory (1)**

Prerequisite or concurrently: Ent 107. (3 lab hours)

**110. Insect Physiology (3)**

Prerequisite: Ent 101. Principles of physiology as applied to insects; functions of insect body, tissues, and organs. (2 lecture, 3 lab or demonstration hours)

**115. Insect Morphology (4)**

Prerequisite: Ent 101. Comparative study of the form and structure of insects; external and internal anatomy. (2 lecture, 6 lab hours)

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

See *Regulations and Procedures—Independent Study*

**200 series.** Graduate courses are listed under *Biology*.

**MICROBIOLOGY****20. General Microbiology (4)**

Prerequisite: Chem 2A-B; one of the following—Bot 10, Bot 1 or Physio 1. General survey of the field of microbiology; principles and selected practical applications. (2 lecture, 6 lab hours)

**104. Microbiology (5)**

For majors. Prerequisite: organic chemistry; Bot 10 or 1. Morphological and physiological consideration of the Schizomycetes and selected unicellular Eumycetes; techniques, illustration of principles, and determinative bacteriology in the laboratory. (3 lecture, 6 lab hours)

**117. Serology and Immunology (4)**

Prerequisite: Mcrb 104, Chem 8. Principles and applications of plasma changes in presence of antigens. (2 lecture, 6 lab hours)

**118. Bacteriology of Human Disease (5)**

Prerequisite: Mcrb 104, 117, Chem 8. Bacterial, etiological agents of human disease. (3 lecture, 6 lab hours)

**150. Medical Mycology (4)**

Prerequisite: Bot 10 or 1 and Mcrb 104 or 20. Morphology, physiology, and pathogenicity of mycotic agents of human and animal disease. (2 lecture, 6 lab hours)

**161. Microbial Physiology (4)**

Prerequisite: Mcrb 104, Chem 8. Structure and physiological functions in the microbial cell. (2 lecture, 6 lab hours)

**185. Virology (4)**

Prerequisite: permission of instructor. Biological and chemical aspects of viruses. Techniques of viral cultivation, detection, and assay; illustration of principles. (2 lecture, 6 lab hours)

**189. Microbial Genetics (4)**

Prerequisite: Biol 120. The nature of genetic information, its mutation, transfer, and recombination in microbial cells. (2 lecture hours, 2 3-hour labs)

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

See *Regulations and Procedures—Independent Study*.

**GRADUATE COURSES (MICROBIOLOGY)**

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

**256. Advanced General Microbiology (3)**

Intensive study of procaryotic cell structures and their relationship to physiological activities of the cell; enrichment isolation procedures and physiological activities of selected bacterial species, including autotrophic and photosynthetic organisms. (2 lecture, 3 lab hours)

**257. Immunochemistry (3)**

Qualitative and quantitative consideration of the physical, chemical, and structural characteristics of antigens and antibodies and the dynamics of antigen-antibody reactions. (1 lecture, 6 lab hours)

**258. Experimental Virology (3) (Former Biol 258)**

Prerequisite: permission of instructor. Experimental procedures used in bacteriophage and animal virus research; collection, interpretation and presentation of data. (1 lecture, 6 lab hours)

**259. Experimental Infectious Pathology (3) (Former Biol 259)**

Prerequisite: permission of instructor. The production and study of tissue changes resulting from infection with pathogenic microorganisms. (1 lecture, 6 lab hours)

**260T. Topics in Microbiology (2-3; max total 8) (Former Biol 260)**

Prerequisite: permission of instructor. Intensive investigation of selected areas in microbiology.

**281T. Seminar in Microbiology (1; max total 4 if no topic repeated)**

Prerequisite: permission of instructor. Reviews and reports on current literature in the various phases of microbiology.

**290. Independent Study (1-3; max total see reference)**

See *Regulations and Procedures—Independent Study*.

**299. Thesis (2-4; max total 4)**

Prerequisite: see *Master's Degrees—Thesis Requirement*. Preparation, completion, and submission of an acceptable thesis for the master's degree.

**PHYSIOLOGY****1. Human Physiology (4)**

Prerequisite: one year of college chemistry and a college biology course, Biol 66 recommended. Detailed study of the functions of the human body. (3 lecture, 3 lab hours)

**22. Human Anatomy and Physiology (4)**

Not open to students with credit in Biol 66 or Physio 1. Anatomy and physiology of the cell, tissues, skeletal, muscular, nervous and circulatory systems. (3 lecture, 3 lab hours)

**23. Human Anatomy and Physiology (4)**

Prerequisite: Physio 22. Anatomy and physiology of respiratory, digestive, urinary, reproductive and endocrine systems, metabolism and special senses. (3 lecture, 3 lab hours)

**140. Comparative Animal Physiology (4)**

Prerequisite: one year of college chemistry, general zoology, or permission of instructor. Evolution of physiological systems; functional adaptations to different environments; physiological principles as applied to animals. (3 lecture, 3 lab hours)

**170. Cell Physiology (4)**

Prerequisite: organic chemistry. Methods, structural bases, cytoplasmic organoids, molecular components, metabolism. (3 lecture, 3 lab hours)

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

See *Regulations and Procedures—Independent Study*.

**200 series.** Graduate courses are listed under *Biology*.

**ZOOLOGY****1. General Zoology (5)**

Students with credit in Zool 10 will receive only 2 units of credit. Prerequisite to most upper division courses in zoology. Survey of major phyla and principles of animal biology. (3 lecture, 6 lab hours)

**10. Animal Biology (3) (Former Biol 1B)**

Not open to students with credit in Zool 1. Structural and functional comparison of animals; principles and human implications of inheritance, evolution, and ecology; physiology as applied to man. (2 lecture, 2 lab hours)

**103. Vertebrate Zoology (3)**

Not open to students with credit in Zool 164. Prerequisite: college zoology. Study of the vertebrates. (2 lecture, 3 lab hours)

**108. Parasitology (4)**

Prerequisite: college zoology, Chem 1A or 2A-B. Biology of parasites living in human beings. (2 lecture, 6 lab hours)

**113. Natural History of Vertebrates (4)**

Prerequisite: college zoology. Vertebrate classes; natural history of local species. (3 lecture, 3 lab or field hours)

**114. Invertebrate Zoology (3)**

Prerequisite: college zoology. Invertebrates exclusive of insects, parasitic protozoa and helminths. (2 lecture, 3 lab or field hours)

**116 Zoological Microtechnique (3)**

Not open to students with credit in Biol 116. Prerequisite: college zoology or equivalent. Preparation of animal tissues for histological examination. (9 lab hours)

**130 Animal Behavior (3)**

Prerequisite: college zoology or permission of instructor; recommended, one course in ecology or natural history. Principles of ethology with emphasis on mechanisms of behavior. (2 lecture, 3 lab hours)

**134. Wildlife Management (3)**

Prerequisite: Zool 103 or 113 or permission of instructor. Relation of vertebrates to human affairs. (2 lecture, 3 lab or field hours)

**135 Mammalogy (3)**

Prerequisite: Zool 103 or 113 or permission of instructor. Mammals of the world with emphasis on local species (2 lecture, 3 lab or field hours)

**137. Herpetology (4)**

Prerequisite: Zool 103 or 113 or permission of instructor. Reptiles and amphibians of the world with emphasis on local species. (3 lecture, 3 lab or field hours)

**138. Animal Ecology (3)**

Prerequisite: college biology, including zoology; or permission of instructor. Environmental relationships of local vertebrates. (2 lecture, 3 lab or field hours)

**140. Ichthyology (3)**

Prerequisite: Zool 103 or 113 or permission of instructor. Identification, natural history, distribution, ecology, and management of fishes; freshwater fishes of California, native and introduced. (2 lecture, 3 lab or field hours)

**157. Histology (4)**

Prerequisite: college zoology. Identification and study of vertebrate cells, tissues, and organs. (2 lecture, 6 lab hours)

**158. Hematology (4)**

Prerequisite: Physio 1 or Zool 157. Development, structure, function, and identification of the cellular elements of blood and of those plasma constituents involved in blood clotting. (2 lecture, 6 lab hours)

**160. Comparative Embryology of Vertebrates (4)**

Prerequisite: college zoology. Principles of development in amphioxus, frog, chick, pig, human. (2 lecture, 6 lab hours)

**164. Comparative Anatomy of Vertebrates (4)**

Prerequisite: college zoology. Comparison of structures in selected vertebrates. (2 lecture, 6 lab hours)

**165. Ornithology (4)**

Prerequisite: Zool 103 or 113 or permission of instructor. Introduction to the identification and natural history of birds with emphasis on local species. (3 lecture, 3 lab or field hours)

**175. Vertebrate Evolution (3)**

Prerequisite: Biol 120; Zool 103 or 113 or permission of instructor. The course of evolution of the higher vertebrates including present concepts of speciation.

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

See *Regulations and Procedures—Independent Study*.

**200 series.** Graduate courses are listed under *Biology*.

**MOSS LANDING LABORATORY COURSES**

*Note: The following courses are offered at the Moss Landing Marine Laboratories. See Special Programs—Moss Landing Laboratories; see also Geol 109.*

**101. General Oceanography (4)**

Prerequisite: college chemistry and biology. An interdisciplinary examination of physical and chemical characteristics of seawater, distribution and effects of ocean currents, geology of the ocean floor and relations of organisms to the marine environment. (3 lecture, 3 lab and field hours)

**111. Zoology of Marine Vertebrates (4)**

Prerequisite: college zoology or equivalent. Field-oriented study of the natural history, ethology, physiology, identification, and systematics of vertebrates living in or associated with marine, estuarine, and shore communities; interrelationships among organisms within these environments. (2 lecture, 6 lab and field hours)

**121. Marine Invertebrate Zoology (4)**

Prerequisite: college zoology or equivalent. Field-oriented study of adaptations and responses of invertebrate animals to their marine and estuarine habitats; interrelationships or organisms within these environments. Emphasis on field observation, collection, identification, and systematics. (2 lecture, 6 lab and field hours)

**131. Marine Algology (3)**

Prerequisite: college botany or equivalent. Field-oriented study of the ecological associations, physiology, identification, and systematics of marine and estuarine algae, with emphasis upon community relationships. (1 lecture, 3 lab and 6 field hours)

**133. Micropaleontology (3)**

Prerequisite: introductory geology or zoology. Fossil micro-organisms: stratigraphic and environmental significance of foraminifera. (2 lecture, 3 lab hours)

**141. Geological Oceanography (4)**

Prerequisite or concurrent: general oceanography. Structures, physiography, and sediments of the sea bottom and shoreline. (3 lecture, 3 lab and field hours)

**161. Marine Ecology (3)**

Prerequisite: college biology. Field-oriented exploration of the physical parameters of marine estuarine and freshwater environments, with emphasis upon ecological and physiological responses of plants and animals to limiting factors of these environments. (2 lecture, 3 lab and field hours)

**180. Special Problems in the Marine Sciences (1-3)**

Prerequisite: consent of instructor. Open only to undergraduate students having adequate subject matter preparation for the selected problem. Faculty directed study of selected research problems in the marine sciences. (3 conference, lab, and field hours per unit)

**181. Literature of the Marine Sciences (1)**

Prerequisite: college chemistry and biology. Directed studies of selected works from the pertinent literature as basis for colloquium and seminar presentations and discussions.

**185T. Topics in Marine Science (1-6)**

Topics in botany, zoology, chemistry, geography, geology, and other associated areas of the marine sciences: ichthyology, behavior of marine animals, chemical oceanography, physical oceanography, meteorology of the oceans.

**GRADUATE COURSES (MOSS LANDING)**

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

**282. Seminar in the Marine Sciences (1; max total 2)**

Prerequisite: graduate standing. Reviews and reports on recent literature and problems in marine science.

**283. Advanced Studies in the Marine Sciences (3) (Former ML 281)**

Prerequisite: graduate standing. Studies of the historic roots of the marine sciences and evolution of major principles and concepts; analyses of selected researches from recent scientific literature, experience with problem-solving approaches to marine science studies.

**285T. Advanced Topics in Marine Sciences (1-6; max total 6)**

Prerequisite: graduate standing. Advanced topics in marine science (botany, zoology, chemistry, geography, geology, and other associated areas of the marine sciences).

**298. Research in the Marine Sciences (1-3)**

Prerequisite: consent of instructor. Independent investigations of an advanced character for the graduate student with adequate preparation. (3 conference, lab, and field hours per unit)

**CHEMISTRY DEPARTMENT**

Professors: Ciula (Chairman), Biggerstaff, Bremner, Burtner, Clark, Kallo, Kauffman, W. Miller

Associate Professors: Bluestone, Gigliotti, K. Russell, Vavoulis

Assistant Professors: Gump, Kunimitsu, Rodemeyer, Toney, D. Zellmer, Ziegler

Lecturer: Bixler

Part-time: Alkridge, Beebe, Braun, S. Gomez, Hovde, Kajiwara, Koligian, Patil, Walls, Wong

The Chemistry Department provides (1) undergraduate training in chemistry for students planning professional careers in chemistry and allied professions, and for those contemplating graduate work for advanced degrees; (2) participation in the preparation of teachers of chemistry and the other physical sciences in the teaching credential programs; (3) teaching of the basic chemical sciences required by students majoring in related fields such as physics, biology, nursing, engineering, geology, agriculture, home economics, and criminology; (4) stimulation of interest in and understanding of the achievements and contributions of chemistry to our civilization for non-science students, as a part of general education; and (5) graduate instruction in chemistry for the master of science degree for 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 junior colleges.

The bachelor of science degree program in chemistry is approved by the American Chemical Society. Students who satisfactorily complete the program will be recommended by the department for certification as graduate chemists by the American Chemical Society. Students completing the bachelor of arts degree may be recommended for certification by completing additional requirements of the American Chemical Society.

Five of the California State Colleges, including Fresno State College, cooperate in the management of the Moss Landing Marine Laboratories on Monterey Bay, an establishment which offers regular course work and opportunities for research which are applicable to graduate and undergraduate programs. Consult the chairmen of the Biology, Chemistry, and Geology Departments. See *Special Programs—Moss Landing Marine Laboratories*; for course descriptions see *Biology Department*.

**HIGH SCHOOL PREPARATION**

The high school preparation for majors in the chemistry department should include: algebra (2 years), plane and solid geometry, trigonometry; chemistry or physics; German (2 years).

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.

**MAJORS**

For the bachelor of arts degree a major in chemistry consists of 37 units as listed below. For the bachelor of science degree, a major in chemistry consists of 46 units as listed below. Upper division students having a grade average of B or higher in their major courses are encouraged to elect Chem 190, Independent Study, in order to acquire first-hand experience in a research project.

**Foreign Language Requirement**

German 1A-B or equivalent is required for bachelor of science degree majors in chemistry. See the general statement under *Degrees and Credentials—Foreign Language Requirement* for equivalents and alternative ways of meeting the requirement. Any student planning advanced study is advised also to meet the foreign language requirement of the school he plans to attend.

<b>BACHELOR OF ARTS DEGREE IN CHEMISTRY</b>		<i>Units</i>
General Education .....		40
Chemistry Major .....		36-37
Chem 1A-B or 4A-B-C, 6, 28, 29, 106, 110A-B, 111, 128, 129		
Additional Requirements .....		20
Math 75, 76, 77, Physics 2A-B		
Electives .....		27-28
Recommended: Chem 99		—
		124

<b>BACHELOR OF SCIENCE DEGREE IN CHEMISTRY</b>		
General Education .....		40
Chemistry Major .....		45-46
Chem 1A-B or 4A-B-C, 6, 28, 29, 106, 110A-B, 111, 123, 128, 129		
Elect 6 units from Chem 115, 124, 126, 130, 155, 156, 190, with at least 3 units from Chem 124, 126, 130, 156, 190.		
Additional Requirements .....		24
Math 75, 76, 77, Physics 4A-B-C		
At least one additional approved physics or mathematics course (recommended: Phys 102, 110, 120, Math 81, 171)		
Electives .....		18-19
German 1A-B or equivalent required if not taken in high school		—
		128

**MINOR**

A minor in chemistry for a bachelor's degree requires 20-22 units, of which 8 are upper division.

Chem 1A-B or 4A-B-C; or 2A-B and 101; or 2A-B and 150, 151 .....	9-11
Chem 8, 104, 105, 109 .....	11
	20-22

**CREDENTIAL PROGRAM**

For information on the current credential program consult departmental advisers and the School of Education; see the sections on *Public School Credentials*.

**MASTER OF SCIENCE DEGREE**

The graduate program for the master of science degree in chemistry is based on the equivalent of the undergraduate major at Fresno State College. Twenty of the 30 units required for the degree must be in chemistry. For specific requirements, consult the chairman of the department; for general requirements see *School of Graduate Studies*. For detailed information about the graduate program at Fresno State College, see the *Graduate Bulletin*, available in the Office of the Dean, School of Graduate Studies.

**FOREIGN LANGUAGE REQUIREMENT**

Advancement to candidacy for the master of science degree with a major in chemistry (except for those who have been certified as graduates in Chemistry by the American Chemical Society) requires the passing of an examination demonstrating the ability to read scientific German or Russian.

**GENERAL EDUCATION REQUIREMENTS**

The following courses will satisfy general education requirements. *Area I*: Chem 1A-B, 2A-B, 4A, 4B, 8. (See *General Education—Courses*)

*Courses***CHEMISTRY****1A-B. General Chemistry and Qualitative Analysis (5-5)**

Chem 1A not open to students with credit in Chem 2A-B. Prerequisite: high school chemistry or physics; advanced algebra or Math 29. Fundamental principles of chemistry; properties of common elements and their compounds; application of the principles of chemical equilibrium to separation and identification of ions. (3 lecture, 6 lab hours)

**2A-B. Introductory General Chemistry (3-3)**

Prerequisite: high school algebra, plane geometry. Composition of matter and physical and chemical changes; fundamental laws and principles; atomic and molecular structure, qualitative and quantitative techniques; introduction to organic chemistry and biochemistry. (2 lecture, 3 lab hours)

**4A. General Chemistry (4)**

Not open to students with credit in Chem 2A-B or 1A. For students of superior facility and preparation in chemistry, but not limited to chemistry majors. Chem 4A-B-C equivalent to Chem 1A-B. Prerequisite: high school chemistry or physics; advanced algebra or Math 29. Stoichiometry, gases, liquids, solids, and atomic structure. (2 lecture, 6 lab hours)

**4B. Chemical Bonding (2)**

Prerequisite: Chem 4A. Introduction to quantum mechanics, valence, bonding and examples.

**4C. General Chemistry (3)**

Prerequisite: Math 75 (or concurrently); Chem 4B concurrently. Introduction to thermodynamics, equilibrium, kinetics. (2 lecture, 3 lab hours)

**6. Quantitative Analysis (4)**

Prerequisite: Chem 1B or 4C. Introductory principles and methods of quantitative analysis. (2 lecture, 6 lab hours).

**8. Elementary Organic Chemistry (3)**

Not open to chemistry majors. Recommended for students requiring a one-semester course in the field. Prerequisite: Chem 1A or 2A-B or 4A-B. Lectures, discussions, and demonstrations of fundamental principles; structure and chemical behavior of organic compounds.

**28. Introductory Organic Chemistry (3)**

For chemistry majors; recommended for premedical students and other science majors. Not open to students with credit in Chem 8. (Chem 28 and 128 together constitute a year sequence.) Prerequisite: Chem 1A-B or Chem 2A-B or 4A-B-C. Introductory survey of the reactions of principal functional groups; natural products.

**29. Introductory Organic Chemistry Laboratory (2)**

(Chem 29 and 129 together constitute a year sequence.) Prerequisite or concurrently: Chem. 28. Laboratory study of properties and reactions of organic compounds and synthesis of representative compounds. (6 lab hours)

**99. Glass Blowing (1)**

Enrollment limited with preference to junior and senior chemistry majors. Elements of glass blowing; construction and repair of glass apparatus. (3 lab hours)

**101. Introductory Physical Chemistry (3)**

Not open to chemistry majors. Prerequisite: logarithms, elementary algebra; organic chemistry, quantitative analysis. Kinetic theory of gases, liquids, solutions, buffers, conductance, electromotive force cells, reaction kinetics, colloidal systems, radioactivity, nuclear fission. (3 lecture-demonstration hours)

**104. Quantitative Analysis (2)**

Prerequisite: Chem. 1B or 4C or 2B. Application of chemical and mathematical principles to the quantitative analysis of inorganic and organic substances.

**105. Quantitative Analysis Laboratory (3)**

Not open to chemistry majors. Prerequisite: Chem. 104 (or concurrent). Laboratory study of principles and methods of quantitative analysis. (1 lecture, 6 lab hours)

**106. Analytical Chemistry (4)**

Prerequisite: Chem 110A; 110B and 111 (or concurrently). Principles and methods of qualitative and quantitative analysis of inorganic and organic substances, including an introduction to instrumental analysis. (2 lecture, 6 lab hours)

**109. Elementary Organic Chemistry Laboratory (3)**

Not open to chemistry majors. Prerequisite or concurrently: Chem 8. Laboratory study of the carbon compounds with coordinating lectures. (1 lecture, 6 lab hours)

**110A-B. Physical Chemistry (3-3)**

Prerequisite: Chem 1B, 8 or 28; Physics 4A and B, or 2A-B; Math 77. Mathematical treatment of the laws of thermodynamics, reaction kinetics, elementary statistical and quantum mechanics, properties of solutions, kinetic theory of gases, crystal structure, molecular structure, and nuclear chemistry.

**111. Physical Chemistry Laboratory (3) (Former Chem III A-B)**

Prerequisite: Chem 110B (or concurrently), Chem 6 or 105. Techniques of physical measurements, error analysis and statistics; ultraviolet, infrared and nuclear magnetic resonance spectroscopy; dipole moments, viscosity, calorimetry, kinetics, phase diagrams and thermodynamic measurements. (1 lecture, 6 lab hours)

**115. Quantum Mechanics in Chemistry (3)**

Prerequisite: Chem 110A-B. Classical mechanics and vectors; postulates of quantum mechanics, square well, harmonic oscillators, rotor and hydrogen atom problems; approximation techniques; chemical bonding and spectroscopy.

**123. Inorganic Chemistry (3) (Former Chem 122)**

Prerequisite: Chem 110A; 110B (or concurrently). Seminar and discussion in the general principles of inorganic chemistry; correlation between observed characteristics of compounds and more fundamental properties. (3 lecture-demonstration hours)

**124. Inorganic Preparations (3) (Former Chem 121)**

Prerequisite: Chem 123 (or concurrently). Preparation of inorganic compounds; development of technique, use of laboratory instruments; correlation of theory with practice; current literature. (1 lecture, 6 lab hours)

**125. Introductory Instrumental Analysis (3)**

Not open to chemistry majors. Prerequisite: Chem 8, 105; Phys 2A-B (or permission of instructor). Lecture and laboratory study of instrumental methods of analysis of organic and inorganic substances. Elements of instrument design. (2 lecture, 3 lab hours)

**126. Instrumental Methods of Analysis (3)**

Prerequisite: Chem 110A (or concurrently). Physical and instrumental methods of analysis of inorganic and organic substances; instrumental design. (1 lecture, 6 lab hours)

**128. Intermediate Organic Chemistry (3)**

Prerequisite: Chem 28 or 8. Continuation of Chem 28. A thorough study of the reactions of aliphatic and aromatic compounds of carbon with emphasis on theory and mechanism.

**129. Intermediate Organic Chemistry Laboratory (2)**

Prerequisite: Chem 29 or 109. Continuation of Chem 29 with emphasis on more difficult laboratory techniques and syntheses; introduction to qualitative organic analysis. (6 lab hours)

**130. Organic Analysis (3)**

Prerequisite: Chem 6, 128, 129. Characterization of organic compounds through study of chemical and physical properties; application of spectroscopy, chromatography and functional group analysis to elucidation of structure. (1 lecture, 6 lab hours)

**140T. Topics in Chemistry (1-3; 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.

**150. General Biochemistry (3) (Former Chem 150A)**

Prerequisite: Chem 8, 105, 109. Chemistry and metabolism of basic cellular constituents including carbohydrates, lipids, proteins, and nucleic acids.

**151. General Biochemistry Laboratory (2) (Former Chem 150A)**

Prerequisite or concurrently: Chem 150. Chemical and physical properties of naturally occurring compounds; introduction to techniques of chromatography, polarimetry, electrophoresis, photometry, and enzymology. (6 lab hours)

**153. Clinical Biochemistry (2) (Former Chem 150B, 152)**

Prerequisite: Chem 151. Intensive discussion of mammalian physiological biochemistry under normal and various pathological states. Clinical laboratory methods of analysis of tissues and body fluids and their diagnostic value. (2 lecture, 6 lab hours)

**154. Clinical Biochemistry Laboratory (3) (Former Chem 152)**

Prerequisite: Chem 153 (or concurrently). Clinical laboratory methods of analysis of tissues and body fluids and their diagnostic value. (1 lecture, 6 lab hours)

**155. Fundamentals of Biochemistry (3)**

Primarily for chemistry majors. Prerequisite: Chem 6 or 105, 128, 129. Structure, function, and metabolism of chemical entities in living systems.

**156. Biochemical Laboratory Techniques (3)**

Prerequisite: Chem 155, 129 (or concurrently). Laboratory study of the chemical and physical properties of naturally occurring compounds; metabolism of living systems; application of techniques in chromatography, electrophoresis, spectrophotometry, enzymology, and radioisotopes. (1 lecture, 6 lab hours)

**160. History of Chemistry (2)**

Prerequisite: chemistry minor or equivalent and Chem 1A-B or 101. Seminar in the evolution and development of chemistry, both in theory and practice, from ancient times to the present. Critical study of fundamental contributions of outstanding chemists.

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

See *Regulations and Procedures—Independent Study*.

**GRADUATE COURSES**

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

**200. Introduction to Chemical Research (3)**

Prerequisite: graduate standing. Principles and practice of chemical research with emphasis on laboratory techniques. (9 laboratory-demonstration hours)

**211. Chemical Thermodynamics (3)**

Prerequisite: Chem 110A-B, 111. Principles of thermodynamics; application to chemical problems; introduction to statistical methods, calculation of thermodynamic functions from spectroscopic data.

**215. Quantum Chemistry (3)**

Prerequisite: graduate standing. Seminar on recent advances in quantum mechanics; chemical bonding, and atomic and molecular spectroscopy.

**220. Theoretical Inorganic Chemistry (3)**

Prerequisite: Chem 110A-B. Seminar on theoretical inorganic chemistry emphasizing structure and bonding of inorganic and coordination compounds; valence bond, molecular orbital and ligand field theories; correlation of structure and reactivity.

**226. Advanced Analytical Chemistry (3)**

Prerequisite: Chem 110A-B, 111. Theory, application, recent developments and literature of organic and inorganic analysis.

**230. Advanced Organic Chemistry (3)**

Prerequisite: Chem 128, 129. Seminar on recent advances in organic chemistry including reaction mechanisms and synthetic applications with references to current literature.

**235. Physical Organic Chemistry (3)**

Prerequisite: Chem 110A-B, 128. Seminar in applications of modern theoretical concepts to the chemical and physical properties of organic compounds.

**240T. Topics in Advanced Chemistry (1-3; max total 6 if no area repeated)**

Seminar covering special topics in one of the areas of chemistry: analytical, biochemistry, inorganic, organic, physical.

**255. Advanced Biochemistry (3)**

Prerequisite: Chem 155 or permission of instructor. Seminar in selected biochemical topics with reference to the current literature.

**280. Seminar in Chemistry (1; max total 2)****290. Independent Study (1-3; max see reference)**

See *Regulations and Procedures—Independent Study*.

**298. Research (2-6; max total 6)**

Prerequisite: permission of instructor. Independent investigations of an advanced character for the graduate student with adequate preparation. (May include conferences, laboratory, library.)

**299. Thesis (4)**

Prerequisite: see *Master's Degrees—Thesis Requirement*. Preparation, completion, and submission of an acceptable thesis for the master's degree.

## ECONOMICS DEPARTMENT

Professors: Mullennix, Spangler

Associate Professors: Minick (Chairman), Allison, Bush, Terry

Assistant Professors: Cypher, Farness, Pisciotoli, J. Shaw, Taniguchi

Lecturer: D. Leet, Reeder

Part-time: E. Leet

The Economics Department prepares students to fill the role of citizens well informed on the economic problems confronting a modern society. Majors in economics are offered training for careers in government, business, and the teaching profession. Those going on to graduate work are given training in sufficient depth and breadth to enable them to pursue their studies in satisfactory fashion.

The department cooperates with other departments in providing for a concentration in Asian Studies. (See *Special Programs—Asian Area Courses*)

## ECONOMICS MAJOR

The following bachelor of arts degree major requirements are in addition to the general education requirement in social science. All students majoring in economics must take a 3-unit statistics course in either the School of Arts and Sciences or the School of Business. Econ 1A and 1B are prerequisite to all upper division courses in economics except those offered in extension. Any student planning advanced study is advised also to meet the foreign language requirement of the school he plans to attend.

	<i>Units</i>
Econ 1A-B, 100A-B .....	12
Elect from: Econ 101, 110, 131, 135 .....	6
Elect from: Economics (ud), Bus Ad 152 .....	12
	<hr/> 30

## ECONOMICS MINOR

The minor in economics requires 18 units as listed below. In addition students must complete a 3-unit statistics course in either the School of Arts and Sciences or the School of Business.

Econ 1A-B, 100A or 100B .....	9
Elect from: Econ 101, 110, 111 .....	3
Elect from: Economics (ud) .....	6
	<hr/> 18

## CREDENTIAL PROGRAM

For information on the current credential program, consult departmental advisers and the School of Education; see the section on *Public School Credentials*.

## MASTER OF ARTS DEGREE

The graduate program for the master of arts degree in economics is based on the equivalent of the undergraduate major at Fresno State College. For specific requirements, consult the head of the department; for general requirements, see *School of Graduate Studies*. For detailed information about the graduate program at Fresno State College, see the *Graduate Bulletin*, available in the Office of the Dean, School of Graduate Studies.

## GENERAL EDUCATION REQUIREMENTS

The following courses will satisfy general education requirements. *Area II*: Econ 1A, 1B. (See *General Education—Courses*.)

*Courses***ECONOMICS****1A. Principles of Economics (3)**

Not open to first-semester freshmen. Introduction to macro-economics; levels of income, production, employment; economic role of government and banking system in the United States.

**1B. Principles of Economics (3)**

Prerequisite: Econ 1A. Introduction to micro-economics; price determination via supply and demand; resource allocation under pure competition, monopolistic competition, monopoly, oligopoly; fundamentals of distribution theory and international trade.

**100A. Economic Theory: Price Analysis (3)**

Prerequisite: Econ 1A-B. Price mechanism and resource allocation under conditions of pure competition, monopolistic competition, oligopoly; theories of consumer's choice, cost, production, income distribution; nature of economic generalizations.

**100B. Economic Theory: National Income Analysis (3)**

Prerequisite: Econ 1A-B. Classical, Keynesian and post-Keynesian theories on level of income and employment; elements of national income accounting, flow-of-funds analysis; relationship of rate of interest to level of investment; alternative theories of inflation; warranted rates of economic growth.

**101. History of Economic Thought (3)**

Prerequisite: Econ 1A-B. Evolution of economics as a science; doctrines of different schools of thought—Mercantilists, Physiocrats, Historical School, Classical Economists; contributions of outstanding economists.

**102T. Contemporary Economic Problems (3; max total 6)**

Prerequisite: upper division standing and permission of instructor. Analysis of economic problems and issues which are of public interest and importance at the time the course is given.

**103. Economic Fluctuations (3)**

Prerequisite: Econ 1A-B; senior standing or permission of instructor. Cyclical movements of business; history, characteristics and measurement; critical examination of business cycle theories and of proposals for reducing economic fluctuations.

**110. Economic History of the United States (3)**

Prerequisite: Econ 1A-B. Exploration and colonization to the present; economic factors in development of the United States; relationships of economic forces to historical, political, and social change.

**111. Economic Development of Europe (3)**

Prerequisite: Econ 1A-B. European expansion, fifteenth century to the present; present economic conditions and trends in Europe; interest of United States in European economy.

**114. Economics of Underdeveloped Areas (3)**

Prerequisite: Econ 1A-B or permission of instructor. Survey and analysis of developmental problems of emergent economies.

**117. Resource Economics (4)**

Prerequisite: Econ 1A-B or permission of instructor. Economic analysis of the development, conservation, and depletion of resources and their influence on economic growth and trade.

**119. Regional Economic Analysis (3)**

Prerequisite: Econ 1A-B or permission of instructor. Techniques of economic analysis of geographic regions; study of differing definitions of a region, economic base studies, input-output analysis, location theory, and multiplier analysis.

**131. Public Finance (3)**

Prerequisite: Econ 100A or permission of instructor. Governmental revenues and expenditures at federal, state, and local levels of jurisdiction.

**135. Money and Banking (3)**

Not open to students with credit in Bus Ad 135. Prerequisite: Econ 1A-B or permission of instructor. Survey of the monetary and banking system of the United States and analysis of its role in economic growth and stabilization.

**136. Monetary and Fiscal Policy (3)**

Prerequisite: Econ 1A-B or permission of instructor. An examination of monetary and fiscal policy as tools for influencing economic growth and stability.

**150. Labor Economics (3)**

Prerequisite: Econ 1A-B or permission of instructor. Alternative theories of wages, employment and structure of labor market; impact of collective bargaining on level of wages, employment and labor's share of national income; history and philosophies of labor movement, structure and functioning of labor unions.

**151. History of Labor in the United States (3)**

Prerequisite: Econ 1A-B or permission of instructor. Analytical topics from historical viewpoint; evolution of unions and labor legislation interpreted in terms of economic theory.

**170. Transportation (3)**

Prerequisite: Econ 1A-B or permission of instructor. Economics of rail, water, motor, air, and pipeline transportation.

**174. Government Regulation of Economic Activity (3)**

Prerequisite: Econ 1A-B or permission of instructor. Justification for regulation, constitutional limitations, public utility regulation, regulation of monopoly; competitive practices; government policy in other areas of economic activity.

**178. International Economics (3)**

Prerequisite: Econ 1A-B or permission of instructor. International economic relations; problems and policies in the light of fundamental economic theory.

**180. Comparative Economic Systems (3)**

Prerequisite: Econ 1A-B or permission of instructor. Comparative study of economic systems of the modern world; capitalism, socialism, communism, fascism, and the problems which arise within each.

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

See *Regulations and Procedures—Independent Study*.

**GRADUATE COURSES**

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

*Note: A master's degree in economics requires the completion of at least 4 units in Econ 200T, at least 4 units in Econ 220T and at least 2 units in either Econ 298 or 299.*

**200T. Seminar in Economic Theory (4; max total 8) (Former Econ 201)**

Consideration of advanced theoretical propositions in micro and macro economic theory.

**210T. Seminar in Economic History (4; max total 8) (Former Econ 210)**

Critical examination of, and reports on, selected topics in economic history.

**220T. Seminar in Research Methodology (4; max total 8) (Former Econ 200)**

Development of deductive and inductive quantitative inference techniques in economics.

**230T. Seminar in Monetary and Fiscal Economics (4; max total 8) (Former Econ 230)**

Examination of advanced topics in the operation of the government and the money system.

**240T. Seminar in Urban and Regional Economics (4; max total 8)**

Issues and analytic techniques of regional economics and survey of empirical literature. Independent study with subject matter and technique determined by preparation and professional objectives of student.

**250T. Seminar in Labor Economics (4; max total 8) (Former Econ 250)**

Advanced topics in employment theory, trade union philosophy, and collective bargaining.

**260T. Seminar in International Economics (4; max total 8) (Former Econ 278)**

Preparation of papers and oral reports on current problems in international trade.

**274T. Seminar in Industrial Organization (4; max total 8)**

Consideration of effects of industrial organization on the functioning of an economy.

**280T. Seminar in Economic Policy (4; max total 8)**

Examination of problems and issues in formulating and implementing economic policy.

**285. Directed Reading (1-4)**

Reading list compiled in consultation with graduate adviser, not necessarily of the specialized nature required for independent study.

**290. Independent Study (1-6; max see reference)**

See *Regulations and Procedures—Independent Study*.

**298. Critique (2-6)**

The preparation, completion, and submission of a paper showing proficiency in some significant problem or area in economics.

**299. Thesis (2-4; max total 4)**

Prerequisite: See *Master's Degrees—Thesis Requirement*. Preparation, completion, and submission of an acceptable thesis for the master's degree.

## ENGLISH DEPARTMENT

Professors: Zumwalt (Chairman), Billings, Chittick, Leavenworth, Levine, Lyon, O'Neil, Poss

Associate Professors: Bluestein, Everwine, Karr, Kausch, Logan, McKnight, Ries

Assistant Professors: W. Cowling, Faderman, Frey, Frost, Hanzlicek, Hart, McDermott, M. Paul, I. Salisbury, Seib, J. Stewart, W. Stuart, Toscan

Lecturers: Heard, R. Salisbury

Instructor: Hicks

Part-time: Bailey, Baloian, Bivins, Duggins, Elder, Eriksson, Givens, Grieco, Gross, G. M. Johnson, Kherdian, Levis, Little, Melnick, Morandian, Newell, Pankratz, Paynter, Peck, Wylie, Yinger

The English Department offers a major in literature, language, and writing leading to the bachelor of arts and master of arts degrees. For students majoring in other departments it provides courses of general interest in reading, composition of various kinds, and literature. A daily tutorial program is available to all students.

### MAJOR

The major in English for the bachelor of arts degree provides for the study of English, American, and world literature, language studies, and creative writing. It will prepare students for postgraduate training in English and in business, law, medicine, theology, civil service, teaching, and in the other fields that recommend a grounding in the liberal arts as preparation for occupational training.

The major consists of 28 upper division units, including 4 units in English 193T or 189 and 4 units in English 191T, of which one section should be taken during each semester of the junior and senior years. English 193T should ordinarily not be taken until 3 upper division courses have been completed. No more than one course in linguistics may apply toward the English major. 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.

The student will propose a program in consultation with his adviser, selecting courses in appropriate proportions from among the following general categories: Literary History, Advanced Writing, Forms of Literature, Seminar in Literary Studies, Major Writers, and Linguistics.

### CREDENTIAL PROGRAM

For information on the current credential program, consult departmental advisers and the School of Education; see the section on *Public School Credentials*.

### MASTER OF ARTS DEGREE

The graduate program for the master of arts degree in English is based on an undergraduate major in English. For specific requirements consult the *Graduate Bulletin* and the departmental advisers; for general requirements, see *School of Graduate Studies*. For detailed information about the graduate program at Fresno State College, see the *Graduate Bulletin*, available in the Office of the Dean, School of Graduate Studies.

### ADVANCED PLACEMENT

Students who have taken high school advanced placement courses in English may receive college credit in English, depending on their scores on the advanced placement examination in English administered by the College Entrance Examination Board. Students who receive a score of 3, 4, or 5 will be given 6 units of credit in English 1 and 20; those who receive a score of 2 may be given 3 units of credit in English 1, subject to review by the English Department.

**Foreign Language Requirement**

Advancement to candidacy for the master of arts degree with a major in English requires the passing of an examination demonstrating a reading knowledge of one foreign language.

**GENERAL EDUCATION REQUIREMENTS**

The following courses will satisfy general education requirements. *Area III:* Engl 20 (3 units), 41, 43, 44, 50T, 112-116, 146-148, 150-156, 161, 163, 164, 169T, 175T. *Area IV:* Engl 1, 20 (1 unit). (See *General Education—Courses*)

**Courses****ENGLISH**

*Note: No more than 16 units from the following courses may be applied on the English major: 112-116, 146-148, 150-156. Prerequisite for these courses: Engl 20, or equivalent.*

**1. Composition (3) (Equivalent to former Engl 3)**

Not open to students with credit in Engl 3. Prerequisite: college-level competence in written English. Theory and practice of composition. Themes, chiefly expository or analytical; one paper based upon investigation of a selected topic.

**20. Literature and Composition (4)**

Reading and analysis of short stories, novels, drama, and poetry. Development of critical thinking and expression through individual projects and extensive writing under close supervision.

**41. Poetry Writing (4) (Former Engl 40.1)**

Prerequisite: Engl 20, or permission of instructor. Beginning workshop in the writing of poetry; appropriate reading and analyses.

**43. Fiction Writing (4) (Former Engl 40.3)**

Prerequisite: Engl 20, or permission of instructor. Beginning workshop in the writing of fiction; appropriate reading and analyses.

**44. Rhetoric (4) (Former Engl 40T)**

Prerequisite: Engl 20, or permission of instructor. Beginning workshop in expository writing; appropriate reading and analyses.

**50T. Studies in Literature (4; max total 8 if no topic repeated)**

Prerequisite: Engl 20. Sections designated as emphasizing certain writers or problems. Appropriate readings and analyses; critical writing.

**50.1. Shorter Shakespeare****50.2. Literature of Protest****50.3. 20th Century Drama****50.4. The Poem****112. World Literature: Ancient (4) (Former Engl 159.8)**

Discussion and close written analyses of comparative major works in translation.

**113. World Literature: Medieval and Renaissance (4) (Former Engl 159.8)**

Discussion and close written analyses of comparative major works in translation.

**114. World Literature: Modern (4) (Former Engl 159.8)**

Discussion and close written analyses of comparative major works in translation.

**115. Bible as Literature (4) (Former Engl 159.12)**

Discussion and close written analyses of selected Biblical texts.

**116. Old Testament (4) (Former Engl 159.11)**

Discussion and close written analyses of the literature of the Old Testament.

**134. Structure of English (4) (See Ling 134)****138. History of the English Language (4) (See Ling 138)****146. Beowulf to Marlowe (4) (Former Engl 159.1)**

Discussion and close written analyses of major works and their backgrounds within a period of literary history.

**147. Skelton to Shakespeare (4) (Former Engl 159.2)**

Discussion and close written analyses of major works and their backgrounds within a period of literary history.

**148. Donne to Milton (4) (Former Engl 159.2)**

Discussion and close written analyses of major works and their backgrounds within a period of literary history.

**150. Dryden to Burns (4) (Former Engl 159.3)**

Discussion and close written analyses of major works and their backgrounds within a period of literary history.

**151. 19th Century Romantics (4) (Former Engl 159.4)**

Discussion and close written analyses of major works and their backgrounds within a period of literary history.

**152. Victorian Literature (4) (Former Engl 159.4)**

Discussion and close written analyses of major works and their backgrounds within a period of literary history.

**153. American Literature to Whitman (4) (Former Engl 159.5)**

Discussion and close written analyses of major works and their backgrounds within a period of literary history.

**154. American Literature 1865 to WW I (4) (Former Engl 159.5)**

Discussion and close written analyses of major works and their backgrounds within a period of literary history.

**155. 20th Century American Literature (4) (Former Engl 159.6)**

Discussion and close written analyses of major works and their backgrounds within a period of literary history.

**156. 20th Century British Literature (4) (Former Engl 159.7)**

Discussion and close written analyses of major works and their backgrounds within a period of literary history.

**161. Advanced Writing of Poetry (4; max total 8) (Former Engl 149.1)**

Prerequisite: Engl 41, or permission of instructor. Intensive workshop in the writing of poetry; appropriate readings, and analyses.

**163. Advanced Writing of Fiction (4; max total 8) (Former Engl 149.3)**

Prerequisite: Engl 43, or permission of instructor. Intensive workshop in the writing of fiction; appropriate readings, and analyses.

**164. Advanced Writing: Rhetoric (4; max total 8) (Former Engl 149.5)**

Prerequisite: Engl 44, or permission of instructor. Intensive workshop in expository writing; appropriate readings, and analyses.

**169T. Forms of Literature (4; repeatable with different topics) (Former Engl 93)**

No more than 12 units may be applied on the English major. Prerequisite: Engl 20 or equivalent. Sections designated as emphasizing poetry, drama, novel, or short story. Reading and close written analysis with particular attention to form.

- 169.1. 18th Century English Novel**
- 169.2. 19th Century English Novel**
- 169.3. 20th Century British and American Poetry**
- 169.4. Modern Short Stories**
- 169.5. Comedy**
- 169.6. Gothic Novel**
- 169.7. Mythology**
- 169.8. Literary Biography**
- 169.9. Folklore**
- 169.10. 20th Century American Novel**
- 169.11. The Novel**
- 169.12. Experiment in the Novel**
- 169.13. The Comic Novel**
- 169.16. 20th Century American Poetry**
- 169.20. New British Drama**
- 169.21. Development of American Short Story**
- 169.22. 20th Century Drama**
- 169.23. Tragedy**
- 169.24. The Poem**
- 169.25. San Francisco's Beat Poets**

**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 professors.

**189. Shakespeare (4) (Former Engl 194.1, .2)**

Reading and written analyses of the major works of Shakespeare.

**190. Independent Study (1-4; max see reference)**

See *Regulations and Procedures—Independent Study*.

**191T. Supervised Independent Reading (1-4; max total 4, if no topic repeated)**

The student reads works from one of the following literary periods and discusses them in individual conferences:

- 191.1. Beowulf to Marlowe**
- 191.2. More to Milton**
- 191.3. Dryden to Burns**
- 191.4. Wordsworth to Shaw**
- 191.5. American Literature to Whitman**
- 191.6. 20th Century American Literature**
- 191.7. 20th Century British Literature**
- 191.8. World Literature: Ancient-Medieval**
- 191.9. World Literature: Renaissance-Modern**

**193T. Seminar in Literary Studies (4; repeatable with different topics) (Former Engl 140-145, 182, 185)**

No more than 12 units may be applied on the English major. Sections designated by topic. Individual projects. Reading, discussion, and writing of papers centered on short periods of literary history, particular literary themes, editorial problems, and other specialized investigations.

**193.1. Romantic Poets****193.2. Victorian Novel****193.3. Minority Groups in Contemporary American Literature****193.4. Modern Literary Criticism****193.5. Comedy****193.6. Tragedy****193.7. Old English Language and Poetry****193.8. Experiments in the Novel****193.9. Problems in Modern Criticism****193.10. Selected Modern Writers****193.11. Theory of the Novel****193.12. Forces in Contemporary American and British Poetry****193.13. Changing Values in Contemporary Black Literature****193.14. 19th Century Russian Novel****193.19. Literary Criticism****193.20. D. H. Lawrence****193.21. Modern Novel****193.22. Transcendental Vein in American Literature****193.23. Donne and the Metaphysicals****193.25. Archtype and Myth****193.26. Research Methods in Poetry****193.27. Arthurian Tradition****193.28. Occult Literature****193.29. Epic and Romance****193.30. Shakespeare's Tragedies****193.31. Blake****193.32. Chaucer (Former Engl 194.3)****193.33. Milton (Former Engl 194.4)****GRADUATE COURSES**

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

**250T. Seminar in Literature (4; max total 12 if no topic repeated)**

Prerequisite: major or minor in English; permission of instructor. Seminar in an aspect of literary history: type, period, movement, or an individual author.

**250.1. The Irish****250.2. Fiction****250.3. Tragedy****250.4. Twentieth Century Novel****250.5. Faulkner****250.6. Seventeenth Century Lyric Poetry****250.7. Hawthorne, Melville**

**250.8. Henry James**

**250.9. Dickens**

**250.10. Shakespeare**

**250.11. Poetry**

**250.12. The Realistic Hero**

**261. Advanced Writing: Poetry (4; max total 12) (Former Engl 210T)**

Prerequisite: permission of instructor. Advanced individual projects in the writing of poetry.

**263. Advanced Writing: Fiction (4; max total 12) (Former Engl 210T)**

Prerequisite: permission of instructor. Advanced individual projects in the writing of fiction.

**264. Seminar in Rhetoric (4; max total 12 if no topic repeated) (Former Engl 220T)**

Prerequisite: advanced composition or equivalent. Seminar in rhetorical theory in relation to social history, critical analysis of current rhetorical doctrine.

**265. Advanced Writing: Expository (4; max total 12)**

Prerequisite: permission of instructor. Advanced individual projects in expository writing.

**280T. Seminar in Literary Theory (4; max total 12 if no topic repeated)**

Prerequisite: major or minor in English; permission of instructor. Seminar in literary criticism.

**280.1. Literary Critics**

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

See *Regulations and Procedures—Independent Study*.

**291T. Supervised Independent Reading (1; max total 4 if no topic repeated)**

The student reads works from one of the following literary periods and discusses them in individual conferences:

**291.1. Beowulf to Marlowe**

**291.2. More to Milton**

**291.3. Dryden to Burns**

**291.4. Wordsworth to Shaw**

**291.5. American Literature to Whitman**

**291.6. 20th Century American Literature**

**291.7. 20th Century British Literature**

**291.8. World Literature Ancient-Medieval**

**291.9. World Literature Renaissance-Modern**

**299. Thesis or Project (2-6; max total 6)**

Prerequisite: see *Master's Degrees—Thesis Requirement*. Preparation, completion, and submission of an acceptable thesis or project for the master's degree.

#### IN-SERVICE COURSES

*Note: In-service courses (300 series) are not intended for use on degrees. See Extension and Summer Session Bulletins for course descriptions.*

**300. English Colloquium (2; max total 6)**

## ETHNIC STUDIES

Lecturers: Richard Keyes (Director), Arellano, Bessard, Garcia, Martinez, Orro, Risco-Lozada, Tavasti, S. Williams

Part-time: Avery, Castro, Duran, Gallardo, Gonzales, Salinas, Valdez, Wheelidin

Included in the Ethnic Studies at Fresno State College are courses in Black Studies, La Raza Studies, Native American Studies, and Oriental American Studies. The offerings are designed to promote academic and professional awareness, knowledge, and sensitivity to the historical and cultural factors important to the various ethnic groups.

## GENERAL EDUCATION REQUIREMENTS

The following courses will satisfy general education requirements. *Area I:* BLST 42. *Area II:* BLST 60, 80, 143, 160, 180; LRST 5A. *Area III:* BLST 21, 25, 121, LRST 30, 31, 44, 130. *Area IV:* BLST 30; LRST 3A, 4A. *Area V:* BLST 34, 50, 70, 81, 122, 131, 133, 144, 151, 161, 181, 182; LRST 155.

## BLACK STUDIES (BLST)

**21. Liberation Workshop (4) (Former BLST 20)**

Reading and analysis of various forms of artistic expression used by Black artists. Writing poetry, short stories, essays; performing short plays; music and dance as they relate to Black culture.

**25. Introduction to Black Literature (4)**

Major authors and their works; themes and movements in Black literature in America from colonial times to the present.

**30. Expressive Writing (4)**

Development of skill in writing and analysis; principles of expository and expressive writing; development of bidialect skill.

**34. Problems in Black Journalism (1)**

Prerequisite: permission of instructor. Workshop in developing a journalistic approach to conveying the problems and concerns of Black people in twentieth-century America.

**42. Ethnic Psychology (4) (Former BLST 40)**

Evaluation of the concepts of general psychology and personality theory; their relevance and applicability to behavioral patterns within the American Black community.

**50. African Tribal Life and American Culture (3)**

Aspects of African tribal backgrounds and their relationships to Black experience in America.

**60. History of America from a Black Perspective: 1619-1900 (3)**

Development of the United States, impact of the Black man from the arrival of Black indentured slaves to the period preceding World War I.

**70. Contemporary Problems of Black Students; Skills Development (2)**

Section I for freshmen only. Section III for sophomores and transfer students. Special problems of Black students in the college environment; laboratory development of skills necessary for bicultural students to cope with the college institution. Group lecturing and counseling.

**80. Community Human Resource Development I (3)**

Study of the ghettos as a part of the system of internal colonialism; relationships between the political, economic, and social systems in the United States and corresponding systems in the ghetto.

**81. Community Human Resource Development II (3)**

Prerequisite: background in community work, BLST 80 (concurrent enrollment) or assignment to community projects course.

**82. Community Work Project Development (3)**

Development of community projects; supervised activities and theory sessions concerning techniques for project development in minority communities and techniques for community organization on issues. Task group assignments and work-study time spent in the community.

**121. Literature and Black Liberation (4) (Former BLST 131.1)**

Revolutionary working class literature from the Civil War through the 1960's.

**122. 20th Century: The Black and the State (4)**

A study of Black cultural development in 20th Century America with an emphasis on contemporary Afro-American literature. An analysis of major works as seen against the background socio-political conditions.

**131. Journalism Workshop (1)**

Advanced concepts in journalism as it touches the lives of Black people.

**133. Themes in Black Literature (4)**

(Repeatable with different topics). Prerequisite: at least one course each in Black literature and Black history or equivalent. Appropriate reading and analysis; critical writing.

**143. Psychology of the Black Role in America (4) (Former BLST 141)**

Prerequisite: BLST 42 or a broad background in psychology. Introduction to group dynamics through the examination of various psychological roles the Black man assumes or falls heir to in his struggle to cope with exigencies impressed upon him by a hostile white environment.

**144. The Black Revolution—A Psychodynamic Purview (4) (Former BLST 142)**

Black motivation and participation in the current youth rebellion against the American "Establishment" and white racism.

**151. African Tribal Life and American Culture (3) (Former BLST 150)**

An understanding and appreciation of some African music and dances. Comparison and contrast of the Black experience in Africa and America as exemplified in their respective cultures.

**160. History of America From a Black Perspective (3) (See BLST 60)****161. Contemporary Problems of the Black Community (3)**

Reading and discernment of events relating to Black condition in the real world; development of creative approaches to face and overcome them.

**180. Community Human Resource Development I (3) (See BLST 80)****181. Community Human Resource Development II (3) (See BLST 81)****182. Community Work Project Development (3) (See BLST 82)****LA RAZA (LR5T)****2A-B. Chicano Student: Introduction (2-2)**

Prerequisite: freshman standing or permission of instructor. Group lecture and counseling; special problems encountered by Chicano students entering college; development of skills necessary for bilingual, bicultural students. (1 lecture, 3 lab hours.)

**3A-B. Spanish for Bilinguals (3-3)**

Readings in Mexican and Chicano literature in the student's native language. Speaking, reading, writing.

**4A-B. English for Bilinguals (3-3)**

Readings in Mexican and Chicano literature in the student's second language. Speaking, reading, writing.

**5A. Native American Cultures (3)**

Indigenous peoples of Americas; culture and history; analytical and historical perspective. Extensive composition on assigned topics.

**5B. Barrio Social Structure (3)**

Social forms in the barrio; sociological perspective. Extensive composition on assigned topics.

**5C. Community Involvement (1-3; max total 3 if no projects repeated)**

Participation in research and development projects in the Chicano community.

**6A. History of Americas to 1900 (3)**

Arrival of Spaniards to Spanish American War; comparison of development of institutions in North and South America. Extensive report writing on assigned topics.

**6B. History of Americas Since 1900 (3)**

Special emphasis on developments as they affected Spanish-speaking people of the Southwest. Comparison of recent trends and policies. Extensive report writing on assigned topics.

**20A-B. Chicano Student: Problems and skills (2-2)**

Not open to students with credit in LRST 2A-B. Prerequisite: transfer or sophomore standing or permission of instructor. Group lecture and counseling; the Chicano student in the college institution. (1 lecture, 3 lab hours.)

**30. Chicano and Mexican Literature (3)**

Readings and analysis of modern authors with emphasis on movements and themes. Oral and written analyses of short stories, *cuentos*, novels, *novellas*, drama, *actos*, and poetry.

**31. La Raza: Vida Cotidiana (3)**

History and culture. The private life and thought of the Chicano: male-female relationship, the family, machismo, drama, the life-death syndrome, colloquial language and regional idioms, music and literature.

**40. Chicano Journalism (3)**

Development of skills for publishing bilingual papers in the Chicano community. Practicum with Daily Collegian or community papers.

**44. Bilingual Rhetoric and Writing (3)**

Expository and creative writing in Spanish and English; appropriate readings and analysis.

**50. Chicano History: Aztlan (3)**

Legendary and historical Indian sources of Chicano culture; interaction of Indian, Hispanic and Anglo culture. Culture conflict, acculturation, and cultural emergence. *El Plan de Aztlan* and its significance.

**109A-B. Seminar in Chicanos and Educational System (3-3)**

Principal elements of the educational system and how they affect Chicano students. Extensive research. (A) Elementary Schools, (B) Secondary Schools.

**120. Seminar in Revolution and Literature in Latin America (3)**

Literature produced during or in relation to the major revolutions in Latin America.

**130. Chicano Theatre (3)**

Production of Chicano Theatre for major performances. *Comedia del Arte*, Passion Plays, Theatre of the Absurd, Socially oriented popular Theatre, *Teatro Campesino*.

**133. Issues of the 70's (3)**

Participation in and critical analysis of political activity in the Chicano community. Analysis of political activity of the larger community and its significance for Chicanos.

**144. Bilingual Creative Writing (3)**

Prerequisite: LRST 44 or permission of instructor. Freedom of students to experiment individually in writing projects to criticize each other's work.

**155. Directed Field Research (1-3)**

Research in specialized topics in the Chicano community and agencies or institutions that affect the community. Resource research, power structure research, demographic research.

**180. Seminar in La Raza Philosophy (3)**

Development of trends of philosophical ideas in Latin America, indigenous and European influences in the emergent concept of La Raza. Philosophies of identity and self-definition in Latin America and the Southwest.

**190. Independent Study (3)**

See *Regulations and Procedures-Independent Study*.

**193. Seminar in Bilingual, Bicultural Curriculum Development (3)**

Concepts and principles of curriculum planning for bilingual, bicultural students. Evaluation of present curriculums; research; project required.

**NATIVE AMERICAN STUDIES (NAS)****50. Contemporary Life of Native Americans (1)**

Orientation to provide Indian students with an understanding of the contemporary problems facing students on a college campus.

**75. Indian Culture (3)**

Historical and sociological factors contributing to the American Indian style of life, development and maintenance of traditional Indian culture patterns; governmental control agencies, their effect on the Indian self-image; class projects in culture patterns of nearby reservations.

**ORIENTAL-AMERICAN STUDIES (OAST)****101. Topics in Oriental-American Studies (3)**

Detailed investigation and analysis of the social, economic, and political status of the Oriental-American in the American society today. Assessment of the degree to which the acculturation and assimilation of the Oriental-American has taken place.

## FOREIGN LANGUAGE DEPARTMENT

Professors: List (Chairman), Brenninger, Elgorriaga, Ensslin

Associate Professors: W. Bowen, Carnero, Clough, Doswald, Jasutis, Kinzel, L. Lewis, Nagy, Pronin

Assistant Professors: Barta, Cohee, Dmitriew, G. Freeman, M. Gendron, A. Kusel, McConnell, Poythress, Ross, H. Roth, Slaniceanu, Stock, Tucker

Lecturer: Bicheron

Part-time: Ballarin, Dahmer, A. Gendron, G. G. Johnson, Kuo, H. Lee, Leon, Manukian, Messerlian, Petrosino, Proudian, Sasai, Vostrak

The Foreign Language Department aims to teach students to understand, speak, read, and write the foreign languages offered, with varying degrees of emphasis upon those objectives according to their needs and interests; to promote an interest in and an understanding of foreign civilizations and of the problems of foreign nations as they arise day by day; to contribute to students' knowledge of English through comparative study of a foreign language; to prepare students to teach foreign languages in the elementary and secondary schools; and to give specialized professional training for positions such as interpreter, translator, consular representative, and foreign trade specialist.

### CREDIT ALLOWANCE IN FOREIGN LANGUAGE

Students who wish to continue in a language taken in high school must take a placement test before enrolling. College credit may be earned in a class in which the student is placed. Consult the *Schedule of Courses* for dates of placement tests. See also *Degrees and Credentials—Foreign Language Requirement*.

### MAJORS AND MINORS

The appropriate 1A-B and 2A-B courses or their equivalent are required for major and minor programs in French, German, Russian, and Spanish; the French major and minor require, in addition, French 4A-B.

	<b>MAJORS</b>	<i>Units</i>
<b>French</b>		
Fren 101, 102, 109A-B .....		12
French electives (ud) .....		15
		—
		27
<b>German</b>		
Germ 101 (4 units), 112 A-B, 114 .....		13
German electives (ud) .....		13
		—
		26
<b>Russian</b>		
Russ 2A-B .....		8
Russ 101 (9 units), 110A-B, 118A-B .....		21
		—
		29
<b>Spanish</b>		
Span 101, 102, 103A-B, 104A-B, 137 .....		21
Spanish electives (ud) .....		9
		—
		30

## MINORS

	<i>Units</i>
<b>French</b>	
Fren 2A-B, 4A-B.....	10
Fren 101, 109A-B.....	9
French electives (ud).....	3
	—
	22
<b>German</b>	
Germ 2A-B.....	0- 6
Germ 50A-B, 101 (4 un), 137.....	11
German electives (ud).....	10- 4
	—
	21
<b>Latin</b>	
Lat 3A-B, 101A-B.....	12
Latin electives (ud).....	9
	—
	21
<b>Russian</b>	
Russ 1A-B, 2A-B.....	16
Russian electives (ud).....	6
	—
	22
<b>Spanish</b>	
Span 2A-B.....	0- 6
Span 50A-B, 101, 102.....	10
Elect from: Span 103A-B, 104A-B, 135 or 137.....	6-12
	—
	22

## CREDENTIAL PROGRAM

For information on the *current* credential program consult departmental advisers and the School of Education; see the section on *Public School Credentials*.

## MASTER OF ARTS DEGREE

The master of arts degree is granted in French, German, or Spanish. The graduate programs for the degree are based on the equivalent of the respective undergraduate majors in these areas at Fresno State College. For specific requirements consult the *Graduate Bulletin* or the departmental graduate committee chairman; for general requirements, see *School of Graduate Studies*. For detailed information about the graduate program at Fresno State College, see the *Graduate Bulletin*, available in the Office of the Dean, School of Graduate Studies.

## GENERAL EDUCATION REQUIREMENTS

The following courses will satisfy general education requirements. *Area III*: Fren 109A-B, 110A-B, 111A-B, 112A-B, 118A-B, 148A-B, 160T, Germ 112A-B, 114, 116A-B, 118A-B, 146T, 160T, Grk 148, Lat 131, 132, 141, 142, 148, Russ 110A-B-C, 118A-B, 148A-B, Span 103A-B, 104A-B, 105, 106, 107, 108, 148A-B, *Area IV*: Fren 1A-B, 2A-B, 50A-B, Germ 1A-B, 2A-B, 50A-B, Lat 1A-B, 3A-B, Russ 1A-B, 2A-B, 50A-B, Span 1A-B, 2A-B, 50A-B. (See *General Education—Courses*.)

## Courses

### ARMENIAN (ARM)

#### 1A-B. Elementary Armenian (4-4)

Not open to students with previous training in Armenian. Beginning course of graded lessons acquainting the student with basic structure and pronunciation of Armenian through practice, reading, and writing.

#### 2A-B. Intermediate Armenian (4-4)

Prerequisite: Arm 1A-B or X109A, B. Grammar review; selected readings; compositions and conversations on assigned topics; pronunciation drill.

### FRENCH

#### 1A-B. Elementary French (4-4)

Beginning course of graded lessons acquainting the student with the basic structure and pronunciation of French through practice in speaking, reading, and writing. (4 lecture, 1 lab hour)

#### 2A-B. Intermediate French (3-3)

(A) Prerequisite: Fren 1B or equivalent. Grammar review; selected readings; compositions and reports. (B) Prerequisite: Fren 2A or equivalent. Continuation of Fren 2A.

#### 4A-B. Intermediate Composition (2-2)

Required of all majors and minors at the intermediate level; optional for others. Prerequisite: (A) Fren 1B or equivalent. (B) Fren 4A or equivalent. Concentration on writing skills preparatory to upper division course work.

#### 50A-B. Oral French (2-2)

Prerequisite: Fren 1B. Oral drill for pronunciation; conversation on assigned topics; brief talks; extemporaneous discussions. (2 lecture, 1 lab hour)

#### 61. Scientific French Readings (3)

Prerequisite: Fren 1B or three years high school French. Selected readings in the sciences aimed at developing the ability to read current scientific journals in French.

#### 101. Advanced Composition and Conservation (3)

Prerequisite: Fren 2B and 4B or permission of instructor. Weekly written and oral assignments in French on varied topics, with emphasis on composition, style, and grammar.

#### 102. Literary Composition and Translation (3)

Prerequisite: Fren 101 or permission of instructor. Weekly written and oral assignments in French on varied literary topics, with emphasis on composition, style, and grammar complemented by an introduction to the problems and techniques of literary translation.

#### 109A-B. Survey of French Literature (3-3)

Prerequisite: intermediate French or permission of instructor. History of French literature from *Chanson de Roland* to the present. Lectures and discussions; selected readings; taught in French.

#### 110A-B. Seventeenth Century Literature (3-3)

Prerequisite: Fren 109A. (A) Classical drama, lectures, and discussions. Selected readings of Corneille, Molière, Racine. (B) Chief nondramatic authors. Selected readings of Malherbe, Descartes, Pascal, Boileau, Perrault, La Fontaine, Bossuet, Mme. de Sévigné, Mme. de la Fayette, La Rochefocauld, La Bruyère.

**111A-B. Eighteenth Century Literature (3-3)**

Prerequisite: Fren 109A. (A) Precursors of the Enlightenment (1680-1784): Fénelon, Bayle, Fontenelle, Marivaux, Prévost, Lesage, Montesquieu. (B) Confrontation and advent of new order (1748-1789): Voltaire, Diderot, Rousseau, Beaumarchais, Chénier.

**112A-B. Nineteenth Century Literature (3-3)**

Prerequisite: Fren 109B. Selected readings from principal movements, genres, authors, and works. (A) Romanticism and realism. (B) The Parnasse, Naturalism, Symbolism.

**118A-B. Twentieth Century Literature (3-3)**

Prerequisite: Fren 109B. Analytical and critical study of twentieth century French literature. (A) From 1900 to 1939. Principal authors. (B) From 1939 to present: Existentialism, theater of the absurd, new novel.

**130. Phonetics and Pronunciation (3)**

Prerequisite: Fren 2B and 4B or permission of instructor. Articulatory phonetics as a means to forming native French pronunciation habits with emphasis upon the difficulties encountered by speakers of American English.

**137. Applied Linguistics (3)**

Prerequisite: Fren 101 (or concurrently); Ling 135. Phonological, morphological, syntactical, and lexical structure of French; conflicts with English structure; linguistics problems in design of teaching materials.

**148A-B. French Literature in Translation (3-3)**

Credit may not be applied to French major or minor requirements. Prerequisite: upper division standing or permission of instructor. (A) French literature from its beginning to 1800. (B) From 1800 to present. Selected readings of principal authors. Lectures and discussions.

**160T. Selected Literary Topics (3; max total 9)**

Prerequisite: Fren 109A-B. Intensive study of significant topics through selected representative literary texts: analysis, discussion, and evaluation of specific genres, themes, movements, and literary problems. Conducted in French.

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

*See Regulations and Procedures—Independent Study.*

**GRADUATE COURSES (FREN)**

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

**203. Research Methods and Bibliography (2)**

Recommended for the first semester of graduate work. Prerequisite: 24 upper division units in French or permission of instructor. Purposes and methods of research in the fields of language and literature; the collection and collation of bibliographical materials, and the proper presentation of results. Individual projects.

**204. Literary Theory and Criticism (3)**

Prerequisite: 24 upper division units in French or permission of instructor. Critical approaches to specific literary texts from the Renaissance to the present. Analysis of literary doctrines.

**205. Explication de Textes (3)**

Prerequisite: French 204 or permission of instructor. The analytical French approach to the detailed study of literature. Demonstrations by instructor and students.

**211. Historical Linguistics (3) (Former FL 202)**

Prerequisite: 24 upper division units in French or permission of instructor. History of the phonological, morphological, syntactical, and lexical developments of the French language from its origins to the present, through study of representative texts.

**212. Synchronic Linguistics (3) (Former FL 201)**

Prerequisite: 24 upper division units in French or permission of instructor.

**220T. Seminar in French Literature (3; max total 6 if no topic repeated) (Former FL 210)**

Prerequisite: 24 upper division units in French or permission of instructor.

**250. Directed Reading (2-3; max total 6)**

Prerequisite: 24 upper division units in French or permission of instructor.

**290. Independent Study (1-3; max total 6)**

*See Regulations and Procedures-Independent Study.*

**299. Thesis or Project (2-6; max total 6)**

Prerequisite: *See Master's Degrees-Thesis Requirement.* Preparation, completion, and submission of an acceptable thesis or project for the master's degree.

**GERMAN****1A-B. Elementary German (4-4)**

Beginning course of graded lessons acquainting the student with the basic structure and pronunciation of German through practice in speaking, reading, and writing. (4 lecture, 1 lab hour)

**2A-B. Intermediate German (3-3)**

Prerequisite: Germ 1B or two years of high school German. Translation; sight-reading; conversation; grammar review.

**40. Phonetics and Pronunciation (2)**

Intensive drill in phonetics for pronunciation, enunciation, and intonation. Designed for, but not restricted to, students in music and speech who wish to use German for singing and declamatory purposes.

**50A-B. Oral German (2-2)**

Prerequisite: Germ 1B. May be taken concurrently with Germ 2A. Conversation on assigned topics; brief talks by students; short scenes from plays. (2 lecture, 1 lab hour)

**61. Literature of the Sciences (2)**

Prerequisite: Germ 1B passed with C or better. Selected readings in chemistry, geology, physics and mathematics for scientific vocabularies; use of standard periodicals.

**101. Composition and Conversation (2; max total 4)**

Prerequisite: Germ 2B. Idioms; written translations in German; compositions on assigned topics; oral exercises. Emphasis on grammar and syntax.

**102. Advanced Composition and Conversation (2; max total 4)**

Prerequisite: Germ 101 (4 units) or permission of instructor. Emphasis on style in composition; written and oral reports on assigned topics.

**103. German Culture (3)**

Prerequisite: Germ 2B. Cultural values of the German people: readings, lectures, films, and other media. Written and oral reports by students.

**112A-B. German Literature, 700 to Present (3-3)**

Prerequisite: German 2B. Lectures and discussions; selected readings. (A) Not open to students with credit in German 115A. From 700 to 1750. (B) From 1750 to present.

**114. Classical Age of German Literature (3)**

Not open to students with credit in German 115B. Prerequisite: German 2B. Reading and discussion of representative writings of Lessing, Goethe, and Schiller.

**116A-B. Nineteenth Century Literature (3-3)**

Prerequisite: Germ 2B. Reading and discussion of representative selections from Tieck, Eichendorff, Hoffmann, Grimm, Kleist, Heine, Grillparzer, Keller, Hauptmann, Sudermann.

**118A-B. Twentieth Century Literature (3-3)**

Prerequisite: Germ 2B or equivalent. Analytical and critical study of twentieth century literary production of Germany. Outside readings and one written report each semester.

**135. History of the German Language (3)**

Prerequisite: five units of upper division German or permission of instructor. Development of the German language from earliest times to the present.

**137. Linguistics (3)**

Prerequisite: five units of upper division German or permission of instructor. Analysis of the phonological, morphological, syntactical, and lexical structure of German; conflicts with English structure; linguistic problems and reports.

**146T. Germanic Literatures in Translation (3; max total 12 if no topic repeated) (Former German 148A-B)**

Credit may not be applied to German major and minor requirements. Prerequisite: permission of instructor. Lectures, discussions, and written analysis of Germanic authors, movements, and themes.

**160T. Selected Literary Topics (3; max total 9)**

Prerequisite: six units upper division German or permission of instructor. Intensive study of significant topics through selected literary texts; analysis, discussion, and evaluation of specific genres, themes, movements, and literary problems.

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

*See Regulations and Procedures—Independent Study.*

**GRADUATE COURSES (GERM)**

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

**125G. German for Graduate Students (2) (Former FL 125G)**

Prerequisite: Germ 1B or permission of instructor. Intensive reading and grammar review to prepare master's degree candidates for German language examination in their fields.

**200. Seminar in Literary Criticism (3) (Former FL 200)**

Prerequisite: completion of an undergraduate major in German or permission of instructor. Methods of literary criticism and techniques of bibliography.

**210T. Seminar in Literature (3; max total 12 if no topic repeated) (Former FL 210)**

Prerequisite: completion of an undergraduate major in German or permission of instructor. Study of an aspect of literary history: genre, period, movement, or individual author.

**220T. Seminar in Literary Studies (3; max total 12 if no topic repeated)**

Prerequisite: German 210T or permission of instructor. Research in special problems of literature.

**230. Seminar in Middle High German (3)**

Prerequisite: German 135 or permission of instructor. Studies in Middle High German language and analysis of literary texts.

**240T. Seminar in Germanic Languages (3; max total 12 if no topic repeated)**

Prerequisite: German 230 or permission of instructor. Study of older Germanic languages and special linguistic problems.

**290. Independent Study (1-3)**

See *Regulations and Procedures-Independent Study*.

**299. Thesis or Project (2-6)**

Prerequisite: see *Master's Degrees-Thesis Requirement*. Preparation, completion, and submission of an acceptable thesis or project for the master's degree.

**GREEK (GRK)****148. Greek Literature in Translation (3)**

Prerequisite: upper division standing or permission of instructor. Analysis of selected works of major Greek poets, writers and thinkers from Homer to Lucian. Lectures, discussions, reports on readings.

**ITALIAN (ITAL)****1A-B. Elementary Italian (3-3)**

Beginning course of graded lessons acquainting the student with the basic structure and pronunciation of Italian through practice in speaking, reading, and writing. (3 lecture, 1 lab hour)

**2A-B. Intermediate Italian (3-3)**

Prerequisite: Italian 1B or equivalent. (A) Review of grammar and syntax; composition; oral practice, reading of short stories and plays. (B) Oral and written composition; reading of short stories, novels, biographies. Conducted in Italian.

**LATIN (LAT)****1A-B. Elementary Latin (3-3)**

(A) Elements of Latin grammar; acquisition of reading ability. (B) Continued emphasis on reading ability through use of adopted selections from classical writers.

**3A-B. Intermediate Latin (3-3)**

(A) Prerequisite: Lat 1B or equivalent. Review of grammar and syntax; use of subjunctive mood in clause construction; reading of selections from classical prose writers. (B) Continued emphasis on grammar and syntax; written compositions.

**101A-B. Advanced Grammar and Composition (3-3)**

Prerequisite: Lat 3B or equivalent; may be taken concurrently with Latin 131 or 132. Exercises in prose composition; selected works of Cicero and others from the Golden Age of Latin.

**131. Classical Latin (3)**

Prerequisite: Lat 3B. Survey of Roman literature; readings in prose and poetry of representative authors from Plautus to Apuleius.

**132. Medieval and Renaissance Latin (3)**

Prerequisite: Lat 131. Recommended: Lat 101B concurrently. Survey of Medieval and Renaissance Latin literature. Readings in *Patrologia Latina*, *Gesta Romanorum*, Erasmus, Luther, Morus; supplementary readings in English on political and cultural backgrounds.

**141. Ovid (3)**

Prerequisite: Lat 3B or equivalent. Translation of the *Metamorphoses* and the *Fasti*. Greco-Roman myths and their influence on world literature.

**142. Roman Drama (3)**

Prerequisite: Lat 3B or equivalent. Translation of the plays of Plautus, Terence, and Seneca. Greco-Roman drama; its evolution and influence on later theater arts.

**148. Roman Literature in Translation (3)**

Credit may not be applied to Latin minor requirements. Prerequisite: upper division standing or permission of instructor. Analysis of selective works of major Roman authors from Plautus to St. Augustine. Lectures, discussions, on readings.

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

See *Regulations and Procedures—Independent Study*.

**PORTUGUESE (PORT)****1A-B. Elementary Portuguese (3-3)**

Beginning course of graded lessons acquainting the student with the basic structure and pronunciation of Portuguese through practice in speaking, reading, and writing. (3 lecture, 1 lab hour)

**2A-B. Intermediate Portuguese (3-3)**

Prerequisite: Port 1B. (A) Review of grammar; tenses, subjunctive mood and irregular verbs emphasized; prose composition; reading modern novels, plays; sight reading. (B) Composition, conversation, correspondence; lectures on Portuguese civilization; modern prose, drama. Written report on individual reading. Conducted in Portuguese.

**RUSSIAN (RUSS)****1A-B. Elementary Russian (4-4)**

Beginning course of graded lessons acquainting the student with the basic structure and pronunciation of Russian through practice in speaking, reading, and writing. (4 lecture, 1 lab hour)

**2A-B. Intermediate Russian (4-4)**

Prerequisite: Russ 1B or equivalent as determined by examination. (A) Review of grammar and syntax; composition; oral practice; reading of short stories. (B) Oral and written composition; reading of modern stories and novels. Conducted in Russian.

**50A-B. Oral Russian (2-2)**

Prerequisite: Russ 1B, 2A, or 2B. Oral drill for intonation and pronunciation; conversation on assigned topics; brief talks; extemporaneous discussions. (2 lecture, 1 lab hour)

**101. Composition and Conversation (3; max total 9)**

Prerequisite: Russ 2B or equivalent. Continuation of prose composition and oral-aural practice for mastery of the finer points in grammar and syntax.

**103. Russian Culture (3)**

Credit may not be applied to Russian major and minor requirements. Prerequisite: permission of instructor. Cultural values of the Russian people: readings, lectures, films, and other media. Written and oral reports by students. Taught in English.

**110A-B-C. Russian Literature to 1900 (3-3-3)**

(A) From Chronicles to Romanticism; the Kiev and Moscow periods; verse, drama, fiction. (B) The novelists from 1830 to 1860. (C) Realism through Chelkhov, Dostoyevsky, Tolstoy; Idealism and Materialism. Readings and reports in Russian and English. Conducted in Russian.

**118A-B. Twentieth Century Literature (3-3)**

Prerequisite: Russ 2B or equivalent. Analytical and critical study of the twentieth century literary production of Russia. Outside readings and one written report each semester.

**148A-B. Russian Literature in Translation (3-3)**

Credit may not be applied to Russian major and minor requirements. Prerequisite: upper division standing or permission of instructor. Selective readings of major Russian literary works. Lectures, discussion. (A) from beginning to 1800. (B) From 1800 to present.

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

See *Regulations and Procedures—Independent Study*.

**SPANISH (SPAN)****1A-B. Elementary Spanish (4-4)**

Beginning course of graded lessons acquainting the student with the basic structure; emphasis on correct pronunciation and comprehension of oral Spanish. (4 lecture, 1 lab hour)

**2A-B. Intermediate Spanish (3-3)**

Prerequisite: Span 1B or two years of high school Spanish. Development of the student's ability in oral Spanish, with increased emphasis on reading, vocabulary building, intensive grammar and writing.

**4A-B. Intensive Reading and Composition (3-3)**

For incoming students with a bilingual background; to be taken in lieu of Spanish 2A-B; admission by departmental placement test only. Reading; intensive exercises in grammar and syntax; original compositions.

**50A-B. Oral Spanish (2-2)**

Prerequisite: Span 1B. May be taken concurrently with Span 2A-B. Enrollment limited. Common idioms; correct expression; simple dialogues and plays. (2 lecture, 1 lab hour)

**101. Advanced Composition and Reading (3)**

Prerequisite: Span 2B, 4B, or permission of instructor. Written assignments on varied topics with emphasis on style, expansion of vocabulary, and advanced grammatical structure; class conducted in Spanish.

**102. Hispanic Culture (3)**

Prerequisite: Span 101. May be taken concurrently with Span 101. Examination of cultural values of the Hispanic world through readings, lectures, films and other media. Frequent written and oral reports by students.

**103A-B. Spanish Literature (3-3)**

Prerequisite: Span 101 and 102 or equivalent; may be taken concurrently with Span 102; Span 103A prerequisite to 103B. An introduction to the principal authors, works, and movements of Spanish literature.

**104A-B. Spanish-American Literature (3-3)**

Prerequisite: Span 101 and 102 or equivalent; may be taken concurrently with Spanish 102. Introduction to the principal authors, works, and movements of Spanish-American literature from the discovery of America to the present.

**105. Spanish-American Fiction of the Twentieth Century (3)**

Prerequisite: Span 104A or equivalent. Intensive study of selected outstanding Spanish-American novels and short stories of the twentieth century.

**106. Spanish Literature of the Golden Age (3)**

Prerequisite: Span 103A or equivalent. The main genres of Renaissance Spanish literature with emphasis on at least one representative work for each.

**107. Spanish-American Poetry of the Twentieth Century (3)**

Prerequisite: Span 104B or equivalent. Intensive study of the works of selected outstanding Spanish-American poets of the twentieth century.

**108. Spanish Literature of the Twentieth Century (3) (Former FL 118)**

Prerequisite: Span 103B or equivalent. Readings in twentieth century Spanish literature as the basis for class discussion of content, form, and theme.

**130. Phonetics and Pronunciation (3)**

Not open to students with credit in FL 130A (Spanish). Prerequisite: Span 2B or permission of instructor. Intensive drill on phonetics for pronunciation, enunciation, intonation. Designed especially for students working toward an elementary or secondary credential in Spanish. (3 lecture, 1 lab hour)

**132. Methods of Teaching Spanish in Elementary Schools (3)**

Not open to students with credit in FL 130B (Spanish). Not applicable toward the Spanish major. Methods, materials, bibliography for Spanish in elementary schools.

**133. Contrastive Structures of Spanish and English (3) (Former EXP 167)**

Prerequisite: Span 2B or equivalent. Taken concurrently with Ling 133, except with permission of instructor. An analysis of the phonology, morphology, and syntax of Spanish with a view toward providing a contrastive analysis of Spanish and English, emphasizing points of similarities, differences, and problems of language acquisition.

**135. History of the Spanish Language (3)**

Prerequisite: Span 2B. The evolution of Spanish from Vulgar Latin to modern Spanish. Study of phonetic, morphological and syntactical changes; development of lexicon.

**137. Applied Linguistics (3) (Former Ling 132)**

Prerequisite: Span 101 (or concurrently); Ling 135. Phonological, morphological, syntactical, and lexical structure of Spanish; conflicts with English structure; linguistic problems in design of teaching materials.

**148A-B. Hispanic Literature in Translation (3-3)**

Credit may not be applied to Spanish major and minor requirements. Prerequisite: upper division standing or permission of instructor. Intensive study of outstanding works of Hispanic literature from the beginning to the present.

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

See *Regulations and Procedures—Independent Study*.

**GRADUATE COURSES (SPAN)**

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

**203. Bibliography and Literary Criticism (3) (Former FL 200)**

Discussion and application of methods and techniques in research. Analysis and application of the methods of literary criticism with consideration given to critical approaches in Spain and Spanish America.

**205. Cervantes (3)**

Intensive study of Don Quixote and other Cervantes' works with special consideration of sources, textual problems, and various critical approaches.

**220. Hispanic Linguistics (3; max total 9 if no topic repeated) (Former FL 202)**

In-depth analysis of the Spanish language through the study of the following areas: diachronic linguistics, synchronic linguistics, and dialectology.

**230. Spanish Literature (3; max total 15 if no topic repeated) (Former FL 210)**

Seminar in critique and analytical study of selected topics, genres or specific literary figures in each of the following areas: Medieval Period, Renaissance Period, Golden Age, 18th-19th Century, and 20th Century.

**240. Spanish American Literature (3; max total 9 if no topic repeated) (Former FL 210)**

Seminar in critique and analytical study of selected topics, genres or specific literary figures in each of the following areas: Colonial Period to 1810, 19th Century to 1910, 20th Century.

**250. Directed Reading (2; max total 6)**

Reading of works from a selected reading list in preparation for comprehensive master's degree examination.

**290. Independent Study (2-3; max total 6)**

See *Regulations and Procedures-Independent Study*.

**299. Thesis or Project (3-6; max total 6)**

Prerequisite: see *Master's Degrees-Thesis Requirement*. Preparation, completion and submission of an acceptable thesis or project for the completion of the Master's degree.

**IN-SERVICE COURSES**

*Note: In-service courses (300 series) are not intended for use on degrees except by special, prior approval. See Extension and Summer Session Bulletins for course descriptions.*

**301. Conversation and Composition Review (2; max total 8 if no language repeated)****304. Theory and Practice (2; max total 8)**

## GEOGRAPHY DEPARTMENT

Professors: Cole (Chairman), Crosby, Ervin, Koller, Montgomery

Associate Professors: Lee, Markham, Nasse

Assistant Professors: Gauss, Norsworthy, M. Stuart, Wiek

Visiting Lecturers: Gibson, van Zyl

Part-time: Clack, Graves, Hendrickson, A. Johnson, Nachtigal, Read, Stiglich, Worrell

The Geography Department offers a major and a minor in geography for the bachelor of arts degree and a graduate program for the master of arts degree. Geography offerings include undergraduate preparation for careers in regional and urban planning (land use surveys, market area analysis); teaching; map intelligence, real estate, cartography, weather; and preparation for graduate work.

Geography, because it integrates much information from the social and natural sciences and because of the diversity of subject matter from which it obtains data, offers a broad, liberal education applicable to many fields of employment. Geography provides much insight of direct application to teaching various courses of study in the elementary and secondary schools.

The department cooperates with other departments in providing for a concentration in Asian Studies and in Latin American Studies. (See *Special Programs—Asian Area Courses, Latin American Studies*)

Five of the California State Colleges, including Fresno State College, cooperate in the management of the Moss Landing Marine Laboratories on Monterey Bay, an establishment which offers regular course work and opportunities for research which are applicable to graduate and undergraduate programs. Consult the chairmen of the Geography and Biology Departments. See *Special Programs—Moss Landing Marine Laboratories*; for course descriptions see *Biology Department*.

## BACHELOR OF ARTS DEGREE IN GEOGRAPHY

The bachelor of arts degree with a major in geography consists of 124 units, including 38 units of geography. See requirements listed below. For general degree requirements see *Degrees and Credentials*. Geography courses may not meet the social science general education requirement for geography majors. Two years of one foreign language are recommended for majors intending to do graduate work in geography. Students intending to study for advanced degrees should be qualified in one or more geographic techniques (quantitative, cartographic, field). For example, the equivalent of Math 29 and 51 is urged for work in quantitative techniques (Geog 135T).

## GEOGRAPHY MAJOR

	<i>Units</i>
I. Elect from: Geog 3, 100, 101, 102, 103, 104, 116, 119T, 120, 130, 177.....	9
II. Elect from: Geog 5, 7, 8, 105, 106, 108, 109, 110, 114, 171, 182.....	6
III. Elect from: Geog 111, 112, 113, 115, 135T, 181.....	5
IV. Elect from: Geog 4, 124, 125, 126, 127, 128T, 129T, 140, 141, 142, 143, 150, 151, 152, 189, 193T.....	6
V. Geography electives, upper division.....	12
	38

*Recommended electives:* Math 40, 51, Ag 31, PISc 30, Biol 157, Engr 103, Geol 105, 109, Anthro 102, Bot 107, Econ 119, 170, Soc 163. May be substituted on Line V of the major with approval of the department chairman.

## Geography Major—Elementary Education Option

In addition to the academic major in geography the department, in cooperation with the School of Education, offers an optional program designed for students interested in an elementary education credential. The option is structured to enable prospective teachers to complete State of California minimum credential

requirements in four years, and thereby begin teaching with a partial fulfillment certificate. The fifth year must be completed within seven years after graduation in order to qualify for the standard teaching credential, as required by the state. The major consists of 36 units of geography and 21-22 units of elementary education courses. Since the program is designed specifically for teachers and does not conform to the regular academic major, it is not considered satisfactory preparation for graduate work in geography.

	<i>Units</i>
Geog 3, 4, 7, 8, 130 .....	12
Elect from (systematic courses): Geog 103 or 120, 108 or 182, 104, 116 .....	9
Elect from (regional courses): Geog 124, 126, 127, 141, 142, 189 or any one regional topics course (128T, 129T) .....	15
	36

*Additional Requirements:* EEd 105, 107A-B, 132A-B; one course from EEd 100, SEd 184, 186 (21-22 units).

#### **GEOGRAPHY MINOR**

Geography 3, 4, 7, 8 .....	10
Geography electives .....	10
	20

#### **CREDENTIAL PROGRAM**

For additional information on the credential program, consult departmental advisers and School of Education; see the sections on *Public School Credentials*.

#### **MASTER OF ARTS DEGREE**

The graduate program for the master of arts degree in geography is based on undergraduate preparation in geography and/or approved related fields. For specific requirements consult the departmental graduate adviser; for general requirements see *School of Graduate Studies*. For detailed information about the graduate program at Fresno State College, see the *Graduate Bulletin*, available in the Office of the Dean, School of Graduate Studies. Assistantships available.

#### **GENERAL EDUCATION REQUIREMENTS**

The following courses will satisfy general education requirements. *Area I:* Geog 5, 7, 8, 109, 171, 182. *Area II:* Geog 3, 4, 103, 104, 116, 120, 177. *Area IV:* Geog 3EC, 4EC, 5EC, 7EC, 99EC. (See *General Education—Courses*)

#### *Courses*

#### **GEOGRAPHY**

##### **3. Economic Geography (3)**

World distribution of significant commodities, their uses in cultures; agricultural and mineral resource patterns; regionalization of economic activity; implications for contemporary society.

##### **3EC. Composition (1)**

Prerequisite: concurrent registration in Geog 3. Theory and practice in English composition.

##### **4. World Geography (3)**

Cultural and physical features; economic development; resources; man-land relationships. The approach is by continents and/or cultural regions.

##### **4EC. Composition (1)**

Prerequisite: concurrent registration in Geog 4. Theory and practice in English composition.

**5. Physical Geography I: Weather and Climate (3)**

A survey of the fundamental principles of weather and climate.

**5EC. Composition (1)**

Prerequisite: concurrent registration in Geog 5. Theory and practice in English composition.

**7. Physical Geography II: The Earth's Surface (3)**

A survey of the fundamentals of biogeography and landform analysis.

**7EC. Composition (1)**

Prerequisite: concurrent registration in Geog 7. Theory and practice in English composition.

**8. Physical Geography Laboratory (1)**

Laboratory study of maps, meteorological measurements, and landform interpretation.

**99EC. Composition (1)**

Prerequisite: concurrent registration in upper division geography course. Theory and practice in English composition.

**100. Trade Flow Analysis (3)**

Prerequisite: permission of instructor. Factor proportions, interregional input-output, effects of transport costs on resource allocation, interpretation of trade statistics.

**101. Agricultural Geography (3)**

Prerequisite: Geog 3 or permission of instructor. Analysis of areal distribution of agricultural (crops and livestock) patterns of the world. Interactions with the environment, role in economics.

**102. Transportation Geography (3)**

Prerequisite: Geog 3 or permission of instructor. Analysis of areal distribution of transport networks of the world (road, rail, water, and air) and the interaction of these networks with other phenomena.

**103. Industrial Regions (3)**

Prerequisite: Geog 3 or permission of instructor. Study of form and function; internal, interregional and extraregional connections of the world's industrial regions.

**104. Cultural Geography (3)**

Spatial aspects of cultural phenomena in the evolution of early and advanced civilizations.

**105. Seminar in Physical Climatology (3)**

Undergraduate seminar in physical climatology. Interactions of meteorological and other physical factors in producing characteristic climates. Students present seminar papers on selected topics.

**106. World Landform Regions (3)**

Prerequisite: Geog 7 or Geol 1. A systematic analysis of types of world landform regions.

**108. Seminar in Regional Climatology (3)**

Undergraduate seminar in regional climatology. Prerequisite: Geog 5 or equivalent or permission of the instructor. Climates as they exist in various parts of the world and their effects upon man and his activities. Students present seminar papers on selected topics.

**109. Plant Geography (3)**

Prerequisite: permission of instructor. World floras, plant dispersal, effect of environment on plant form and distribution, vegetation classification, regional analysis, and regional vegetation of western United States.

**110. Seminar in United States Landform Regions (3)**

Prerequisite: Geog 106 or Geol 105. Natural regions of the United States based on surface features and their interrelationships. Class discussion, research, and report writing.

**111. Map Interpretation (2)**

Prerequisite: Geol 1, 1L, permission of instructor. Interpretation of foreign and domestic maps; symbols, scale, methods of showing topography, vegetation, culture, land use; soils, water and water levels; characteristics of projections. (2 2-hour labs)

**112. Aerial Photograph Interpretation (3)**

Prerequisite: Geol 1, 1L, permission of instructor. Aerial photographs as a means of determining culture, topography, and vegetation; scale, use of index, vertical and oblique photographs, and stereoscopes. (2 3-hour labs)

**113. Advanced Aerial Photo Interpretation and Remote Sensing of the Environment (3)**

Interpretation of air-borne and orbital imagery: panchromatic, color, infrared, color infrared, radar, multispectral. (2-3 hour labs)

**114. Agricultural Climatology (3) (Same as PISc 170T Section)**

Prerequisite: Geog 5 or equivalent, or permission of instructor. Climatic factors influencing agriculture with specific reference to the San Joaquin Valley. Course designed for anyone interested in the relations between climate and agriculture, regardless of major.

**115. Cartography (3)**

Use of instruments for drafting and lettering of maps; construction and use of standard map projections; relief representation and map reproduction; cartographic source materials and literature; field trips. (2 3-hour labs)

**116. Seminar in Political Geography (3)**

Systematic treatment; nature and structure of states, boundary problems, territorial waters, international power, air space; papers, reports required.

**119T. Population and Settlement Geography (3; max total 9 if no topic repeated)**

Migrations, routes, settlement sites and situations, motives.

**120. Urban Geography (3)**

The region as a geographic unit; urban settlements as regional centers; city-region relationships; morphology and structure of villages, towns and cities, and their internal functional relationships; case studies.

**124. Geography of the USSR (3)**

Comprehensive study of the economic, cultural, physical and political geographic foundations of the Soviet state, followed by intensive study of selected regions within the country.

**125. 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.

**126. Australia, New Zealand, and Pacific Islands (3)**

Geographic relationship of natural and cultural features to social and economic development.

**127. Europe (3)**

Geographic regions of Europe emphasizing the relation of human activities to physical factors areal in their distribution and influence.

**128T. Eurasian Regions (3; max total 9, if no area repeated)**

Geographic regions of Eurasia emphasizing physical and cultural features. Regions to be discussed include East Asia, Southeast Asia, South Asia, Southwest Asia, Mediterranean Lands, Western Europe, Southern Europe, Eastern Europe, Central Europe, Northern Europe, and Eurasian Polar Lands.

**129T. African Regions (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 Subsaharan Africa, North Africa, West Africa, East Africa, Central Africa and South Africa.

**130. Seminar in Geographic Literature (2)**

Prerequisite: geography major or minor. Primary and secondary source materials; literary background of geography. Papers and reports required.

**135T. Topics in Quantitative Techniques (3; max total 9 if no topic repeated)**

The application of quantitative techniques to geographic problems, especially spatial analysis related to economic location, circulation, politico-geographic relationships, landform patterns, climatic data, and vegetation distributions. Topics to be discussed include basic, advanced, and applied quantitative techniques. (1 unit may be scheduled as a 2-hour lab)

**140. Canada and Alaska (3)**

Regional study of advantages and limitations of the natural environment upon present and future problems involving resource distribution, human activities, and regional and interregional adjustments.

**141. Conterminous United States (3)**

Systematic and regional survey of the United States; cultural and physical phenomena related to economy.

**142. South America (3)**

Relationship of natural and cultural features; economic and social development; man-land relationships. Countries considered individually.

**143. Caribbean America (3)**

Relationship of natural and cultural features in Mexico, Central American countries, and Caribbean islands and countries; social and economic development; man-land relationships.

**150. Geography of the Humid Tropics (3)**

A systematic and regional investigation of the physical and cultural complexes of the Humid Tropics.

**151. Geography of the Polar Lands (3)**

A systematic and regional investigation of the physical and cultural complexes of the polar regions of the world.

**152. Geography of the Arid Lands (3)**

A systematic and regional investigation of the physical and cultural complexes of the world's arid lands.

**171. Soils and Water (3)**

World distribution of soil types and factors of soil genesis; geographic aspects of the world's surface waters developed in detail.

**177. Seminar in Historical Geography of the United States (3)**

Regional settlement of the United States; peopling of physiographic regions, creation of economic (cultural) regions, and geographic factors related to broad trends in American history. One week-end field trip required.

**180. Field Geography (1-6; max total 6)**

Week-end or summer field tours.

**181. Technical Field Geography (3)**

Gathering and analysis of rural land use data—crop distribution related to topography, climate, soils, water, markets; urban land use—delineation of central business district (CBD), foot and automobile traffic flows, housing quality, retail and wholesale trade territories, population concentrations and ethnic groupings. (Saturdays 4-8 hours)

**182. Seminar in Geography of Environment (3)**

Prerequisite: 20 units of geography or senior standing. Interactions of man and his environment and some of the effects of the environment upon human activity. Class discussion, research, and report writing.

**189. Geography of California (3)**

Natural and cultural patterns of California; historical and regional geography of the state. (Field trips required)

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

See *Regulations and Procedures—Independent Study*.

**191T. Topics in Geography (1-3; max total 6)**

Topics to be discussed include resource use, California resources, environmental pollution, selected microregions, fundamental concepts in physical geography, fundamental concepts in economic geography, fundamental concepts in cultural geography.

**192. Directed Readings (1-3)**

Supervised readings in a selected field of geography. Combined units of Geog 190 and 192 may not exceed 6 units.

**193T. Seminar in Latin American Regions (3; max total 9 if no topic repeated)**

Undergraduate seminar in Latin American regions. Comprehensive investigations of physical, cultural and economic aspects of Latin American countries and regions. Students present seminar papers on selected topics, including Brazil, Platine countries, Andean countries, Central America, Mexico, and Caribbean Islands.

**GRADUATE COURSES**

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

**203T. Seminar in Economic Geography (3; max total 6 if no topic repeated)**

Prerequisite: Geog 3 or 101 or 102 or 103 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.

**207. Seminar in Landforms (3; max total 6)**

Prerequisite: graduate standing or permission of instructor. Advanced study of landforms.

**208. Seminar in Climatology (3; max total 6)**

Prerequisite: graduate standing or permission of instructor. Original research on a climatological topic selected by the student.

**209T. Seminar in Biogeography (3; max total 6)**

Prerequisite: graduate standing or permission of instructor, Original research on a topic in biogeography selected by the student.

**215. Advanced Cartography (3)**

Prerequisite: Geog 115 or permission of instructor. Advanced techniques in planning, compilation, and execution of maps and diagrams; research using primary and secondary source materials; use of advanced cartographic instruments, map reproduction methods. (2 3-hour labs per week)

**230. Seminar in Contemporary Geographic Thought (3)**

Prerequisite: graduate standing or permission of instructor. Current theories of geography and their evolution.

**260T. Seminar in Human Geography (3; max total 9)**

Prerequisite: graduate standing 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 if no region is repeated)**

Prerequisite: undergraduate course dealing with the region under study or permission of instructor. Study of geographic conditions in relation to economic, social and political problems in a selected region of the world.

**280T. Advanced Field Studies in Selected Regions (1-3; max total 6)**

Prerequisite: permission of instructor. Intensive field study emphasizing selected cultural, economic, political and/or physical geographical phenomena. The study region may vary with each offering.

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

See *Regulations and Procedures—Independent Study*.

**291. Directed Readings in Geography (1-3; max total 6)**

Prerequisite: graduate standing. Supervised independent reading in a selected geographical topic.

**299. Thesis (2-6; max total 6)**

Prerequisite: see *Master's Degrees—Thesis Requirement*. Preparation, completion, and submission of an acceptable thesis for the master's degree.

**IN-SERVICE COURSES**

*Note: In-service courses (300 series) are not intended for use on degrees except by special, prior approval. See Extension and Summer Session Bulletins for course descriptions.*

**301. Recent Interpretations in Geography (2; max total 12 if no topic repeated)**

## GEOLOGY DEPARTMENT

Professors: Beard, Cserna, Mack

Associate Professor: Blackerby (Chairman)

Assistant Professors: Avent, Bereskin, Keller, Lange, White

Part-time: Ortmann

The Geology Department offers a major in geology for the bachelor of arts degree. Geology offerings include undergraduate preparation for professional careers and for graduate work. The department offers courses for earth study as an avocation. The graduate program provides (1) courses of instruction and research leading to a master of arts degree, (2) graduate-level courses for students from other departments, particularly those undertaking work at Moss Landing Marine Laboratories, and (3) advanced course work for professional personnel within the Fresno State College service area.

Five of the California State Colleges, including Fresno State College, cooperate in the management of the Moss Landing Marine Laboratories on Monterey Bay, an establishment which offers regular course work and opportunities for research which are applicable to graduate and undergraduate programs, including courses in geological oceanography. Consult the chairman of the Geology and Biology Departments. See *Special Programs—Moss Landing Laboratories*; for course descriptions see *Biology Department*.

**BACHELOR OF ARTS DEGREE  
MAJORS IN GEOLOGY**

The bachelor of arts degree with a major in geology consists of a total of 124 units including 37 units of geology. For general degree requirements see *Degrees and Credentials*. A student planning graduate study is advised to meet the foreign language requirements of the institution he plans to attend. Students majoring in geology are strongly urged to take Geology 107 and make arrangements for Geology 108 during their junior year (see adviser).

<b>Geology Major for BA Degree</b>	<b>Units</b>
Geol 1, 1L, 2, 12A-B, 101, 106A, 107, 108 .....	27
Elect from upper division geology.....	10
	37

*Additional Requirements:* Bot 10, Zool 10; Chem 1A-B; Math 75, 76, or Math 71, 72, 76; Physics 2A-B. Recommended: At least two years of French, German, or Russian in preparation for graduate study.

**GEOLOGY MINOR**

A minor in geology consists of 20 units. The following courses are recommended: Geol 1, 1L, 2, 12A, 101, 105 and 189.

**CREDENTIAL PROGRAM**

For information on the current credential program consult departmental advisers and the School of Education; see the section on *Public School Credentials*.

**MASTER OF ARTS DEGREE**

The graduate program for the master of arts degree in geology is based on the equivalent of the undergraduate major at Fresno State College. Twenty of the 30 units required for the degree must be in geology. For specific requirements consult the chairman of the department; for general requirements see School of Graduate Studies. For detailed information about the graduate program at Fresno State College, see the *Graduate Bulletin*, available in the Office of the Dean, School of Graduate Studies.

**GENERAL EDUCATION REQUIREMENTS**

The following courses will satisfy general education requirements. *Area I: Geol 1, 1L, 2, 10, 12A, 189, 189L.* (See *General Education—Courses.*)

**Courses****GEOLOGY****1. Physical Geology (3)**

Nature and properties of earth materials and processes involved in development of landscapes; work and effects of streams, waves, glaciers, volcanoes, mountain building, and earthquakes. May include field trips.

**1L. Physical Geology Laboratory (1)**

Prerequisite: Geol 1 concurrently or permission of instructor. Introductory laboratory study of minerals, rocks, topographic maps, and geologic maps; land forms and geologic structures as shown by maps and models. One-day field trip may be required. (3 lab hours)

**2. Historical Geology (3)**

Prerequisite: Geol 1 or equivalent. Survey of earth's history revealed by the rock sequence. May include field trips.

**2L. Historical Geology Laboratory (1)**

Prerequisite: Geol 1, 2 (concurrently) or permission of instructor. Introductory laboratory study of geologic time, geologic maps, regional geology and regional geologic history. (3 lab hours)

**3. Field Studies (1)**

Prerequisite: Geol 1 (concurrently) or permission of instructor. Weekend supervised field trips to areas such as Yosemite, Sequoia, Death Valley, San Joaquin Valley and the Coast Ranges.

**10. Introduction to Geoscience (4) (Former X16)**

Not open to students with credit in Geol 1 and 1L. Introduction to the earth sciences: interrelationships between various scientific disciplines, state of progress in study of the planet Earth. No previous science background is necessary. (3 lecture-discussion and 3 lab hours)

**12A-B. Mineralogy (3-2)**

Prerequisite: for Geol 12B: high school chemistry, trigonometry. Properties, relationships, origin of minerals; form and structure of crystals; determination of common minerals by physical and chemical tests. (Geol 12A: 2 lecture, 3 lab hours. Geol 12B: 1 lecture, 3 lab hours)

**25. Engineering Geology (3)**

Not open to freshmen. For engineering students. Principles of physical geology; application of geology to engineering structures and projects.

**101. Petrology (3)**

Prerequisite: Geol 1, 12A-B (or concurrently). Common rock-forming minerals; origin, classification, textures, and structures of igneous, sedimentary, and metamorphic rocks; examination of rocks in the hand specimen. (2 lecture, 3 lab hours)

**103. Advanced Field Studies (1; max total 3 if no studies repeated)**

Prerequisite: upper division standing in geology. Weekend or vacation field trips to geologically important and significant areas within California and neighboring states.

**105. Geomorphology (3)**

Prerequisite: Geol 1, 1L, 2, or permission of instructor. Land forms, their origin and development; regional problems; interpretation of topographic maps. May include field trips. (2 lecture, 3 lab hours)

**106A-B. Structural Geology (3-3)**

Not open to students with credit in Geol 106, 118. Prerequisite: Geol 1, 1L, 2 or permission of instructor. Structural arrangements of rocks; intrusive and extrusive rock structures; folding and faulting; unconformities. Interpretation of geologic maps; advanced problems in structural geology; stereographic net; structural interpretation from aerial photographs. May include field trips. (2 lecture, 3 lab hours)

**107. Field Geology Methods (3)**

Prerequisite: Geol 1, 101, 106A. Field trips to introduce groups of students to methods and instruments used in geologic field work; observation and description of geologic phenomena; written presentation of observed data. (1 lecture, 6 lab hours, usually on week ends)

**108. Field Geology (6)**

Prerequisite: Geol 101, 107. Geologic reconnaissance in field groups; application of instrumental methods in geologic mapping; written report of area selected for study.

**109. General Oceanography (4)**

Prerequisite: college chemistry and biology, Geol 1 or permission of instructor. Interdisciplinary examination of physical and chemical characteristics of seawater; distribution and effects of ocean currents; geology of the ocean floor; relation of organisms to marine environment. See ML 101. (3 lecture, 3 lab and field hours.)

**110A-B. Paleontology (3-3)**

For geology and biology majors. Prerequisite: Geol 2, and either Biol 10 or Zool 1; or permission of instructor. Invertebrate structures and development of prehistoric animals; paleoecology; use of index fossils in biostratigraphic analysis. May include field trips. (2 lecture, 3 lab hours)

**111. Physical Stratigraphy (3)**

Prerequisite: Geol 107. Principles of stratigraphy and of sedimentation as applied to stratigraphy; features, arrangements, fossils, age and distribution of major rock formations of North America. Includes week-end field trips. (1 lecture, 6 lab hours)

**115. Ore Deposits (3)**

Prerequisite: Geol 101, 106A, college chemistry, or permission of instructor. Geology, mineralogy, distribution and occurrence of common ore minerals essential in industry; genesis and localization of metallic minerals. May include field trips. (2 lecture, 3 lab hours)

**116. Petroleum Geology (3)**

Prerequisite: Geol 101, 106A. Theories of origin of petroleum, petroleum structures, prospecting, extraction methods; selected petroleum fields. May include field trips.

**117. Ground Water (2)**

Prerequisite: senior standing or permission of instructor. Geologic and hydrologic factors related to occurrence and utilization of ground water.

**120. Marine Geology (4)**

Prerequisite: Geol 1, 1L, 2. Geomorphology of the ocean basins; marine processes affecting coastal areas; economic resources of the oceans. (3 lecture, 3 lab hours)

**124. Geochemistry (3)**

Prerequisite: Geol 101, one year of college chemistry. Application of chemical principles to geological processes. Chemical reactions involved in origin and alterations of rocks and minerals of the earth's crust. (2 lecture, 3 lab hours)

**130T. Advanced Problems in Geology (2-3; 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, and marine geology.

**170. Optical Mineralogy (3) (Former Geol 112)**

Prerequisite: Geol 12B or permission of instructor. Optical properties of minerals; identification of selected minerals by optical methods. Manipulation and use of petrographic microscope. (2 lecture, 3 lab hours)

**171. Igneous Petrography (3) (Former Geol 113A-B)**

Prerequisite: Geol 101, 170. Identification, classification, and interpretation of igneous rocks, using the petrographic microscope and other techniques. May include field trips. (2 lecture, 3 lab hours)

**172. Metamorphic Petrography (3) (Former Geol 113A-B)**

Prerequisite: Geol 101, 170. Identification, classification, and interpretation of metamorphic rocks, using the petrographic microscope and other techniques. May include field trips. (2 lecture, 3 lab hours)

**173. Sedimentary Petrography (3) (Former Geol 113A-B)**

Prerequisite: Geol 101, 170. Sediment analysis, techniques of preparation and statistical analyses, thin section study with petrographic microscope; problems of classification, mineralogy, geochemistry, and origin. (2 lecture, 3 lab hours)

**189. Geology of California (2)**

Prerequisite: Geol 1. Origin of geological features of the State; relation of structural, stratigraphic, and mineralogical conditions to geologic features and resources of the State.

**189L. Geology of California Field Study (1)**

Prerequisite or concurrently: Geol 189 or permission of instructor. Laboratory and field study of selected areas displaying features of the geology of California; written report on each trip. Minimum of 32 hours in field trips required during semester of registration in course; limited to students who can arrange transportation for field trips and share cost.

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

See *Regulations and Procedures—Independent Study*.

**GRADUATE COURSE**

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

**209. Geology Seminar (3; max total 9 if no topic repeated)**

Research and reporting on theories, principles, experimentation, and methods of dealing with significant problems in geology.

**250T. Topics in Geology (3; max total 9 if no topic repeated)**

Prerequisite: Major or minor in geology; permission of instructor. Advanced studies in such areas as hydrology, regional stratigraphy, marine geology, and geochemistry.

**290. Independent Study (1-3; max total 6)**

See *Regulations and Procedures—Independent Study*.

**299. Thesis (2-6)**

Prerequisite: see *Master's Degrees-Thesis Requirements*. Preparation, completion, and submission of an acceptable thesis for the master's degree.

**HISTORY DEPARTMENT**

Professors: Bohnstedt, Canales, G. Cobb, Comegys, Nelsen, Wiley

Associate Professors: Klassen (Chairman), Bilderback, S. Chang, Kensel, Matthew, Nalbandian, Smetherman

Assistant Professors: Benko, Bjerck, Brouwer, J. Christensen, R. Dinkin, Echols, Gade, Goodwin, Hudson, Kendall, E. K. Smith, Vigil

Instructor: T. Russell

Lecturer: Contreras

Part-time: Altmueller, M. Cohen, A. Leavenworth, J. Márquez, Skinner, W. Taylor

A primary function of the History Department is to give students a liberal education in world and American civilization. It aims to bring to them an understanding of modern society by reviewing the achievements of the past. Thus the department aims to prepare students to be enlightened citizens equipped with the broad cultural background essential to studies in the fields of education, philosophy, literature, law, government, journalism, public service, and business; all of which today demand a greater grasp of vital domestic and foreign problems.

The department offers a major and a minor in history for the bachelor of arts degree, a graduate program in history for the master of arts degree, and courses for use in teaching credential programs as well as the nondepartmental social science and Latin American Studies majors. (See *Special Programs—Latin American Studies*)

**THE AMERICAN HISTORY REQUIREMENT**

The American history requirement for graduation may be fulfilled by taking (a) the Advanced Placement Examination (see *Regulations and Procedures—Advanced Placement*), (b) the no-credit departmental examination, (c) Hist 11 or 12, or (d) one of the following upper division courses: Hist 167, 168, 172, 173, 174, 176, 177. No course used to fulfill the American history requirement may be used to satisfy the general education requirements.

**ADVANCED PLACEMENT**

Students who earn a composite score of "4" or "5" on the advanced placement examination in history administered by the College Entrance Examination Board will be allowed 3 units of credit for History 11 or 12. A score of "2" or "3" may receive similar credit, subject to the approval of the department. A score of "1" will receive neither credit nor advanced placement.

**HISTORY MAJOR**

The following major requirements are in addition to the general education requirements. No course may be used to meet more than one line of requirements.

	<i>Units</i>
Modern Europe: Hist 141, 142, 145, 146, 147.....	6
United States: Hist 171, 172, 173, 174.....	6
Hist 101.....	3
Elect 9 units from one and 12 units from another of the areas of concentration listed below (one of which must be other than Modern Europe or United States).....	21
Non-Western: Hist 104A-B, 105, 106, 107, 109T, 110, 133, 135, 136	
Ancient, Medieval: Hist 110, 111, 112, 119T, 120, 121, 122, 131, 132, 137	
Modern Europe: Hist 131, 132, 137, 138, 139, 143A-B, 144A-B, 149T, 160A-B	
England, British Empire: Hist 151, 152, 155, 158	
Latin America: Hist 161, 162A-B-C, 165, 166, 169T	
United States: Hist 167, 168, 175, 176, 177, 178, 179T, 181, 182, 183, 188, 189	
36	

*Additional Requirements:* Approved upper division electives in related field, e.g., literature, psychology, and social science (6 un). Lower division courses: Hist 1, 2, 3; 6, 7, or 8.

**Foreign Language Requirement**

Two years of satisfactory collegiate study (or equivalent) of one foreign language are required of majors in history. See the general statement in section on *Degrees and Credentials—Foreign Language Requirement* for equivalents and alternative ways of meeting the requirement. Any student planning advanced study is advised also to meet the foreign language requirement of the school he plans to attend.

**HISTORY MINOR**

The following minor requirements are in addition to the general education requirement in social science.

	<i>Units</i>
Hist 1, 2, 3, 6, 7, 8, 11, 12 (exclude course if used for general education).....	9-12
Elect from: Non-Western, Latin America, or Ancient-Medieval.....	3-6
Elect from: United States or Canada.....	6-9
Elect from: Modern Europe.....	3-6
24	

**CREDENTIAL PROGRAM**

For information on the current credential program, consult departmental advisers and the School of Education; see the sections on *Public School Credentials*.

**MASTER OF ARTS DEGREE**

The graduate program for the master of arts degree in history is based on the equivalent of the undergraduate major at Fresno State College. For specific requirements, consult the chairman of the department; for general requirements, see *School of Graduate Studies*. For detailed information about the graduate program at Fresno State College, see the *Graduate Bulletin*, available in the Office of the Dean, School of Graduate Studies.

**Foreign Language Requirement**

Advancement to candidacy for the master of arts degree with a major in history requires the passing of an examination demonstrating the ability to read materials of the major in one appropriate foreign language.

**GENERAL EDUCATION REQUIREMENTS**

The following courses will satisfy general education requirements. *Area II:* Hist 3, 6, 7, 8, 167, 168, 176, 177. *Area III:* Hist 1, 110, 111, 112, 121, 131, 132. *Area V:* Hist 2, 136, 141, 142, 145, 146, 147, 171, 172, 173, 174, 178, 183. (See *General Education—Courses.*)

**Courses****HISTORY****1. Western Civilization to 1650 (3)**

Foundations of western civilization; interdependence of cultures and peoples; cultural development from prehistoric times to 1650. (2 lecture, 1 quiz sections.)

**1HD. Western Civilization to 1650 (3)**

Honors section of Hist. 1. Open only to honors students at the invitation of the instructor.

**2. Western Civilization Since 1650 (3)**

Not open to students with credit in Hist 4A-B. Political, social, and cultural history of Europe since 1650; European expansion and impact of western civilization upon the non-European world; Asian and African nationalist movements in 19th and 20th centuries.

**2HD. Western Civilization Since 1650 (3)**

Honors section of Hist 2. Open only to honors students at the invitation of the instructor.

**3. Colonial America (3) (Former Hist 8A)**

Western Hemisphere history from discovery to independence.

**6. East Asian Civilization I (3)**

The cultures and history of China; China's relations with her neighboring Asian and Southeast Asian countries from the earliest times to 1800; examination of the difference between Chinese and American civilizations.

**7. East Asian Civilization II (3)**

The cultures and history of Japan and Korea from the earliest times to the 1860's and their roles in the traditional East Asian World.

**8. Republics of Latin America (3)**

Rise of the modern Hispanic American states since 1800; political, social, and economic development.

**11. American History to 1865 (3)**

Not open to students with credit in Hist 10. Meets the American history requirement. The formation of the Union and the development of American society to 1865.

**11HD. American History to 1865 (3)**

Honors section of Hist. 11. Open only to honors students at the invitation of the instructor.

**12. American History from 1865 (3)**

Not open to students with credit in Hist 10. Meets the American history requirement. The development of American society since 1865.

**12HD. American History from 1865 (3)**

Honors section of Hist 12. Open only to honors students at the invitation of the instructor.

**101. Introduction to Historical Method (3) (Former Hist 199)**

Prerequisite: upper division standing, preferably first-semester junior; permission of instructor. Introductory course for advanced work; bibliography; research techniques, historical writing; appraisal of historians of contemporary significance.

**104A-B. China (3-3)**

Prerequisite: Hist 6 and 7, or equivalent. (A) An appraisal of political, social, economic, and cultural developments of China from 1800-1928. (B) Analysis of political, social, economic, and cultural changes of China from 1928 to the present.

**105. Japan and Korea (3)**

Prerequisite: Hist 7. Cultural, political, and economic development of Japan and Korea from antiquity to the present.

**106. India and Pakistan (3)**

Prerequisite: Hist 6. Cultural, political, and economic evolution of the sub-continent of India from the formation of the primitive societies to the rise of modern nations.

**107. Southeast Asia (3)**

Not open to students with credit in Anthro 123. History and cultures of South-east Asia from earliest times to the present.

**109T. Studies in Non-Western History (3; max total 6 if no area repeated)**

Prerequisite: permission of instructor. Class discussion and closely supervised research and writing.

**109.1. Ancient Israel****109.2. Buddhism****109.3. Philosophy of Ghandi****110. Ancient Fertile Crescent (3)**

Not open to students with credit in Hist 111A. Ancient civilization of the Middle East from the dawn of history to the ascendance of Greece.

**111. Ancient Greece (3) (Former Hist 111A)**

The Hellenic and Hellenistic periods of Greek history to the dissolution of Alexander's empire.

**112. Ancient Rome (3) (Former Hist 111B)**

Evolution of Rome through the republican and imperial periods.

**119T. Studies in Ancient and Medieval History (3; max total 6 if no area repeated)**

Prerequisite: permission of instructor. Class discussion and closely supervised research and writing.

**119.1. Medieval Studies****120. Byzantine History (3)**

Prerequisite: Hist 1 or equivalent. Eastern Roman Empire from Justinian to the fall of Constantinople; the role and development of the Church, internal development, and its relations with the Islamic, Latin, and Slavic worlds.

**121. Formation of the Medieval Order (3)**

Prerequisite: Hist 1. Influences of Neoplatonism, Universalism, and Christianity in the development of thought and institutions; Monasticism, Feudalism, Crusading, and the Papacy.

**122. Disintegration of the Medieval Order (3)**

Not open to students with credit in Hist 121 prior to September 1967. Prerequisite: Hist 1. Conflict between Christian Universalism and National Particularism. Examination of the Hundred Years War, Babylonian Captivity of the Church, Conciliarism, and tradition of ecclesiastical dissent prior to the Reformation.

**131. Renaissance (3)**

Prerequisite: Hist 1 or equivalent or permission of instructor. The foundations of modern Europe during the 14th and 15th centuries.

**132. Reformation (3)**

Not open to students with credit in Hist 131 prior to September 1967. Prerequisite: Hist 1 or equivalent or permission of instructor. Analysis of the political, social, and intellectual movements associated with the 16th century religious upheaval.

**133. Armenian History (3)**

Prerequisite: Hist 1 or permission of instructor. Economic, political, social, religious, and cultural history of Armenia from earliest times to the present.

**135. Moslem World (3)**

Political and cultural development of the Arabs, Turks, Berbers, and other Moslem peoples from Mohammed to the present.

**136. Africa (3)**

Prerequisite: permission of instructor. The chronological development and the indigenous and foreign influences which have created modern Africa.

**137. Old Russia to 1689 (3) (Former Hist 137A)**

Prerequisite: Hist 1, or permission of instructor. The development of Russian national life from the earliest times to the accession of Peter the Great.

**138. Imperial Russia 1689-1917 (3) (Former Hist 137B)**

Prerequisite: Hist 2, or permission of instructor. The modification of Russian political and social institutions to meet the demands of the modern world.

**139. Soviet Union (3)**

Prerequisite: Hist 2 or permission of instructor. The impact of Marxist ideology and the influence of prerevolutionary norms in Soviet government and society, 1917 to the present.

**141. Europe 1618-1715 (3)**

Prerequisite: Hist 2 or equivalent. European culture, institutions, and politics from the start of the Thirty Years' War to the death of Louis XIV.

**142. Europe 1715-1815 (3)**

Not open to students with credit in Hist 141 or 145 prior to fall 1966. Prerequisite: Hist 2 or equivalent. European culture, institutions, and politics from the death of Louis XIV to the end of the Napoleonic era.

**143A-B. Modern Germany (3-3)**

Not open to students with credit in Hist 143 prior to September 1969. Prerequisite: Hist 2 or equivalent. (A) Political, social, cultural development of Germany from Frederick the Great to the outbreak of World War I. (B) Political, economic, and ideological analysis of German history from 1914 to the present; contemporary German society.

**144A-B. Modern France (3-3)**

Not open to students with credit in Hist 144 prior to September, 1970. Prerequisite: Hist 1 or 2 or permission of instructor. (A) Culture, politics, and society of France from Francis I to Napoleon. (B) Political, social, and economic history of France in the nineteenth and twentieth centuries.

**145. Europe 1815-1870 (3)**

Not open to students with credit in Hist 146 prior to fall 1970. Prerequisite: Hist 2 or equivalent. Political, social, and cultural development of Europe from the Congress of Vienna to the Franco-Prussian War.

**146. Europe 1871-1914 (3)**

Prerequisite: Hist 2 or equivalent. Political, social, and cultural development of Europe from the Franco-Prussian War to the outbreak of World War I.

**147. Europe Since 1914 (3)**

Prerequisite: Hist 2 or equivalent. The European nations in two world wars; rise and character of totalitarian movements; social and economic developments; artistic achievements, new intellectual currents; revolt of Asia and Africa against European dominance.

**149T. Studies in Modern European History (3; max total 6 if no area repeated)**

Prerequisite: permission of instructor. Class discussion and closely supervised research and writing.

**149.1. Social Dissent in 16th Century Europe****149.2. The Age of Bismarck****149.3. Propaganda Methods in the Reformation****151. England to 1688 (3)**

Structure of the British government, society, and economic life from Roman times to the Glorious Revolution.

**152. England Since 1688 (3)**

Changing structure of the British government, economy, and society from the Glorious Revolution to the present.

**155. British Empire Since 1783 (3)**

Political and economic development of the British Empire, including the development of the Commonwealth, colonial nationalism, and changes in British colonial policy.

**158. Canada (3)**

Prerequisite: Hist 3 or equivalent. Discovery, growth and expansion of Canada, social, economic and political institutions from the French regime through British rule to the Transcontinental Dominion.

**160A-B. Spain and Portugal (3-3)**

Prerequisite: Hist 2 or permission of instructor. (A) Development of the Iberian Peninsula from prehistoric times to the Napoleonic Invasion of 1808. (B) From 1808 to the present; political, social and economic institutions; outstanding literary works.

**161. Colonial Latin America (3)**

The age of discovery, European and American background; political, social and economic institutions of the Spanish and Portuguese empires in America.

**162A. Platine Countries (3)**

Prerequisite: Hist 8 or equivalent. Disintegration of the Viceroyalty of La Plata and the formation of Argentina, Paraguay, and Uruguay from 1800 to the present.

**162B. Caribbean America (3)**

Prerequisite: Hist 8 or equivalent. Creation and growth of the nations of the Greater Antilles and the Spanish Main: Venezuela, Colombia, Cuba, Haiti, the Dominican Republic, and Puerto Rico, 1800 to the present.

**162C. Western South America (3)**

Prerequisite: Hist 8 or equivalent. Development of the countries which once formed the bulk of the Viceroyalty of Peru: Ecuador, Peru, Bolivia, and Chile, 1800 to the present.

**165. Mexico (3)**

Prerequisite: Hist 3 or equivalent. Development of Mexican nationality and culture through political, social, and economic changes from 1800 to the present; Mexican Revolution.

**166. Brazil (3)**

Prerequisite: Hist 3 or permission of instructor. Brazil from 1800 to the present; emphasis on major political, economic, and social developments.

**167. American Diplomatic History to 1898 (3)**

Not open to students with credit in Hist 167 prior to September 1970. Principles, ideals, and policies of the United States in diplomatic relations from 1775 to 1898.

**168. American Diplomatic History Since 1898 (3)**

Not open to students with credit in Hist 167 prior to September 1970. Principles, ideals, and policies of the United States from 1898 to the present.

**169T. Studies in Latin American History (3; max total 6 if no area repeated)**

Prerequisite: permission of instructor. Class discussion and closely supervised research and writing.

**169.1. Cultural History****169.2. Mexican-American****171. Early American History, 1607-1783 (3)**

Meets the American history requirement. First of a sequence of four courses covering the full period of history of the United States; colonial foundations; political and economic factors; social and cultural development through the American Revolution.

**172. United States History, 1783-1850 (3)**

Not open to students with credit in Hist 173 prior to September 1967. Meets the American history requirement. Political, economic, social, and cultural developments of the early agrarian republic.

**173. United States History, 1850-1914 (3)**

Meets the American history requirement. The Civil War and Reconstruction; problems of an increasingly urban and industrialized society.

**174. United States History Since 1914 (3)**

Meets the American history requirement. The United States in world affairs; political, economic, social, and cultural developments and problems from 1914 to the present.

**175. Representative Americans (2)**

Biographical sketches of leading characters in American history from Revolution to present. Lectures and reading from standard biographies.

**176. Social and Intellectual History of the United States to 1865 (3)**

Development of the American people; leading ideas and values in a predominantly rural and agrarian society.

**177. Social and Intellectual History of the United States Since 1865 (3)**

Not open to students with credit in Hist 176 prior to fall 1966. Impact of industrialization and urbanization upon American society; leading ideas and values.

**178. History of Black Americans (3)**

Evolution of American Black society from 1619 to the present; developments in the twentieth century.

**179T. Studies in United States History (3; max total 6 if no area repeated)**

Prerequisite: permission of instructor. Class discussion and closely supervised research and writing.

**179.1. Religious Factors****179.2. Military History****179.3. American Negro in the 20th Century****179.4. Canada, 20th Century****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.

**182. Westward Movement Since 1848 (3) (Former Hist 181)**

Patterns of exploitation; role of the federal government in the West: land policy, Indian policy; problems of communication; economic growth.

**183. The Hispanic Southwest (3)**

Evolution of the Hispanic Southwest from the dissolution of the Viceroyalty of New Spain to the present through the Mexican and American periods; contributions of Hispanic and Mexican Americans to American culture.

**185. San Joaquin Valley (2)**

San Joaquin Valley from Indian days to present; recent expansion in agriculture and industry.

**188. Early California (3) (Former Hist 189A)**

Prerequisite: Hist 3 or equivalent; upper division standing. Discovery, exploration, and early settlement of Alta California; founding of the missions; the Spanish, Mexican, and American periods; government, customs, habits, and influences of the various peoples who occupied California.

**189. Modern California (3) (Former Hist 189B)**

Social, cultural, economic, and political development of California from the 1860's to the present.

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

See *Regulations and Procedures—Independent Study*.

**GRADUATE COURSES**

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

*Note: Graduate courses in history are in the process of revision. See the Graduate Bulletin for revisions.*

**200. Seminar in Historiography (3) (Former History 202)**

Prerequisite: major or minor in one of the social sciences. Advanced studies in a field of history; American, Latin-American, European; writings and philosophies of great historians; development of historiography.

**201. Reading Seminar (3)**

Open only to second-semester seniors and graduates majoring in history. Prerequisite: see instructor. Extensive, individually directed readings in history.

**205T. Seminar in Far Eastern History (3; max total 6)**

Prerequisite: Hist 101 or permission of instructor. Research in specific areas of Far Eastern history and culture.

**210T. Seminar in Ancient History (3; max total 6)**

Prerequisite: Hist 101 and related undergraduate course (Hist 110, 111, or 112). Research in special problems in the Ancient Fertile Crescent, Ancient Greece, Ancient Rome.

**220. Seminar in Medieval History (3; max total 6)**

Prerequisite: Hist 101, 120, 121, 122. Research on special problems in medieval history.

**230. Seminar in Renaissance and Reformation (3; max total 6)**

Prerequisite: Hist 101, 131, 132. Research in special problems of the Renaissance and Reformation period.

**233. Seminar in the Middle East (3)**

Prerequisite: Hist 101, 133, 135. Research in specific areas of Middle Eastern history and culture.

**236. Seminar in Africa (3)**

Prerequisite: Hist 101, 136. Research in specific areas of African history.

**240T. Seminar in Modern Europe (3; max total 6)**

Prerequisite: see instructor. Selected research topics in modern European history.

**250. Seminar in Canada (3; max total 6)**

Prerequisite: Hist 101, 158. Selected research topics in Canadian history.

**260T. Seminar in Latin America (3; max total 6) (Former Hist 263)**

Prerequisite: see instructor. Selected research topics in Latin American history.

**270T. Seminar in United States (3; max total 6)**

Prerequisite: see instructor.

**278. Recent Interpretations of American History (3; max total 6)**

Prerequisite: see instructor. Examination of selected problems in American history in the light of new research discoveries; extensive use of scholarly journals.

**289. Seminar in California History (3; max total 6)**

Prerequisite: Hist 101, 188, 189. Research on special problems in California history.

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

See *Regulations and Procedures—Independent Study*.

**299. Thesis (3; max total 6)**

Prerequisite: see *Master's Degrees—Thesis Requirement*. Preparation, completion, and submission of an acceptable thesis for the master's degree.

**IN-SERVICE COURSES**

*Note: In-service courses (300 series) are not intended for use on degrees except by special, prior approval. See Extension and Summer Session Bulletins for course descriptions.*

**300. Topics in History (2; max total 8 if no topic repeated)**

## LINGUISTICS DEPARTMENT

Professor: Brengelman

Associate Professor: Gammon (Chairman)

Assistant Professors: Hopkins, Mistry, Raney, Romero, Truitner, Weitzman, Wohl, Zeldis

Part-time: Kellas, H. Lec, Sasai, Smetherman, Waddle

The Linguistics Department offers a minor in linguistics and program in general and applied linguistics leading to the master of arts degree. For students in other departments it provides courses in the theory of language description and in the English language relevant to research in the social and behavioral sciences and to the teaching of English and foreign languages.

## MINOR

A minor in linguistics consists of 22 units, including the following:

	<i>Units</i>
Ling 135, 137 .....	8
Ling 138, 140T, 142, 143, 144 .....	8
Approved electives in related fields .....	6
	22

## CREDENTIAL PROGRAM

For information on the current credential program, consult the departmental advisers and the School of Education; see the section on *Public School Credentials*.

## MASTER OF ARTS DEGREE

The master of arts degree in linguistics is open to students with undergraduate majors in foreign language, English, anthropology, psychology, philosophy, mathematics, and other related fields. For specific requirements consult the *Graduate Bulletin* and the departmental adviser for the master of arts degree; for general requirements see *School of Graduate Studies*. For detailed information about the graduate program, see the *Graduate Bulletin*, available in the office of the Dean, School of Graduate Studies.

## FOREIGN LANGUAGE REQUIREMENT

Advancement to candidacy for the master of arts degree in linguistics requires the passing of an examination demonstrating a reading knowledge of one foreign language.

## GENERAL EDUCATION REQUIREMENTS

The following courses will satisfy general education requirements: *Area III*: Ling 134, 135, 137, 138. *Area IV*: Ling 142, 143. *Area V*: Ling 140T, 144. (See *General Education—Courses*.)

*Courses*

## LINGUISTICS

**133. Contrastive Structures of English and Spanish (3) (Former EXP 167)**

Prerequisite: Span 2B or equivalent. Fulfills same requirements as Ling 134. Concurrent registration in Span 133 required unless waived by instructor. An analysis of the phonology, morphology and syntax of English with a view toward providing a contrastive analysis of English and Spanish, emphasizing points of similarity and difference.

**134. Structure of English (4) (Same as Engl, Spch 134)**

Not applicable to the English major. Satisfies the credential advanced composition requirements. Scientific study of English phonology, morphology, syntax, spelling, and punctuation.

**135. General Linguistics (4) (Same as Spch 135)**

Descriptive and historical linguistics; relationships between language and culture.

**137. American English (4) (Same as Spch 137)**

Prerequisite: Ling 134 or 135. Studies in the linguistic structure of modern English.

**138. History of the English Language (4) (Same as Engl 138)**

Empirical study of the development of the sound system, grammar, and vocabulary of English.

**140T. Topics in Linguistics (4; max total 12 if no topic repeated) (Former Ling 139T)**

Topics to be offered at the discretion of the department: historical, contrastive, mathematical, and other areas of linguistics.

**141. English as a Foreign Language (4) (Former Ling 140.1)**

Techniques of teaching English as a foreign language.

**142. Phonology (4; max total 8 if no topic repeated) (Former Ling 139A)**

Prerequisite: Ling 135. Study of phonetic feature of languages; phonetic, phonemic, and practical alphabets.

**143. Syntax (4; max total 8 if no topic repeated) (Former Ling 139B)**

Prerequisite: Ling 135. Theory and practice in the description of grammatical systems. Comparison of approaches. Practical experience with data.

**144. Field Methods in Linguistics (4) (Former Ling 139C)**

Prerequisite: permission of instructor. Theory and practice in the collection and analysis of linguistic data.

**156. Voice Science (3) (See CD 104)****190. Independent Study (1-3; max see reference)**

See *Regulations and Procedures—Independent Study*.

**FOREIGN LANGUAGE COURSES****Chinese (Chin)****1A-B. Elementary Chinese (4-4)**

Not open to students with previous training. Basic structure and pronunciation of Mandarin Chinese; practice in speaking, reading, and writing. (4 lecture, 1 lab hour)

**2A-B. Intermediate Chinese (4-4)**

Prerequisite: Chin 1B or equivalent. Review grammar and syntax; techniques of brush use; speaking and reading. (4 lecture, 1 lab hour)

**Japanese (Japn)****1A-B. Elementary Japanese (4-4)**

Beginning course in modern spoken and written Japanese. Covers learning comprehension and oral practice, basic grammar and sentence patterns. Introduction to reading and writing in Kana and Kanji characters. (4 lectures, 1 lab hour)

**2A-B. Intermediate Japanese (4-4)**

Prerequisite: Japn 1B or equivalent. Intermediate spoken and written Japanese; reading modern Japanese with emphasis on expository writings; translation and oral and written composition. (4 lecture, 1 lab hour)

**GRADUATE COURSES**

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

**200A-B. Graduate Survey (4-4)**

Prerequisite: permission of instructor. Individually directed readings in linguistics and related subjects.

**231. Seminar in Linguistics (3; max total 12 if no topic repeated)**

Prerequisite: Ling 135 and permission of instructor. Topics to be offered at the discretion of the department: philosophy of language, psycholinguistics, dialectology, and other subjects in general linguistics.

**232. Seminar in English Linguistics (3; max total 12 if no topic repeated)**

Prerequisite: Ling 135 and permission of instructor. Topics to be offered at the discretion of the department: structure of Old, Middle, or Early Modern English; topics in English phonology, grammar, and lexicon.

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

*See Regulations and Procedures—Independent Study.*

**299. Thesis or Project (2-5, max total 5)**

Prerequisite: see *Master's Degrees—Thesis Requirement*. Preparation, completion, and submission of an acceptable thesis or project for the master's degree.

**MATHEMATICS DEPARTMENT**

Professors: Kipps, A. Labarre

Associate Professors: Zane (Chairman), Donohue, Ewy, Nur, E. Robinson, Schwitters

Assistant Professors: Ali, Arnold, M. Cohen, G. Labarre, W. Read, Torrance, Wagoner, Wehrly, Woo

Part-time: L. Barton, Borgwardt, Bowley, Eidson, Ford, Jaszewski, Malkani, Oraze, Rempel, Rucker, G. Williams

Mathematics and related subjects play important dual roles in our culture. On the one hand mathematics is the study of pure thought in its own right; on the other, it furnishes a language for the expression of ideas in the various sciences. The courses offered by the department are designed to develop an appreciation of both roles, particularly for those who plan to continue in study, to teach, or to use mathematics in research or in applications in the various fields of pure and applied science. Certain courses are also suitable for students in other areas. See *Degrees and Credentials—General Education Requirements*.

**HIGH SCHOOL PREPARATION**

Two years of algebra and courses in geometry and trigonometry or a sequence of mathematics courses containing their equivalents are prerequisite to entry into either a major or a minor program in mathematics. Such study should be completed before entrance into college.

**DUPLICATION OF COURSES**

No credit will be allowed for Math 29 or 30 if their equivalents have been completed elsewhere, or if taken after completion of Math 71 or 75. No student transferring credit in calculus will receive more than a total of 12 units of credit for equivalents of Math 75, 76, and 77.

**ADVANCED PLACEMENT CREDIT**

Students who earn a composite score of "3", "4" or "5" on the advanced placement examination in mathematics administered by the College Entrance Examination Board will be allowed four units of credit for Math 75. A score of "2" may receive similar credit, subject to the approval of the department. A score of "1" will receive neither credit nor advanced placement.

**MAJORS**

The department offers a program leading to the bachelor of arts degree. The program consists of a basic set of required courses giving a strong, well-rounded mathematical background, with an opportunity to elect additional courses according to individual interests. Courses are offered in the following areas: preparation for graduate study in mathematics, teaching mathematics, application in industrial or related fields. The attention of those interested in teaching mathematics in the elementary school is directed to the mathematics minor program.

**Mathematics Major for BA Degree**

*Units*

Math 75, 76, 77 ..... 12

Math 151 and 152, 161 or 162 or 165, 171 ..... 12

Elect from upper division mathematics or Math 81..... 15

39

**MINOR**

The minor in mathematics includes 20 units of mathematics courses, of which at least 6 must be upper division. Math 29, 30 may not be applied on the minor.

**CREDENTIAL PROGRAM**

For information on the current credential program consult departmental advisers and the School of Education; see the section on *Public School Credentials*.

**MASTER OF ARTS AND MASTER OF SCIENCE DEGREES**

For information about the Graduate program at Fresno State College, see the *Graduate Bulletin*, available in the Office of the Dean, School of Graduate Studies.

**Foreign Language Requirement**

Any student preparing for graduate work in mathematics is advised to meet the foreign language requirement of the school he plans to attend. Proficiency in the reading of at least two languages selected from French, German, and Russian is required for most doctor's degree programs; however, most graduate programs do not leave time for language study. There is usually no language requirement for a master's degree.

**GENERAL EDUCATION REQUIREMENTS**

The following courses will satisfy general education requirements. *Area IV*: Math 29, 30, 40, 41, 51, 71, 72, 75, 76, 103, 141. (See *General Education—Courses*.)

*Courses***MATHEMATICS****29. Intermediate Algebra (3)**

Prerequisite: elementary algebra and geometry. Sets, functions, graphs, quadratic equations, inequalities, simultaneous equations, matrices and determinants, mathematical induction, binomial theorem, progressions, exponents and logarithms. (See *Duplication of Courses*.)

**30. Trigonometry (3)**

Prerequisite: intermediate algebra. Concept of a function, sine and cosine functions, tables and graphs, other trigonometric functions, identities and equations. Trigonometric functions of angles, solution of triangles. (See *Duplication of Courses*.)

**40. Elements of Statistics (3)**

Not open to students with credit in Math 107, 109. Prerequisite: elementary algebra and geometry. Organization of data, descriptive measures, sampling, statistical inference, testing hypotheses, chi-square, correlation and regression.

**41. Number Systems I (3) (Former Math 140)**

Not open to mathematics majors or to students with credit in Math 141; designed for elementary credential. Prerequisite: elementary algebra and geometry. 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.

**51. Elements of Modern Mathematics (3)**

Prerequisite: two years high school algebra or Math 29. Logic, set theory, probability, Markov chains, matrices, linear programming, introduction to differential calculus, applications to business, economics, psychology and sociology. (2 lecture, 1 discussion hour)

**71. Elementary Mathematical Analysis I (3)**

Prerequisite: two years high school algebra, one year high school geometry. Review of algebra, analytic geometry, introduction to set theory, mathematical induction, vectors, complex numbers, limits, derivatives. (2 lecture, 1 discussion hour)

**72. Elementary Mathematical Analysis 2 (3)**

Prerequisite: Math 71 and trigonometry. Applications of differentiation, polynomials, rational functions, trigonometric functions, exponential and logarithmic function, conic sections, definite integral. (2 lecture, 1 discussion hour)

**75. Mathematical Analysis I (4)**

Not open to students with credit in Math 72; one unit allowed for students with credit in Math 71. Prerequisite: two years of high school algebra, one year of plane geometry, trigonometry. Analytic geometry, functions, limits and derivatives, applications of the derivative, anti-derivatives, the definite integral.

**76. Mathematical Analysis II (4)**

Prerequisite: Math 72 or 75. Applications of the definite integral, transcendental functions, techniques of integration, polar coordinates, conic sections, multiple integrals.

**77. Mathematical Analysis III (4)**

Prerequisite: Math 76. Vectors, improper integrals, three-dimensional analytical geometry, functions of several variables, infinite series.

**81. Advanced Engineering Mathematics (3) (Former Math 117)**

Prerequisite: Math 77. Vector functions, gradient, line, surface, and volume integrals, Green's and Stoke's theorems. Introduction to complex variables; introduction to linear differential equations with constant coefficients; solution by series, Laplace transforms. Introduction to Fourier series; matrices.

**103. History of Mathematics (3)**

Prerequisite: Math 72 or 75. Development of mathematics since ancient times; mathematics as a part of the general culture of the periods studied; relationship between mathematics and the physical sciences.

**107. Probability and Statistics (3)**

Prerequisite: Math 171. Theory of probability and mathematical statistics, introduction to estimation theory and tests of simple hypotheses.

**108. Advanced Statistics (3)**

Prerequisite: Math 107. Estimation theory and sampling, tests of simple and composite hypotheses.

**109. Probability (3)**

Prerequisite: Math 171. Axiomatic development of the theory of probability, discrete and absolutely continuous probability distributions, Markov chains, limit theorems.

**110. Symbolic Logic (3)**

Prerequisite: Math 71 or 75 or permission of instructor. An informal treatment of the theory of logical inference, statement calculus, truth-tables, predicate calculus, interpretations, applications.

**111. Theory of Sets (3)**

Prerequisite: Math 71 or 75 or permission of instructor. Set theory from an informal axiomatic foundation, relations and functions, cardinal numbers, ordinal numbers, applications.

**116. Theory of Numbers (3)**

Prerequisite: Math 72 or 75. Divisibility, greatest common divisor, Euler's function, continued fractions, congruences, quadratic residues, Diophantine equations.

**121. Numerical Analysis (3)**

Prerequisite: Math 77, 152. Finite difference and Lagrangian interpolation formulas; numerical solution of equations, systems of equations, and differential equations; principles of coding and programming computers.

**123. Topics in Applied Mathematics (3)**

Prerequisite: Math 77. Vector spaces and linear transformations, eigen values and eigen functions. Special types of linear and nonlinear differential equations; solution by series. Fourier transforms. Special functions, including gamma, hypergeometric, Legendre, Bessel, Laguerre and Hermite functions. Introduction to partial differential equations.

**131. Game Theory and Linear Programming (3)**

Prerequisite: Math 72 and permission of instructor; or Math 76. Games of strategy, normal form of a game, minimax theorem for two-person games, n-person games, solutions of n-person games and equilibrium points, linear programming, applications.

**141. Number Systems II (3)**

Prerequisite: Math 41 or 71. Especially recommended for prospective teachers and minors. Development of the real number system and its subsystems from the formal point of view. Mathematical induction and definition by recursion. Axiomatic development of the various number systems and their interrelation.

**151. Principles of Algebra (3)**

Prerequisite: Math 76 or 141. Rings, integral domains, fields, polynomials.

**152. Linear Algebra (3)**

Prerequisite: Math 151 or permission of instructor. Linear transformations, matrices, determinants, linear functionals, bilinear forms, quadratic forms, orthogonal and unitary transformations, selected applications of linear algebra.

**153. Modern Algebra (3)**

Prerequisite: Math 152. Group theory, field theory, elements of Galois theory.

**161. Principles of Geometry (3)**

Prerequisite: Math 72 or 75. Modern concepts of geometry. Postulates of incidence, order and separation, congruence. Parallel postulates of Euclidean and non-Euclidean geometry. Selected topics of modern Euclidean geometry.

**162. Projective Geometry (3)**

Prerequisite: Math 77. Synthetic and analytic projective geometry; axioms; duality; perspective and projective correspondence; harmonic sets; coordinatization; projective collineations and correlations; polarities and conics; groups of projective, affine and Euclidean transformations.

**165. Differential Geometry (3)**

Prerequisite: Math 77, 152. 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.

**171. Intermediate Mathematical Analysis (3)**

Prerequisite: Math 77. The complete ordered field and its usual topology; extensions to the plane; continuity and uniform continuity; characterization of the differential; extended mean value theorem; intermediate value property of derivatives; characterization of Riemann integrable functions as functions continuous almost everywhere.

**172. Advanced Calculus I (3)**

Prerequisite: Math 171. The real number system; function theory, continuity, differentiability; partial differentiation.

**173. Advanced Calculus II (3)**

Prerequisite: Math 172. Multiple integrals; line and surface integrals; Fourier series and integrals; infinite series.

**174. Complex Analysis (3)**

Prerequisite: Math 77. Analytic functions of a complex variable, contour integration, series, singularities of analytic functions, the residue theorems with applications to the definite integral.

**181. Differential Equations (3)**

Prerequisite or concurrently: Math 81 or 123. Definition and classification of differential equations; general, particular, and singular solutions; existence theorems; theory and technique of solving certain differential equations; applications.

**182. Partial Differential Equations (3)**

Prerequisite: Math 81 or 123 and 171. Classical methods for solving partial differential equations including separation of variables, Green's functions, the Riemann-Volterra method and Cauchy's problem for elliptic, parabolic, and hyperbolic equations; applications to theoretical physics.

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

See *Regulations and Procedures—Independent Study*.

**191T. Proseminar (3; max total 9)**

Prerequisite: permission of instructor. Presentation of advanced topics in mathematics in the field of the student's interest.

**GRADUATE COURSES**

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

**202. Fundamental Concepts of Mathematics (3)**

Prerequisite: Math 151, 161 and 171. Fundamental notions regarding number theory, number systems, algebra of number fields; functions.

**210. Foundations of Mathematics (3) (Same as Phil 200)**

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 or permission of instructor. Linear spaces and spectral theory of operators.

**251. Abstract Algebra I (3)**

Prerequisite: Math 153 or permission of instructor. Semi-groups, groups, groups with operators, rings, fields, lattices.

**252. Abstract Algebra II (3)**

Prerequisite: Math 153, 251. Vector spaces, linear transformations, sets of linear transformations, Euclidean and unitary spaces, infinite dimensional vector spaces.

**263. Point Set Topology (3)**

Prerequisite: Math 172. Basic concepts of point set topology, set theory, topological spaces, continuous functions; connectivity, compactness and separation properties of spaces. Topics selected from function spaces, metrization, dimension theory.

**265. Differential Geometry (3)**

Prerequisite: Math 165, 172. Study of geometry of curves and surfaces in Euclidean space by means of tensor calculus, including an introduction to Riemannian geometry and theory of manifolds.

**271. Real Variables (3)**

Prerequisite or concurrently: Math 173. Theory of sets; cardinals; ordinals; function spaces, linear spaces; measure theory; theory of modern 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).

**274. Functions of a Complex Variable (3)**

Prerequisite: Math 174. Representation theorems of Weirstrasse and Mittag-Leffler, normal families, conformal mapping and Riemann mapping theorem, analytic continuation, Dirichlet problem.

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

See *Regulations and Procedures—Independent Study*.

**291. Seminar (3)**

Prerequisite: graduate standing. Presentation of current mathematical research in field of student's interest.

**299. Thesis (2-6; max total 6)**

Prerequisite: see *Master's Degrees—Thesis Requirement*. Preparation, completion, and submission of an acceptable thesis for the master's degree.

**IN-SERVICE COURSES**

*Note: In-service courses (300 series) are not intended for use on degrees except by special, prior approval. See Extension and Summer Session Bulletins for course descriptions.*

**302. Topics in Mathematics for Teachers (3; max total 6, if topic not repeated)**

## MUSIC DEPARTMENT

Professors: Coker (Chairman), Bakkegard, Bennett, A. Bryon, Dempster, Gillis, Howland, Lywen, R. Rea

Associate Professors: Irwin, J. H. Martin, Sutherland

Assistant Professors: A. Huff, Hurst, Mullen, Renzi

Lecturers: Ames, Lorenz

Part-time: Caskey, Galloway, Maruko, Murphy, Nielsen

The Music Department provides (a) undergraduate instruction in music for those planning professional careers as performers and composers as well as those preparing for advanced degrees in performance, composition, and musicology; (b) preparation for the teaching credential programs in or involving music; (c) graduate training for students planning professional and academic careers or seeking professional growth as teachers in junior colleges or other school systems; (d) broad acquaintance with musical art for the layman and nonmusic major. Two degree programs are offered: the bachelor of arts and the master of arts, each with concentrations in performance, composition, musicology, or music education.

## BACHELOR OF ARTS DEGREE

Each student seeking a bachelor of arts degree with a major or minor in music must fulfill all the requirements listed under *General Degree Regulations*, *General Education*, and *Other Departmental Requirements*.

MUSIC MAJOR	Units
Music 4.1, 4.2, 4.3, 4.4, 117.1, 117.2, 117.3, 117.4 .....	18
Complete one of the following options .....	26

**Option I.** *Preparation for performance, composition, musicology and other non-teaching careers in music.*

Pass piano proficiency test; 10 units in Music 14.1-14.4; Music 114.1; concentrations a, b, or c below.

a. Performance: 8 units in Music 110T (instrument or voice) with advanced standing; 5 units in Music 114T, 124T, 134T, 144T.

b. Composition: Music 124.1, 9 units in 134T, 1 unit in Music 190.

c. Musicology: Music 114.2, 10 units in Music 76T-176T.

**Option II.** *Preparation for a standard teaching credential with secondary specialization.*

Pass piano proficiency test; 8 units in Music 110T with 4 units advanced standing; Music 129.2, concentration a or b below.

a. Teaching general music and music appreciation: Music 119.7, 119.8; 11 units in Music 76T-176T.

b. Teaching performing organizations: Music 14.1-14.4; 5 units of Music 114T, 119T, 124T, 134T, 144T.

**Option III.** *Preparation for a standard teaching credential with elementary specialization.*

Pass piano proficiency test; 8 units in Music 110.5 and 8 units in 110.10 with 4 units advanced standing; 4 units in Music 119.6, 119.7 or 119.8; Music 129.1; 3 units in Music 76T-176T.

*Recommended elective:* Phys 55

**OTHER DEPARTMENTAL REQUIREMENTS**

1. Each student majoring in music must declare an area of concentration (i.e., an instrument, voice, composition, musicology, or music education).
2. At the close of his first semester, each student must pass the preliminary jury examination in his area of concentration before being permitted to continue his major. A further examination must be passed for advanced standing.
3. A proficiency test on piano must be taken at least one year before graduation by each student whose concentration is in performance, composition, musicology, or music education. Those failing the test must take Music 110.5 (piano) until the proficiency test is passed.
4. During the orientation period prior to their first registration, all transfer students take a placement test.
5. Every semester each student must participate in a major performing organization: voice students in Concert Choir; string students in Orchestra; woodwind, brass and percussion students in Band Workshop or Concert Band, and others in any of the foregoing organizations. After four semesters of credit in the above organizations, other performing organizations may be substituted to meet this requirement. The student will normally enroll in the same organization both semesters of an academic year.
6. Participation in all rehearsals and performances of the performing organizations (Music 101T and 102T series) for which the student registers must take precedence over any conflicting activity.
7. Students in Music 110T and 210T series courses will appear in student recitals when assigned.
8. Each student majoring in music must attend the departmental recitals on Thursday at 1:00 p.m.
9. A senior project is required of each student during his final year. For those whose area of concentration is voice or an instrument the project will be a public recital. A student concentrating in composition will compose a work of major proportions during his final year and will either perform or supervise a prepared reading of the work. Those concentrating in musicology or music education will present an original research paper, which may also require special performance. The senior project must be approved in advance of preparation by the instructor concerned and the department chairman. On presentation, the project must be accepted by the designated faculty committee before the candidate may be recommended for the degree.

**MUSIC MINOR**

The minor in music requires completion of at least 20 units of music courses, 6 units of which must be upper division. The program must be approved by the department adviser and the department chairman. Required units usually include: Music 9 (or 4.1 and 4.2); 6 units of Music 110T; 7 units of Music 76T-176T. In addition, students minorng in music must enroll in Music 101T or 102T each semester of the junior and senior years.

**CREDENTIAL PROGRAM**

For information on the current credential program, consult departmental advisers and the School of Education; see the section on *Public School Credentials*.

**MASTER OF ARTS DEGREE**

The graduate program for the master of arts degree in music is based upon the undergraduate major in music at Fresno State College or the equivalent. For specific requirements, consult the chairman of the departmental graduate committee and see the *Graduate Bulletin*, available in the Office of the Dean, School of Graduate Studies. For general requirements, see *School of Graduate Studies*.

**GENERAL EDUCATION REQUIREMENTS**

The following courses will satisfy general education requirements. *Area III:* Music 9, 76T, 101T, 102T, 110T, 176T. *Area V:* Music 4T, 117T. General education listings in music are offered on an optional basis of either a letter grade or pass-withdrawal. Music majors and minors must enroll for a letter grade in all music courses.

**Courses****MUSIC****PERFORMING ORGANIZATIONS**

All performing organization courses may be repeated for credit and are open to both lower and upper division students. Credit earned by students with fewer than 45 units does not count toward the 40 units of upper division credit required for graduation.

**101T. Vocal Organizations (1-2)**

Technical, stylistic, and aesthetic elements of musical literature; rehearsal and public performance.

**101.1. Concert Choir (2)**

**101.2. Chamber Singers (2)**

**101.3. Opera Workshop (1-2)**

**101.4. Collegiate Chorale (1)**

**101.5. Men's Chorus (1)**

**101.6. Women's Chorus (1)**

**102T. Instrumental Organizations (1-2)**

Technical, stylistic, and aesthetic elements of musical literature; rehearsal and public performance.

**102.1. Brass Ensemble (1)**

**102.2. Percussion Ensemble (1)**

**102.3. String Ensemble (1)**

**102.4. Woodwind Ensemble (1)**

**102.5. Keyboard Proseminar (1)**

**102.6. Orchestra (2)**

**102.7. Band Workshop (1-2)**

**102.8. Concert Band (1)**

**102.9. Jazz Workshop (1)**

**102.10. Contemporary Ensemble (1)**

**102.11. Marching Band (1-2)**

**110T. Instrumental and Vocal Lessons (2; repeatable for credit)**

Open to all lower and upper division students. Credit earned by students with fewer than 45 units does not count toward the 40 units of upper division credit required for graduation. Studies in technical, stylistic, and aesthetic elements of artistically performing repertory from the standard literature of etudes, solo, chamber, and large ensemble music.

**110.1. Brass**

**110.2. Percussion**

**110.3. Strings**

**110.4. Woodwinds**

**110.5. Piano**

- 110.6. Accompanying**
- 110.7. Harp**
- 110.8. Organ**
- 110.9. Electronic Instruments**
- 110.10. Voice**
- 110.11. Lyric Diction**

### **THEORY AND COMPOSITION**

#### **4T. Elementary Theory (2-3)**

Prerequisite: Music 9 or ability to read music.

##### **4.1. Ear Training and Sight Singing I (3)**

Prerequisite: Music 4.2 (concurrent). Notation: rhythmic, melodic, and harmonic ear training, dictation, sight singing, and keyboard skills for tonal and modal music with emphasis on 17th–18th century music; principles of simple formal structure.

##### **4.2. Harmonic-Contrapuntal Practice I (2)**

Prerequisite: Music 4.1 (concurrent). Modality, tonality, equal temperament; intervals; melody; diatonic triads, their inversions and connections; nonharmonic tones; rhythmic, melodic, and harmonic motion in two to four parts for instruments and voices; figure, motive, phrase, simple period structure; emphasis on 17th–18th century style.

##### **4.3. Ear Training and Sight Singing II (3)**

Prerequisite: Music 4.1, 4.2; 4.4 (concurrent). Continuation of Music 4.1 with emphasis on 18th–19th century music.

##### **4.4. Harmonic-Contrapuntal Practice II (2)**

Prerequisite: Music 4.1, 4.2, 4.3 (concurrent). Continuation of Music 4.2. Diatonic seventh chords and secondary dominants; simple chromaticism and modulation; idiomatic homophonic and contrapuntal writing for varied media; chorale and period structure; emphasis on 18th–19th century style.

#### **14T. Advanced Theory (2-3)**

Prerequisite: Music 4 series.

##### **14.1. Ear Training and Sight Singing III (2)**

Prerequisite: Music 14.2 (concurrent). Rhythmic, melodic, and harmonic training in recognition and sight singing of 19th century tonal structures involving diminished sevenths, altered and extended chords, chromaticism, and modulation to remote keys.

##### **14.2. Harmonic-Contrapuntal Practice III (3)**

Prerequisite: Music 14.1 (concurrent). Nineteenth century music; diminished sevenths, Neapolitan and augmented sixth chords, extended chords; chromaticism and modulation to remote keys; accompaniment, imitation, and development; part-forms, variations, rondo, and sonata designs.

##### **14.3. Ear Training and Sight Singing IV (2)**

Prerequisite: Music 14.1, 14.2; 14.4 (concurrent). Rhythmic, melodic, and harmonic training in recognition and sight singing of 20th century idioms and formal procedures.

##### **14.4. Harmonic-Contrapuntal Practice IV (3)**

Prerequisite: Music 14.1, 14.2; 14.3 (concurrent). Contemporary concepts of melody, harmony, counterpoint, rhythm, tonality, and modality; free use of dissonance, quartal-quintal and secundal harmony, polyharmony, polymodality, polytonality; pandiatonicism, atonality, serialism, aleatory techniques.

**114T. Proseminar in Contrapuntal Techniques (3; max total 9)**

Prerequisite: Music 14 series.

**114.1. Seminar in Modal Counterpoint**

Polyphony of the 15th and 16th centuries; analysis and composition of melodic lines, simple counterpoint, types of imitation; writing motets with text in three or more parts.

**114.2. Seminar in Canon and Fugue**

Polyphony of the 17th and 18th centuries; analysis and composition of melodic lines, imitative, strict and invertible counterpoint, canon and fugue.

**114.3. Seminar in Contemporary Counterpoint**

Polyphony of the 20th century; analysis and composition of melodic lines and counterpoint using modern procedures.

**124T. Proseminar in Orchestration and Arranging (2-3; max total 8)**

Prerequisite: Music 14 series.

**124.1. Orchestration and Band Arranging (3; max total 6)**

Problems in scoring for instrumental ensembles; idiomatic writing for instruments singly and in combinations.

**124.2. Band Pageantry (2)**

Prerequisite: Music 124.1; 102.7 or 102.8 (concurrent). Practical and creative aspects of producing musical shows and marching formations for athletic events, parades, and public ceremonies.

**134T. Proseminar in Composition (3; max total 12)**

Prerequisite: Music 14 series or permission of instructor.

**134.1. Seminar in Exercises in Composition (3)**

Creative writing for voices or instruments in small forms with specified techniques of the 20th century.

**134.2. Seminar in Advanced Composition (3; max total 9)**

Prerequisite: Music 134.1 or permission of instructor. Seminar in original composition of a thoroughly contemporaneous nature in media, forms, and styles of student's choice.

**144T. Proseminar in Conducting (3; max total 6)**

Prerequisite: Music 14 series.

**144.1. Choral Conducting (3)**

Projects related to directing choral ensembles of varying size and levels of competence; conducting techniques; achieving tone quality and balance; diction; score reading; rehearsal techniques, ensemble organization and management.

**144.2. Instrumental Conducting (3)**

Projects related to directing instrumental ensembles of varying size and levels of competence; conducting techniques; score reading; rehearsal techniques, ensemble organization and management.

**MUSICOLOGY****76T-176T Series. Forms, Styles and Repertory****76.0-176.0. Forms and Styles (1)**

Prerequisite: concurrent enrollment in a 2-unit 76T-176T repertory course. Listener's guide to appreciation of musical art; principles of structure and expression, formal designs, and stylistic tendencies of the chief historical eras.

**76.1-12, 176.1-12. Repertory (2; max total 24)**

Prerequisite: Music 76-176.0 or concurrent enrollment. Musical literature of the important performance areas; analysis of representative works.

**76-176.1. Choral****76-176.2. Wind, Brass, and Percussion****76-176.3. String****76-176.4. Chamber Music****76-176.5. Keyboard****76-176.6. Orchestral****76-176.7. Vocal Recital****76-176.8. Operatic****76-176.9. Avant-Garde****76-176.10. Folk and Ethnic****76-176.11. Jazz and Rock****76-176.12. Musical Theatre****117T. Proseminar and Practicum in Musical Literature (4; max total 8)**

Prerequisite: Music 4 series, 76T or 176T, and for nonmusic majors, permission of instructor.

**117.1. Proseminar in Musical Literature I (3)**

Prerequisite: Music 117.2 (concurrent). Individual research projects and reports on style systems and major works from antiquity to 1700.

**117.2. Practicum in Musical Literature I (1)**

Prerequisite: Music 117.1 (concurrent). Practical use of research by small groups through study of historic performance practices; preparation for concert of compositions from antiquity to 1700.

**117.3. Proseminar in Musical Literature II (3)**

Prerequisite: Music 117.1, 117.2; 117.4 (concurrent). Individual research projects and reports on style systems and major works from 1700 to present.

**117.4. Practicum in Musical Literature II (1)**

Prerequisite: Music 117.1, 117.2; 117.3 (concurrent). Practical use of research by small groups through study of historic performance practices; preparation for concert of compositions from 1700 to present.

**MUSIC EDUCATION****9. Introduction to Music (3)**

Not open to music majors or students with credit in Mus 4. Theory necessary for the reading, playing and understanding of music by the layman and the elementary credential candidate.

**109. Piano in the Classroom (2; max total 4)**

Not open to music majors. Class instruction in piano for elementary credential candidates and teachers working on graduate degrees.

**119T. Topics in Pedagogy (2)**

Prerequisite: Music 4 series. Principles, procedures, and materials for teaching music in the schools and junior colleges.

**119.1. Brass****119.2. Percussion****119.3. Strings****119.4. Woodwinds**

**119.5. Keyboard Instruments****119.6. Children's Instruments****119.7. Voice and Chorus****119.8. Theory and Appreciation****129T. Proseminar in Music Education (3; max total 6)**

Prerequisite: Music 4 series for students majoring in music, Mus 9 for others.

**129.1. Children's Music (3)**

Individual research on the place and functions of music in the 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.

**129.2. Music for Youth (3)**

Individual research on the place and functions of music in the secondary school curriculum; selection, discussion, and analysis of musical materials; planning activities that enable adolescents to develop musical skills and understanding.

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

See *Regulations and Procedures—Independent Study*.

**191. Readings in Music (1-3)**

Prerequisite: permission of instructor. Readings in depth and discussions in individual conferences; subject to be selected by student and his adviser. May be preliminary research in connection with thesis topic.

**GRADUATE COURSES**

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

**204. Studies in Musical Analysis (3; max total 6)**

Directed individual research projects in analysis of selected works; special problems in interpretation of form, thematic and motivic development, harmonic structure, compositional devices and their significance.

**210. Studies in Performance (2; max total 6)**

Open only to master's degree students majoring in performance. Prerequisite: Music 220 and permission of department chairman. 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.

**214. Seminar in Theory (3; max total 6)**

Prerequisite: Music 204, 220, the equivalent, or permission of the instructor. Individually directed research projects on modern or historical theoretical systems and sources, theories of musical aesthetics, and their applications in analysis and interpretation of compositions.

**217T. Seminar in Musicology (3; max total 9 if no era repeated)**

Prerequisite: Music 220, the equivalent, or permission of instructor. Critical and analytic study of the historical sources, selected works and composers of various eras; individual research projects and discussions.

**217.1. Renaissance and Baroque Eras****217.2. Classic and Early Romantic Eras****217.3. Late Romantic and Contemporary Eras**

**219T. Seminar in Music Education (3; max total 9 if no course repeated)**

Prerequisite: Music 129.1, 129.2 or equivalents 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.

**219.1. Musical Literature for Children****219.2. Musical Literature for Youth****219.3. Curriculum and Philosophy****219.4. Supervision and Administration****220. Research Methods and Bibliography (3)**

Prerequisite: Music 117 series or equivalent. Bibliography, sources, and research techniques necessary for graduate study in music. Individual projects and research. Required of all students working for the master's degree in music.

**234. Seminar in Composition (3; max total 9)**

Prerequisite: Music 114.1, 114.2, 204, and permission of instructor. Independent creative writing with contemporary techniques of an extended work equivalent in substance to a sonata, cantata, or other composition of major proportions.

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

See *Regulations and Procedures—Independent Study*.

**291. Readings in Music (1-3)**

Prerequisite: permission of instructor. Readings in depth and discussions in individual conferences; subject to be selected by student and his adviser. May be preliminary research in connection with thesis topic.

**299. Thesis or Project (2-6; max total 6)**

Prerequisite: see *Master's Degrees—Thesis Requirement*. Preparation, completion, and submission of an acceptable thesis or project for the master's degree.

**IN-SERVICE COURSES**

*Note: In-service courses (300 series) are not intended for use on degrees except by special, prior approval. See Extension and Summer Session Bulletins for course descriptions.*

**307. Musical Instrument Repair (1; max total 3)****309A. Workshop: New State Music Textbooks (1)****309B. Workshop: Elementary School Classroom Instruments (1)****309C. Workshop: Folk Music and Dancing (1)****309D. Workshop: Piano Teachers' Workshop (1-2)**

## PHILOSOPHY DEPARTMENT

Professors: James Marvin Smith (Chairman), Colver, Pitt, Uphold

Associate Professor: H. Foster

Assistant Professors: Gibson, Hall, Kessler, Mabey, Slinger

The Philosophy Department offers a highly flexible major which permits concentration in such areas as value theory, logic, religion, analysis, and the history of philosophy. Many students with majors in philosophy will enter college teaching; others will enter the fields of medicine, dentistry, law, social work, the ministry, or government.

## PHILOSOPHY MAJOR

The major in philosophy consists of 28 units, including at least 8 units in Philosophy 100T and 8 units in Philosophy 150T. The student will propose a program in consultation with his adviser, selecting courses in appropriate proportions in such fields as the history of philosophy, logic, value theory, and metaphysics (including religion).

The philosophy courses listed below suggest the general approach to be taken to a body of material. Specific course content for a given semester is indicated in the *Schedule of Courses*.

*Note: Students intending to pursue graduate study in philosophy should seek the adviser's help in planning adequate preparation.*

## PHILOSOPHY-PSYCHOLOGY MAJOR

	<i>Units</i>
Psych 25, 50, 110T, 125T or 150T, psychology electives .....	18
Philosophy (ud) .....	16
	<hr style="width: 100%;"/>
	34

## PHILOSOPHY MINOR

The minor in philosophy consists of 16 units in philosophy.

## CREDENTIAL PROGRAM

For information on the current credential program, consult departmental advisers and the School of Education; see the sections on *Public School Credentials*.

## GENERAL EDUCATION REQUIREMENTS

The following courses will satisfy general education requirements. *Area III*: Phil 20T (3 units), 100T (3 units). *Area IV*: Phil 20T (1 unit), 25, 100T (1 unit). *Area V*: Phil 150T. (See *General Education—Courses*)

*Courses*

## PHILOSOPHY

**20T. Introductory Topics in Philosophy (4; max total 8 if no topic repeated)**

(For composition requirements, equivalent to Engl 20.) Investigations into diverse problems of philosophy: ethics, religion, epistemology, social philosophy, metaphysics. Development of critical thinking and expression through individual projects and extensive writing under close supervision.

**25. Deductive Logic (4) (Former Phil 5)**

Introduction to modern symbolic logic, with illustrative applications to ordinary language and philosophy.

**100T. Topics in the History of Philosophy (4; max total 20 if no topic repeated)**

Intensive study of particular philosophers, schools of philosophy or historical periods from ancient times to the 20th century: ancient, medieval, and modern philosophy; Plato, Aristotle, Descartes, Spinoza, Hume, Hegel; empiricism, rationalism, pragmatism.

**110. Symbolic Logic I (4)**

Prerequisite: Math 75 or Phil 25 or permission of instructor. Rigorous development of deductions; sentential logic, a natural deduction system for the predicate logic; definition of systematic consistency and completeness, proofs of invalidity, consistency, and independence of sentences within predicate logic.

**120. Introduction to Philosophical Issues (3)**

Not open to students with credit in Phil 20T. Prerequisite: junior standing. For students without philosophical background capable of benefiting from lectures on selected philosophical issues without extensive discussion or written work.

**150T. Special Topics (1-4; max total 32 if no topic repeated)**

Issues in such fields as aesthetics, comparative religion, ethics, existentialism, literature of the Bible, logic, analysis, metaphysics; philosophy of education, history, law, science; theology; theory of knowledge; twentieth century philosophy.

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

See *Regulations and Procedures—Independent Study*.

**GRADUATE COURSES**

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

**200T. Seminar in the History of Philosophy (2-3; max total 16 if no area repeated)**

Prerequisite: permission of instructor. Concentration on one or more philosophers or historical periods; independent research and submission of papers.

**250T. Seminar in Systematic Philosophy (2-3; max total 16 if no area repeated)**

Prerequisite: permission of instructor. Concentration on issues in fields of aesthetics, comparative religion, ethics, existentialism, literature of the Bible, logic, analysis, metaphysics, philosophy of education, history, law, science, theology, theory of knowledge; twentieth century philosophy.

PHYSICAL EDUCATION AND RECREATION DEPARTMENT

**MEN**

Professors: Coleman (Chairman), M. Anderson, Gleason, Hairabedian, B. Johnson, Pape, Warmerdam  
 Associate Professors: Burgess, Gregory, Wild  
 Assistant Professors: Ballard, R. Bennett, Carbajal, Colbert, Donnelly (Coordinator —Recreation Administration, Estes, Francis, Knibbs, Murray, Padilla, Sawyer, Van Galder, Wilcox  
 Lecturer: Rogers  
 Part-time: Calderwood, G. Christensen, Conrad, R. Thompson

**WOMEN**

Professors: Doyle, Mason (Coordinator, Women)  
 Associate Professors: Flake, Mott, S. Thompson, Thomson  
 Assistant Professors: J. Davis, Kennedy, Mohamed, Pickel, Poston, Predika, Sawyer, Schroll  
 Lecturer: Hunter  
 Part-time: Bechkoff, Fitzpatrick, Keller, Milutinovich, Owensby, Walts

**ACTIVITIES**

Students are expected to take four activities courses (PE M, C, SC, SM, SW, or W series) during the first four semesters. (See *Degrees and Credentials—Course Requirements.*) After the completion of this graduation requirement, additional physical education courses may count as upper division credit; for other provisions see *Courses—Note.* Students majoring or minoring in physical education may count a maximum of twelve units of upper and lower division activity courses toward the total units required for the bachelor's degree; other students may apply a maximum of eight units to the total degree requirement. Candidates preparing for elementary teaching or minoring in physical education are advised to have experience in rhythmic activities.

**MAJORS**

**Men**

A major in physical education for the bachelor of arts degree consists of 45 units listed below, exclusive of the general education requirement.

	<i>Units</i>
PE 30, 35A-B-C, 45A-B-C-D.....	16
PE 106, 108, 152, 153, 154, 156A-B-C, 159.....	23
Elect from: PE 125 A-B-C-D.....	9
	48

*Additional Requirements:* Physio 22, 23, Phys Sc 10 or 12 or equivalent, H Ec 40 or 42.

**Women**

A major in physical education for the bachelor of arts degree, with three options available, consists of 43-44 units listed below, exclusive of the general education requirement.

<i>Option 1. General</i>	<i>Units</i>
Foundations: PE 30, 31, 44.....	5
Performance laboratories: PE 45A-B-C-D, 115A-B-D-E.....	15
Conceptual interpretations: PE 144, 152, 153, 154, 156A-B-C, 159.....	20
Approved electives .....	3
	43

*Additional Requirements:* Physio 22, 23, Phys Sc 10 or 12 or equivalent.

	<i>Units</i>
<i>Option II. Dance (in Education. Coeducational)</i>	
PEC 18, 58, PE 30, 59, 65, 67, activity courses (4 units).....	18
PE 115A, 153, 156A-B, 164T, 167, 168.....	19
Electives (approved ud) .....	7
	<hr/> 44

*Additional Requirements:* Biol 10, 66.

<i>Option III. Dance (for performance. Coeducational)</i>	
PEC 18, 58, PE 63, 65.....	9
PEC 118, 158, PE 156A-B, 163, 164T, 166.....	18
Approved electives (at least 7 ud).....	17
	<hr/> 44

*Additional Requirements:* Biol 10, 66.

### MINORS

#### Men

The minor in physical education consists of 24 units which permits, with guidance, a selection of courses to satisfy special interests and needs.

	<i>Units</i>
PE 30; elect from 35A-B-C; 45A-B-C.....	12
PE 153 .....	3
Elect from: PE 125A-B-C-D.....	9
	<hr/> 24

#### Women

The minor in physical education, with two options, consists of 21 units of which at least 12 must be upper division.

	<i>Units</i>
<i>Option I. General</i>	
PE 30, 31, 45D .....	6
PE 115B, 152 .....	4
Approved physical education electives.....	11
	<hr/> 21

#### *Option II. Dance*

PEC 18, PE 63, 65.....	7
PE 163, 164T .....	5
Approved electives in dance (ud).....	8
	<hr/> 20

### CREDENTIAL PROGRAM

For information on the current credential program, consult departmental advisers and the School of Education, see the section on *Public School Credentials*.

### MASTER OF ARTS DEGREE

The graduate program for the master of arts degree in physical education is based on the equivalent of the undergraduate major at Fresno State College. At least 21 of the 30 units required for the degree must be in graduate courses in physical education. For specific requirements, consult the chairman of the department graduate committee; for general requirements, see *School of Graduate*

*Studies*. For detailed information about the graduate program at Fresno State College, see the *Graduate Bulletin*, available in the Office of the Dean, School of Graduate Studies.

**GENERAL EDUCATION REQUIREMENTS**

The following courses will satisfy general education requirements. *Area III*: PE C 11, 16, 17, 18, 52, 53, 58. *Area V*: PE M, C, W, SC, SM, SW series except courses listed in Area III. (See *General Education—Courses*)

**Courses**

*Note: Not more than 2 courses in any one activity (PE M, C, W, SC, SM, SW) may be applied toward the graduation requirement. Activity courses must be taken in sequence and may not be repeated for credit except as noted. Upper division credit will be given for activities, with exception of PE M1, 2, and PE W28, taken after the completion of 4 semesters of lower division activities courses.*

**Coeducational****C1. Adaptive Body Mechanics (1)**

May be repeated with permission of instructor. Medical referrals.

**C4. Synchronized Swimming (1)**

Prerequisite: intermediate swimming skill.

**C5. Senior Lifesaving (1)**

(Prerequisite: permission of instructor)

**C6. Water Safety Instructor Course (2)**

Prerequisite: current lifesaving certificate.

**C8. Advanced Tennis (1)**

Prerequisite: M20, W7, or permission of instructor.

**C9. Elementary Gymnastics (1)****C10. Intermediate Gymnastics (1)**

Prerequisite: C9 or permission of instructor.

**C11. Elementary Folk, Square and Social Dancing (1)****C14. Elementary Social Dancing (1)****C15. Intermediate Social Dancing (1)**

Prerequisite: C14 or permission of instructor.

**C16. Elementary Modern Dance (1)****C17. Intermediate Modern Dance (2)**

Prerequisite: C16 or permission of instructor.

**C18. Advanced Modern Dance (2)**

Prerequisite: C17 or permission of instructor.

**C21. Elementary Archery (1)****C22. Intermediate Archery (1)**

Prerequisite: C21, M28, W21, or permission of instructor.

**C24. Elementary Bowling (1) (Fee \$1.45 per week)****C25. Intermediate Bowling (1) (Fee \$1.45 per week)**

Prerequisite: C24 or permission of instructor.

**C27. Elementary Ice Skating (1) (Fee \$15)****C28. Intermediate Ice Skating (1) (Fee \$15)**

Prerequisite: C27 or permission of instructor.

**C29. Advanced Ice Skating (1) (Fee \$15)**

Prerequisite: C28 or permission of instructor.

**C31. Elementary Badminton (1)****C32. Intermediate Badminton (1)**

Prerequisite: C31, M34, W31, or permission of instructor.

**C37. Intermediate Golf (2)**

Prerequisite: M25, W36, or permission of instructor.

- C39. Jogging (1)**
- C40. Elementary Skiing (2)**  
Limited to novice skiers.
- C41. Elementary Sailing (2)**
- C42. Skin and Scuba (2)**
- C43. Elementary Western Riding (1) (Fee \$45 per semester)**  
Limited to novice riders. Prerequisite: permission of instructor.
- C45. Elementary Fencing (1)**
- C52. Intermediate American Folk Dance (1)**  
Prerequisite: C11.
- C53. Intermediate International Folk Dance (1)**  
Prerequisite: C11.
- C55. Elementary Modern Jazz Dance (1) (Former C19)**
- C56. Intermediate Modern Jazz Dance (2)**  
Prerequisite: C55 or 58 or permission of instructor.
- C58. Elementary Ballet (2) (Former C20)**
- C59. Intermediate Ballet (2)**  
Prerequisite: C58 or permission of instructor.
- C80. Synchronized Swim Show Production (2; max total 8)**  
Prerequisite: C4 or permission of instructor.

**Men Only**

- M1. Group Games (1)**  
Archery, badminton, handball, tennis.
- M2. Group Games (1)**
- M7. Basketball (1)**
- M10. Elementary Swimming (1)**
- M11. Intermediate Swimming (1)**  
Prerequisite: M10 or permission of instructor.
- M13. Elementary Boxing (1)**
- M16. Elementary Wrestling (1)**
- M18. Intermediate Wrestling (1)**  
Prerequisite: M16 or permission of instructor.
- M19. Elementary Tennis (1)**
- M20. Intermediate Tennis (1)**  
Prerequisite: M19 or permission of instructor.
- M21. Advanced Tennis (1)**  
Prerequisite: M20 or permission of instructor.
- M22. Elementary Handball (1)**
- M23. Intermediate Handball (1)**  
Prerequisite: M22 or permission of instructor.
- M24. Advanced Handball (1)**  
Prerequisite: M23 or permission of instructor.
- M25. Elementary Golf (1)**
- M28. Elementary Archery (1)**
- M29. Elementary Paddle Ball (1)**
- M31. Elementary Gymnastics (1)**
- M32. Intermediate Gymnastics (1)**  
Prerequisite: M31 or permission of instructor.
- M34. Elementary Badminton (1)**

**M35. Intermediate Badminton (1)**

Prerequisite: M34 or permission of instructor.

**M37. Elementary Volleyball (1)****M38. Intermediate Volleyball (1)**

Prerequisite: M37 or permission of instructor

**M40. Body Building (1)****M41. Intermediate Body Building (1)**

Prerequisite: M40 or permission of instructor

**M45. Self-Defense (1)****Intercollegiate—Coeducational**

(Courses may be repeated.)

**SC2. Badminton (1)****Intercollegiate—Men**

(Courses may be repeated.)

**SM12. Baseball (1)****SM13. Basketball (1)****SM14. Cross Country (1)****SM15. Football (1)****SM16. Golf (1)****SM19. Swimming (1)****SM20. Tennis (1)****SM21. Track and Field (1)****SM24. Water Polo (1)****SM25. Wrestling (1)****Intercollegiate—Women**

(Courses may be repeated.)

**SW3. Basketball (1)****SW5. Golf (1)****SW6. Intercollegiate Swimming (1)****SW7. Tennis (1)****SW9. Volleyball (1)****Women Only****W1. Elementary Swimming (1)**

For nonswimmers.

**W2. Low Intermediate Swimming (1)****W3. High Intermediate Swimming (1)**

Prerequisite: W2 or permission of instructor.

**W6. Elementary Tennis (1)****W7. Intermediate Tennis (1)**

Prerequisite: W6 or permission of instructor.

**W21. Elementary Archery (1)****W26. Conditioning Exercises and Figure Control (1)****W28. Fundamentals (1)****W29. Elementary Paddle Ball (1)****W31. Elementary Badminton (1)****W33. Elementary Track and Field (1)****W36. Elementary Golf (1)**

**W46. Soccer, Hockey, and Speedball (1)****W48. Volleyball, Basketball, and Softball (1)****PE M,C,SC,SM,SW,W Upper Division Activities Courses***(See Courses—Note.)***30. Foundations of Physical Education (2)**

Coeducational. History and foundations of the physical education program in secondary schools; personal, social, and professional requirements; demands on the physical education teacher.

**31. Motor Learning (2)**

Coeducational. Study and experience in selected aspects of human motor performance; laws of physics, rhythmical analysis and individual patterns of learning.

**35A. Theory and Analysis of Team Sports (2)**

Men only. Scheduled for 8 weeks of semester. Limited to physical education and recreation majors and minors. Analysis and practice of skills.

**35B. Theory and Analysis of Combatives (2)**

Men only. Scheduled second 8 weeks of semester. Limited to physical education and recreation administration majors and minors. Analysis and practice of skills. (2 2-hour labs and arranged hours)

**35C. Theory and Analysis of Gymnastics (2)**

Men only. Limited to physical education and recreation administration majors and minors. Analysis and practice of skills. (2 2-hour labs and arranged hours)

**44. Instructional Laboratory I (1)**

Coeducational. Limited to physical education major and minor students. Designed to provide an opportunity to work in an instructional situation.

**45A. Theory and Analysis of Aquatics (2)**

Coeducational. Limited to physical education and recreation administration majors and minors. Prerequisite: intermediate skill. Study and practice of beginner's skills and swimming strokes; elements of diving and skills basic to lifesaving; skill progression for various levels; water polo, scuba diving. (2 2-hour labs)

**45B. Theory and Analysis of Racquet Sports (2)**

Coeducational. Limited to physical education and recreation administration majors and minors. Prerequisite: intermediate skill. Study and practice of strokes and tactics; rules; history; skill progression for various levels. (2 2-hour labs)

**45C. Theory and Analysis of Golf and Archery (2)**

Coeducational. Limited to physical education and recreation majors and minors. Prerequisite: M25 or W36. Study and practice of values and fundamentals in golf and archery; organization and conduct in the secondary school physical education program.

**45D. Theory and Analysis of Folk, Square and Social Dance (2)**

Coeducational. Limited to physical education and recreation administration majors and minors. Prerequisite: C11. Study and practice of elementary leadership in folk, square, and social dance. (2 2-hour labs)

**59. Music as Dance Accompaniment (3)**

Coeducational. Kinds of accompaniment: live and recorded music, percussion scores, spoken word. Student selection and preparation of accompaniment: dance technique and composition.

**63. Dance Performance (2; max total 8) (Same as PE 163)**

Coeducational. Students with fewer than 60 units register for PE 63; those with more than 60 units register for PE 163. Prerequisite: PEC 17, PE 65, or permission of instructor. Group laboratory experience in presentation of major productions for public performance.

**65. Elementary Dance Composition (3)**

Coeducational. Prerequisite: PEC 16 or 116. Discussion of dance elements, composition of dance studies, critiques.

**67. Orchestration (2) (Same as PE 167)**

Coeducational. Students with fewer than 60 units register for PE 67; those with more than 60 units register for PE 167. Prerequisite: permission of instructor. Laboratory workshop of group projects: for high schools and for other groups and organizations.

**70T. Studies in Dance (3; max total 12 if no topic repeated) (Same as PE 170T)**

Coeducational. Students with fewer than 60 units register for PE 70T; those with more than 60 units register for PE 170T. Prerequisite: permission of instructor. Topics may include the repertory of Doris Humphrey, Jose Limon, Martha Graham, and others.

**106. Care and Conditioning of Athletes (2)**

Coeducational. Principles of training for specific athletic schedules; methods of preventing injuries in athletic competition; first aid treatment of athletic injuries; demonstrations and practice in prophylactic taping techniques.

**107. Field Work in Care and Conditioning of Athletes (1)**

Prerequisite: PE 106 or permission of instructor. Practical experience in the field of athletic training.

**108. Organization of Intramural Sports (2)**

Coeducational. For physical education and recreation administration majors. Organization, administration, and motivation of a program of intramural activities in secondary schools.

**111A. Officiating Tennis and Volleyball (1)**

Women only. Prerequisite: experience in tennis and volleyball. Rules, officiating techniques, and practice in officiating. Students may elect to take national theoretical (\$0.25) and practical (\$0.75) examinations given by the San Joaquin Board of Women Officials. (2 1-hour lecture labs)

**111B. Officiating Basketball (1)**

Women only. Prerequisite: experience in basketball. Rules, officiating techniques, and practice in officiating. Students may elect to take national theoretical (\$0.25) and practical (\$0.75) examinations given by the San Joaquin Board of Women Officials. (2 1-hour lecture labs)

**112A. Officiating Football (1)**

Men only. Scheduled second 8 weeks of semester. Prerequisite: varsity squad experience in football or PE 125A; PE 112B concurrent, or permission of instructor. Analysis and interpretation of rules for football; procedures, mechanics and practice in officiating.

**112B. Officiating Basketball (1)**

Men only. Scheduled first 8 weeks of semester. Prerequisite: varsity squad experience in basketball or PE 125B. Analysis and interpretation of rules for basketball; procedures, mechanics, and practice in officiating.

**112C. Officiating Track and Field (1)**

Men only. Prerequisite: varsity squad experience in track or PE 125C. Analysis and interpretation of rules for track; procedures, mechanics, and practice in officiating.

**112D. Officiating Baseball (1)**

Men only. Prerequisite: varsity squad experience in baseball or PE 125D. Analysis and interpretation of rules for baseball; procedures, mechanics, and practice in officiating.

**115A. Theory and Analysis of Modern Dance (2)**

Coeducational. Limited to physical education dance option I and II majors and minors. Prerequisite: C16. Practice and analysis of body movement in dance, rhythmic, space and quality elements. Practice in planning and presenting teaching techniques, movement progressions, and group studies; elementary composition; brief history of dance. (2 2-hour labs)

**115B. Theory and Analysis of Team Sports (2)**

Women only. Limited to physical education majors and minors. Prerequisite: W46 and W48. Skill, strategy, and rules of team sports. Materials, interpretations, and organization of team sports for girls in secondary schools. (2 2-hour labs)

**115D. Theory and Analysis of Gymnastics (2)**

Women only. Prerequisite: PEC 9. Analysis and performance of elementary and intermediate stunts in tumbling, free exercise, apparatus, trampoline, and rhythmic gymnastics. Theory of skill progressions, class organization, spotting techniques, judging, analysis and development of routines, and organization of gymnastic competition. (2 2-hour lecture labs)

**115E. Theory and Analysis of Track and Field (1)**

Women only. Prerequisite: PEW 33. Analysis and performance of track and field events. Theory of skill progressions, class organization, officiating; planning, promoting, and conducting meets; purchase and care of equipment and facilities.

**125A. Theory and Analysis of Football (3)**

Men only. Limited to physical education majors and minors. Principles underlying participation in competitive interscholastic athletics. (2 lecture, 1 2-hour lab)

**125B. Theory and Analysis of Basketball (3)**

Men only. Limited to physical education majors and minors. Principles underlying participation in competitive interscholastic athletics. (2 lecture; 1 2-hour lab)

**125C. Theory and Analysis of Track and Field (3)**

Men only. Limited to physical education majors and minors. Principles underlying participation in competitive interscholastic athletics. (2 lecture; 1 2-hour lab)

**125D. Theory and Analysis of Baseball (3)**

Men only. Limited to physical education majors and minors. Principles underlying participation in competitive interscholastic athletics. (2 lecture; 1 2-hour lab)

**144. Instructional Laboratory II (1)**

Coeducational. Limited to major and minor students. Designed to provide an opportunity to work in an instructional situation.

**152. Elementary School Physical Education (2)**

Coeducational. Activities, materials, and methods for teaching physical education in elementary schools based on the California state program. (2 2-hour lecture-labs)

**153. Proseminar in Principles of Physical Education (3)**

Coeducational. Prerequisite: PE 30. Principles basic to sound philosophy of physical education; appraisal of historical development; relationship to health education, recreation, and other areas; foundation and functions of physical education in contemporary American society.

**154. Proseminar in Organization and Administration (3)**

Coeducational. Prerequisite: PE 30, 153. Organization and administration: classification, scheduling, planning facilities for instruction and recreation; role of the physical education teacher in recreation, equipment, budget, co-curricular program, student leadership, community relationship.

**156A. Kinesiology (3)**

Coeducational. Prerequisite: Biol 66, Physio 1 or Biol or Zool 10. Human movement: biological and mechanical bases, application of skeleto-muscular considerations and principles of mechanics to human movements.

**156B. Physiology of Exercise (3)**

Coeducational. Prerequisite: Biol 66, Physio 1 or Biol or Zool 10. Physiologic bases of movement, work and exercise; physiologic concepts related to respiration, circulation, digestion, metabolism, and to their roles in physical activity.

**156C. Adaptive Physical Education (2)**

Coeducational. Prerequisite: Biol 66, Physio 1 or Biol or Zool 10, PE 156A. Anomalies and physical divergencies among elementary and high school students, their etiology and consequences; development of special provisions to meet the needs of atypical students.

**159. Tests and Measurements (3)**

Coeducational. Prerequisite: PE 30. Scientific testing in physical education; analysis, study, and construction of tests; diagnosis of physical efficiency and physiological reactions to exercise, sports, and games.

**161. Curriculum and Methods of Physical Education in Secondary Schools (3)  
(Former PE 151)**

Coeducational. Prerequisite: PE 30, 153, and/or concurrently (men) PE 125A-B-C-D, (women) PE 115A-B-D-E. Principles applied to the teaching-learning process; organization and observation of physical education activities in secondary schools; development of physical education programs.

**163. Dance Performance (2; max total 8) (See PE 63)****164T. History of Dance (3; max total 12 if no topic repeated)**

Coeducational. Evolution of dance as an art form; cultural implications; changing concepts in dance style and form. Topics may include the following periods: Primitive to Renaissance, Baroque to 20th Century, 20th Century.

**166. Intermediate Dance Composition (3)**

Coeducational. Prerequisite: PE 65. Analysis of styles and trends of compositional form with experience in development of individual and group dance studies.

**167. Orchestis (2) (See PE 67)****168. Elementary Dance Notation (3)**

Coeducational. Prerequisite: PEC 16, PE 65. Designed to study the system of Labanotation. Will include experience in recording and interpreting dance scores.

**170T. Studies in Dance (3; max see PE 70T)****190. Independent Study (1-3; max see reference)**

See *Regulations and Procedures—Independent Study*.

**199. Supervised Work Experience (2; max total 6)**

Coeducational. Open only to physical education majors. Prerequisite: upper division status, GPA 2.5 last 30 units, consent of department coordinator and instructor.

**GRADUATE COURSES**

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

**230T. Scientific Bases of Physical Education (3; max total 9 if no topic repeated)**

Seminar in a selected topic: research in physical education; body mechanics; analysis of athletic performance.

**230.1. Body Mechanics****230.2. Analysis of Athletic Performance****230.3. Research in Physical Education****230.4. Statistical Inference in Physical Education****230.5. Quantitative Measurement in Exercise Physiology****240T. Programs in Physical Education (3; max total 9 if no topic repeated)**

Prerequisite: PE 161. Seminar in a selected topic: facilities and equipment; program development; administration.

**240.1. Physical Education Facilities and Equipment****240.2. Administration in Physical Education****240.3. Philosophical Concepts of Physical Education****240.4. Program Development****240.5. Historical Concepts****250T. Topics in Physical Education (3; max see below)**

May be repeated if no topic repeated. Prerequisite: permission of instructor. Seminar in a selected topic; for example, contemporary dance and related art forms.

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

See *Regulations and Procedures—Independent Study*.

**299. Thesis or Project (2-6; max total 6)**

Prerequisite: see *Master's Degrees—Thesis Requirement*. Preparation, completion, and submission of an acceptable thesis or project for the master's degree.

**IN-SERVICE COURSES**

*Note: In-service courses (300 series) are not intended for use on degrees except by special, prior approval. See Extension and Summer Session Bulletins for course descriptions.*

**310. Analysis of Team Activities (2-3; max total 12 if no area repeated)****320. Analysis of Individual Activities (2-3; max total 12 if no area repeated)**

## RECREATION

The Physical Education and Recreation Department offers a bachelor of science degree with a major in recreation for students who are preparing for leadership and supervisory responsibilities in recreation service. The curriculum offers each student an opportunity to select course material in public, voluntary, and institutional settings. Curriculum experiences are designed to serve as a foundation for graduate education in recreation service.

## BACHELOR OF SCIENCE DEGREE

The bachelor of science degree with a major in recreation is granted upon completion of 128 units including the courses listed below. The general degree regulations and general education requirements must also be fulfilled.

RECREATION MAJOR	<i>Units</i>
Rec 55, 73, 73L, 160, 171, 172, 173, 173L, 178, 179, 180, 181 .....	32
PE 45A or C6, PE 108 .....	4
Elect From: (men) PE 112B, C, or D; (women) PE 45B or C .....	2
	<hr/> 38

Additional Requirements: Psych 119, HSc 48, Art 120T, Mus 9, Drama 137.

*Professional Area Requirements:* (Select 26 units in one area below)

*Public Recreation and Parks:* Acct 1A. Recommended electives: Rec 177, Jour 113, Off Ad 105, 107, Pol Sc 181, 182. Electives: Acct 1B, Bus Ad 8 or 118, Econ 102, E Ed 120T, H Ec 132, IA 42, Jour 126, Math 40, Off Ad 1, 103, PISc 15, 25, 30, 50, 125, 165, Pol Sc 160, 163, Psych 123, 125T, 160T, 181, S Welf 127, Spch 160, 162, 167.

*Institutional Recreation:* Jour 113. Recommended electives: Psych 123, 125T. Electives: Acct 1A, 1B, Bus Ad 8 or 118, 151, Crim 132, 140, Econ 102, E Ed 135, H Sc 90, 157, H Ec 132, IA 80, Jour 126, Math 40, Off Ad 1, 103, 105, Psych 123, 160T, 152, 167, 181, S Welf 127, Spch 160, 162, 167.

*Voluntary Recreation:* Jour 113. Recommended electives: Psych 160T, Spch 167. Electives: Acct 1A-B, 8, or 118, Econ 102, E Ed 135, H Ec 132, IA 80, Jour 126, Math 40, Off Ad 1, 103, 105, Psych 123, 125T, S Welf 127, 274, Spch 160, 162, 167.

## RECREATION MINOR

The minor in recreation for the bachelor of science degree consists of 23-24 units of which 6 must be upper division and permits, with guidance, a selection of courses to satisfy special interests and needs. The recreation minor gives training in activities suitable for use in recreation programs of communities, schools, youth agencies, and clubs.

	<i>Units</i>
Rec 60, 73, 73L, 171, 173, 173L .....	14
PE 45A or C6 and PE 108 .....	4
Select two courses from an approved section of Art 120T, Music 9 or Drama 137 .....	5-6
	<hr/> 23-24

*Courses*

## RECREATION

**55. Principles of Recreation (3) (Former Rec 155)**

Philosophical, theoretical, and historical base for recreation service in contemporary American society; development of a personal philosophy of recreation through education information, and stimulation.

**60. Recreation in American Society (3)**

Nonmajors only. Development of recreation service in the United States; recreation service at the local, state, and federal level.

**73. Leadership in Recreation Service (2) (Former Rec 66)**

Theoretical and philosophical basis for leadership. Social dynamics of participation in recreative activities.

**73L. Leadership in Recreation Service Laboratory (2) (Former Rec 66)**

Concurrent with Rec 73. Practical leadership experience in supervised recreation settings.

**160. Camp Management (3)**

Prerequisite: Rec 55, 73, 73L. Practical skills in camping; leadership, supervision, and management of various types of camp. (2 field trips; approximately \$10 camp trip expenses).

**165. Foundations of Therapeutic Recreation Service (3)**

Prerequisite: Rec 55. Concentrated study of recreation service for the ill and disabled. Individual projects in the area of special interest: mental retardation, physical disability, aging, emotionally disturbed.

**166. Modifying Recreation Resources for Disabled Persons (3)**

Prerequisite: Rec 165. Analysis of problems encountered by persons with physical disabilities in utilizing recreation resources, i.e., theatres, museums, sports, game and activity equipment. Adaptations and modifications of recreation resources.

**167. Private Recreation Resources (3)**

Prerequisite: Rec 55. Evaluation of private recreation resources including membership organizations, private clubs, College Union, and commercial recreation endeavors; problems include program content, leadership, facilities, and organizational structure.

**169. Development and Management of Commercial Recreation (3)**

Prerequisite: Rec 55, 167. Evaluations of commercial recreation enterprises; problems include the establishment, organization, and management of commercial recreation.

**171. Community Recreation (3) (Former Rec 161A)**

Prerequisite: Rec 55. Evaluation of community recreation programs funded by public monies.

**172. Organization and Administration of Recreation (3) (Former Rec 161B)**

Prerequisite: Rec 55, 73, 173, or permission of instructor. Preparation for the role of administrator of recreation services; activity programs, the provision of sites and facilities, management of personnel and finances, volunteer personnel.

**173. Programs of Recreation (2) (Former Rec 162)**

Prerequisite: Rec 55, 73, 73L. Principles and procedures of planning programs for various age groups and settings.

**173L. Programs of Recreation Laboratory (2)**

Prerequisite: Rec 173 (concurrently). Practical program experience in recreation settings.

**177. Analysis of Leisure and Park Resources (3) (Former Rec 170)**

Prerequisite: Rec 55. Concentrated study of park planning, designs, and other resources for recreation purposes. Individual projects in the area of special interest: public, private, or therapeutic.

**178. Supervision in Recreation and Parks (3) (Former Rec 176.1)**

Directed full-time supervisory experience in the field of recreation and parks; initiating, organizing, supervising, and evaluating programs. Weekly seminars, reports, and conferences.

**179. Problems in Recreation and Parks Supervision (3) (Former Rec 176.2)**

Analysis and synthesis of problems related to the major areas of the field of park and recreation supervision.

**180. Seminar in Recreation and Park Management (3) (Former 176.3)**

Administrative aspects of the recreation and park management.

**181. Relations in Recreation and Park Services (3) (Former 176.4)**

Community and public relations in recreational agency work, and in recreation and park work.

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

See *Regulations and Procedures—Independent Study*.

## PHYSICAL SCIENCE

Some of the departments in the School of Arts and Sciences offer courses in the physical science area. These courses may be used to satisfy requirements for general education, credential programs, or professional development.

### MINOR

The minor in physical science consists of 20 units including Geog 5, Geol 1, Physics 100A-B, P Sci 21, 106. Chem 2A-B and Physics 2A-B are strongly recommended.

### Courses

#### PHYSICAL SCIENCE

##### 10. Elements of Astronomy and Physical Science (3)

Not open to students with credit in college physics. No credit when taken concurrently with college physics. Prerequisite: one year of high school algebra or equivalent. Elementary astronomy and physics; mechanical, magnetic, and optical principles; application to everyday experiences. Lecture, demonstration, discussion.

##### 12. Physical Science (3)

Not open to students with credit in college chemistry; for nonscience majors. Prerequisite: one year of high school algebra or equivalent; P Sci 10 is not a prerequisite. Qualitative introduction to principles and theories of the physical sciences. Reading assignments dealing with history and philosophy of science, the interaction of science and society, and the nature of scientific enterprise. Lecture, demonstration.

##### 21. Elementary Astronomy (3)

Prerequisite: elementary algebra and geometry. Nontechnical fundamental principles and facts of astronomy; appreciation of the wonders of the universe.

##### 106. History and Philosophy of Physical Science (3)

Prerequisite: permission of instructor. Development of physical science from the historical standpoint and its significant contributions; philosophy of science, nature of reality, principle of causality, role of definitions in science, uncertainty and measurements, rise and decline of the mechanical view, epistemology.

##### 108. Impact of Science Upon Society (3)

Basic philosophical issues and social problems attending the growth of science; study of areas in the history of science which have posed important questions for man, with special attention to the writings of eminent scientists.

#### IN-SERVICE COURSES

*Note: In-service courses (300 series) are not intended for use on degrees except by special, prior approval. See Extension and Summer Session Bulletins for course descriptions.*

**305. Physical Science for Secondary School Teachers (3; max total 6 in any one field)**

**350. Physical Science for Elementary School Teachers (3-6; max total 6 in any one field)**

## PHYSICS DEPARTMENT

Professors: Scott (Chairman, fall), S. Brown, Donaldson, Eliason, J. T. Shockley  
 Associate Professors: Dews, Zender (spring)  
 Assistant Professors: Judd, Lyles, Williamson

The Physics Department is organized and developed to offer scientific programs leading to various degrees in physics, including the bachelor of arts, bachelor of science, bachelor of science with an option in astronomy, master of arts, and master of science. The programs are arranged to assist in meeting the need for qualified teachers and scientifically trained personnel brought about by the increasing applications of physics to industries, communications, aviation, engineering, national defense and particularly to the research which develops these fields.

Five of the California State Colleges, including Fresno State College, cooperate in the management of the Moss Landing Marine Laboratories on Monterey Bay, an establishment which offers regular course work and opportunities for research which are applicable to graduate and undergraduate programs. Consult the chairman of the Physics and Biology Departments. See *Special Programs—Moss Landing Marine Laboratories*; for course descriptions see *Biology Department*.

### HIGH SCHOOL PREPARATION

The high school preparation for majors in the Physics Department should include: algebra (2 years), plane and solid geometry, trigonometry, and chemistry or physics; French, German, or Russian (2 years or more).

### MAJORS

For the bachelor of arts degree a major in physics consists of 36 units of which 24 must be upper division. For the bachelor of science degree, a major in physics consists of 43 units as listed below. For general degree regulations see *Degrees and Credentials*.

#### Foreign Language Requirement

Two years of satisfactory collegiate study (or equivalent) in French, German, or Russian are required for majors in physics. See the general statement under *Degrees and Credentials—Foreign Language Requirement* for equivalents and alternative ways of meeting the requirement. Any student planning advanced study is advised also to meet the foreign language requirement of the school he plans to attend.

<b>BACHELOR OF ARTS DEGREE IN PHYSICS</b>	<i>Units</i>
Physics Major .....	36
Phys 4A-B-C, 102, 105A, 107A, 130A-B (25 un)	
Upper division electives in physics (11 un)	
Additional Requirements .....	25
Math 75, 76, 77, 81, Chem 1A-B	
Foreign Language (courses taken in high school may reduce this requirement)	14
General Education and Electives .....	49
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<b>BACHELOR OF SCIENCE DEGREE IN PHYSICS</b>		<i>Units</i>
Physics Major .....		43
Phys 4A-B-C, 102, 105A-B, 107A-B, 110, 115, 116, 130A-B, 140		
Additional Requirements .....		37
Math 75, 76, 77, 81, 151, 152, 171, 172, Chem 1A-B		
Foreign Language (courses taken in high school may reduce this requirement)		14
General Education and Electives .....		34
		<hr/> 128
 Recommended courses: Phys 120, Engr 70		
Physics Major, Astronomy Option .....		46
Phys 4A-B-C, 22A-B, 102, 105A-B, 108A-B, 109A-B, 110, 115, 140		
Additional Requirements .....		31
Math 75, 76, 77, 81; 2 electives from Math 107, 151, 152, 171; Chem 1A-B		
Foreign Language (courses completed in high school may reduce this requirement)		14
General Education and Electives .....		37
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#### **SUGGESTED SEQUENCE OF COURSES FOR BACHELOR OF SCIENCE DEGREE IN PHYSICS**

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

1st Year: Math 75, 76, Phys 4A, F Lang (or equivalent)

2nd Year: Phys 4B-C, Math 77, 81, Chem 1A-B, F Lang (or equivalent)

3rd Year: Phys 102, 105A-B, 110, 140, Math 171, 172

4th Year: Phys 107A-B, 115, 116, 130A-B, Math 151, 152

#### **MINORS**

A minor in physics for a bachelor's degree requires 18 units of which 6 must be upper division.

#### **CREDENTIAL PROGRAM, SECONDARY TEACHING**

Students majoring in physics who wish to teach on the secondary level should consult the School of Education and see the section on *Public School Credentials*.

#### **MASTER OF ARTS DEGREE**

The graduate program for the master of arts degree in physics is based on the equivalent of the undergraduate major in physics at Fresno State College. Twenty of the 30 units required for the degree must be in physics. For specific requirements, consult the chairman of the department; for general requirements, see *School of Graduate Studies*. For detailed information about the graduate program at Fresno State College, see the *Graduate Bulletin*, available in the Office of the Dean, School of Graduate Studies. See foreign language requirement below.

#### **MASTER OF SCIENCE DEGREE**

The master of science degree in physics is designed for graduates who desire to seek industrial employment in physics and allied fields. Undergraduate preparation equivalent to a physics major at Fresno State College is necessary for admission. For specific details of the program, consult the chairman of the department; for general requirements, see *School of Graduate Studies*. For detailed information about the graduate program at Fresno State College, see the *Graduate Bulletin*, available in the Office of the Dean, School of Graduate Studies. See foreign language requirement below.

**FOREIGN LANGUAGE REQUIREMENT**

Advancement to candidacy for the master of arts or the master of science degree with a major in physics requires the passing of an examination demonstrating the ability to read materials of the major in French, German, or Russian.

**GENERAL EDUCATION REQUIREMENTS**

The following courses will satisfy general education requirements. *Area I: Phys* 2A-B, 4A, 4B, 22A-B, 55. (See *General Education—Courses.*)

**Courses****PHYSICS**

*Note: Math 77, Physics 4A-B-C are prerequisite to all upper division and graduate physics courses, except Physics 100A-B. No more than 12 units of lower division physics may be applied toward a degree.*

**2A-B. General Physics (4-4)**

Prerequisite: two years of high school algebra or their equivalent and satisfactory score on mathematics proficiency test. Mechanics, properties of matter, heat, sound, light, electricity and magnetism, and modern physics. (3 lecture, 3 lab hours)

**4A. Mechanics and Wave Motion (4)**

Prerequisite: Math 76 (or concurrently). Statics, forces, motions, properties of matter, wave motion. (3 lecture, 3 lab hours)

**4B. Electricity, Magnetism, Heat (4)**

Prerequisite: Physics 4A, Math 75, 76. Electrostatics, concepts of fields and potential, capacitance, D.C. circuits, chemical and thermal effects, magnetic fields, induced current, alternating current circuits, temperature, calorimetry, heat flow, thermodynamics. (3 lecture, 3 lab hours)

**4C. Light and Modern Physics (4)**

Prerequisite: Physics 4B, Math 75, 76. Lenses, mirrors, optical instruments, spectra, atomic structure, radioactivity, X rays, and nuclear physics. (3 lecture, 3 lab hours)

**22A-B. General Astronomy (3-3)**

Prerequisite: Phys 4A. Survey of astronomy including astronomical coordinate systems, telescopes, solar system, stars and stellar systems, galaxies and cosmology. (Occasional observation or lab hour)

**55. Sound (3)**

For music students and others interested in the physical basis of music. Vibrations and spectra of various musical instruments; harmony and discord, the tempered scale; acoustics; reproducing instruments; hearing.

**100A-B. Modern Physics (2-2)**

Prerequisite: Physics 2A-B or equivalent. Classical and quantum physics, electromagnetic spectrum, relativity, radiation and atomic structure, wave nature of matter, natural and artificial radioactivity, properties of nuclear radiations, structure of nucleus, fission process, fusion. Topics treated without use of calculus.

**102. Modern Physics (3)**

Foundations of atomic and nuclear physics, extranuclear structure of the atom, radioactivity and nuclear physics.

**105A-B. Analytical Mechanics (3-3)**

(A) Analytical and vector treatment of the fundamental principles of statics, kinematics, and dynamics. (B) Advanced dynamics; harmonic motion, central force fields and Lagrange's equations.

**107A-B. Intermediate Electricity and Magnetism (3-3)**

Prerequisite: Physics 105A. (A) Mathematical analysis of electrostatics and magnetostatics, Gauss' law, solutions of Laplace's equation, images, theory of conduction, magnetic potentials. (B) Motion of ions in electric and magnetic fields, electromagnetic induction, Maxwell's equations and wave propagation, electron theory and magnetic properties.

**108A-B. Astrophysics (3-3)**

Prerequisite: Phys 22A-B, 102, 105A. Telescopes, spectrographs, classification of stellar spectra, formation of absorption lines, radiative energy transport, multicolor photometry, interstellar material, energy generation in stars, stellar evolution, clusters.

**109A-B. Practice in Observation (2-2)**

Prerequisite: Physics 108A-B. Modern astronomical techniques of observation, experiments and projects in multicolor photometry, spectroscopy, visual observations, photography, telescope operation.

**110. Physical Optics (3)**

Theory of optical phenomena; wave theory of light with applications to optical instruments; interference and diffraction phenomena, dispersion, polarization.

**115. Quantum Mechanics (3)**

Prerequisite: Physics 102, 105A, 110, Math 81. Historical background, postulates, meaning and methods of quantum mechanics; applications to atomic phenomena.

**116. Quantum Physics of Atoms (3)**

Prerequisite: Phys 115. Quantum mechanics applications to atomic and nuclear physics.

**120. Electrical Measurements (3)**

Prerequisite: Physics 4A-B-C, Math 77. Theory, operation and use of electrical and electronic instruments and circuits commonly used in science laboratories. (2 lecture, 3 lab hours)

**130A-B. Advanced Laboratory (2-2)**

Prerequisite: Physics 102, 105A-B; senior physics major. Advanced experiments in mechanics, electricity and magnetism, atomic and nuclear physics. Opportunity for at least one individual project. (6 lab hours)

**140. Thermodynamics and Kinetic Theory (3)**

Prerequisite: Math 81. Fundamental concepts and laws of thermodynamics and kinetic theory with applications.

**162. Solid State Physics (3)**

Prerequisite: Physics 115. Classification of solids; crystalline state and lattice vibrations; properties of metallic lattices and dielectrics; magnetic properties of solids; free electron theory and band theory of metals; semiconductors; imperfections.

**170A-B. Mathematical Physics (2-2)**

Application of mathematical methods to the solution of problems in physics.

**175T. Topics in Contemporary Physics (3)**

Designed to provide students with special work in such areas of physics as plasmas, high energy physics, solid state, nuclear structure, astrophysics, low temperature phenomena.

**180A-B. Seminar in Physics (1-1)**

Prerequisite: senior or graduate physics major or permission of department chairman.

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

See *Regulations and Procedures—Independent Study*.

**GRADUATE COURSES**

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

*Note: Preparation equivalent to a physics major at Fresno State College and the permission of the instructor are prerequisite to admission to any of the graduate courses in Physics.*

**203A-B. Theoretical Physics (3-3)**

Advanced treatment of classical analytical mechanics including Lagrange's and Hamilton's formulation of the laws of motion, special relativity, small oscillation theory, hydrodynamics.

**220A-B. Advanced Electricity and Magnetism (3-3)**

Electromagnetic theory and its applications; solutions of Laplace's equation; electromagnetic potentials; cylindrical and spherical waves; retarded potentials; Lienard-Wiechert potentials; special relativity and electron theory.

**221A-B. Atomic and Nuclear Physics (3-3)**

The nature of matter and radiation as deduced from the classical quantum and quantum mechanical theories; atomic and nuclear structure; the nature of the nucleus as deduced from classical, quantum and quantum mechanical theories; models of nuclear structure.

**222A-B. Quantum Mechanics (3-3)****223. Statistical Mechanics (3)**

Theoretical principles of classical and quantum statistics.

**280A-B. Group Study of Selected Topics (3-3)****290. Independent Study (1-3; max see reference)**

See *Regulations and Procedures—Independent Study*.

**299. Thesis or Project (2-4; max total 4)**

Prerequisite: See *Master's Degrees—Thesis Requirements*. Preparation, completion, and submission of an acceptable thesis or project for the master's degree.

## POLITICAL SCIENCE DEPARTMENT

Professors: Buckman, Provost, Svenson, Tueller

Associate Professors: Rotstan (Chairman), Beach, Kolstad, Moore, Wright

Assistant Professors: Broyles, Cha, Franc, Heine, McGoldrick

Part-time: Goedhard, H. Goodwin, Sarkisian, Smetherman, Tuccori

The Political Science Department offers courses leading to a bachelor of arts degree with a major or minor in political science or public administration, a certificate in public administration, and the master of arts degree. In addition to curricula designed to prepare students for careers in teaching, government or related fields, the department offers courses for the nonmajor to meet general education requirements and to provide insight into the field of politics for the student concerned with his role as a citizen in a democracy.

The department cooperates with other departments in providing a concentration in Asian Studies and Latin American Studies. (See *Special Programs—Asian Area Courses, Latin American Studies*)

### FOREIGN LANGUAGE AND STATISTICS REQUIREMENT

The department requires of all political science majors either (1) one year of competency in a modern foreign language (A student with a foreign language background may determine competency by taking the Foreign Language Department qualifying examination.) or (2) six units of statistics and/or data processing. The foreign language requirement is waived for foreign students whose native language is not English. All foreign students having deficiencies in English are urged to seek aid in overcoming the deficiencies.

### UNITED STATES CONSTITUTION REQUIREMENT

The United States Constitution (including California state constitution and local government) requirement for graduation should be fulfilled by Pol Sci 2 or 101. Political Science 1 does not fulfill the United States Constitution requirement.

### MAJORS

The following major requirements are in addition to the general education requirement in social science.

<b>Political Science</b>	<i>Units</i>
Pol Sc 1, 110 or 111, 120, 140, 150 .....	16
Political science electives (ud), excluding Pol Sc 101, 102, 130, 187 .....	14
Electives (ud), approved by the adviser, in at least three of the following disciplines: economics, English, geography, history, philosophy, psychology, anthropology, sociology, or ethnic studies.....	12
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 <b>Public Administration</b>	
Pol Sc 1, 181, 182 .....	9
Elect from: Pol Sc 150, 151 .....	4
Elect from: Pol Sc 160, 163, 183, 188T, 189T .....	3
Elect From: Pol Sc 114, 170 .....	3
Elect from: Pol Sc 141T, 143T, 146T .....	3
Elect from: Soc 145, 155, 157, 163; Crim 132 .....	6
Elect from: Econ 110, 131, 170, 174, 180 .....	6
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**MINORS**

The following minor requirements are in addition to the general education requirement in social science.

<b>Political Science</b>	<i>Units</i>
Pol Sc 1, 110 or 111 .....	6
Political science electives (ud), excluding Pol Sc 101, 102, 130, 187 .....	9
Electives (ud) in anthropology, economics, English, geography, history, philosophy, psychology, or sociology .....	6
	<hr/> 21
<b>Public Administration</b>	
Pol Sc 1, 181, 182 .....	9
Elect from: Pol Sc 150, 151 .....	4
Elect from: Pol Sc 160, 163, 183, 188T, 189T .....	3
Elect from: Soc 157, 163, Crim 132 .....	3
Elect from: Econ 110, 131, 180 .....	3
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**CERTIFICATE IN PUBLIC ADMINISTRATION**

A certificate program in public administration is offered for persons interested in training for public service who are not in a position to meet the requirements for a degree. This certificate will be offered to public service personnel and others without reference to previous academic experience. Candidacy will be established with the approval of the Political Science Department. The candidate must complete a minimum of 23 units with a grade point average of 2.5 (20 units, if the candidate has completed an acceptable course in American government on the college or university level).

All candidates for the certificate must complete a core requirement of 12-15 units of political science and public administration in Group A and 8 units in Group B. With the approval of the Political Science Department substitutions may be made for courses already completed. Prerequisite requirements to advanced courses must be met.

**Group A. Political Science and Public Administration:** Pol Sc 101, 160, 163, 181, 182.

**Group B. Related Courses:** Psych 10, 181, Pol Sc 188T, Bus Ad 151, Econ 131, Jour 113.

**CREDENTIAL PROGRAM**

For information on the current credential program, consult departmental advisers and the School of Education; see the section on *Public School Credentials*.

**MASTER OF ARTS DEGREE**

The graduate program for the master of arts degree in political science provides concentrations in government and public administration. For prerequisites and specific requirements consult the department chairman; for general requirements see *School of Graduate Studies*. For detailed information about the graduate program at Fresno State College, see the *Graduate Bulletin*, available in the Office of the Dean, School of Graduate Studies.

**FOREIGN LANGUAGE REQUIREMENT**

Advancement to candidacy for the master of arts degree with a major in political science (government concentration) requires competence in a foreign language.

**GENERAL EDUCATION REQUIREMENTS**

The following courses will satisfy general education requirements. *Area II:* Pol Sc 1, 10T, 120, 121, 122, 151. (See *General Education—Courses*)

*Courses***POLITICAL SCIENCE****1. Elements of Political Systems (3)**

Introduction to the major disciplinary areas of political theory, comparative systems, political parties, public opinion and interest groups, public administration, and international relations through focus on ideologies and the structures, functions, and processes of governmental and political institutions.

**2. American Government and Institutions (3) (Former Pol Sc 11)**

Meets the United States Constitution requirement and the federal, California state and local government requirement. Not open to students with credit in Pol Sc 1A-B or 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.

**10T. Contemporary Issues in Politics (3; max total 9 if no topic repeated)**

Prerequisite: Pol Sc 1, 2, or permission of instructor. Significant contemporary uses in political theory, world politics, comparative government, American government, local government, or public administration.

**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 Pol Sc 1A-B, 2, 11, or equivalent. Executive, legislative, and judicial functions of our government under the constitution; federal, California state and local governmental relationships.

**102. California Government and Institutions (1)**

Not open to students with credit in Pol Sc 1A-B, 2, 11, 101, or equivalent. Open only to students who have satisfied United States Constitution requirement but have not satisfied California state and local government requirement. Examination of legislative, executive, judicial, and local government problems in California.

**POLITICAL THEORY****110. Seminar in History of Political Thought to Machiavelli (3) (Former Pol Sc 112A)**

Prerequisite: Pol Sc 1, 2, or permission of instructor. 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) (Former Pol Sc 112B)**

Prerequisite: Pol Sc 1, 2, or permission of instructor. 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, Rosseau, Hume, Burke, Bentham, Hegel, Tocqueville, Mill, and Dewey.

**114. Seminar in American Political Thought (3)**

Prerequisite: Pol Sc 1, 2, or permission of instructor. Analysis of democracy, majority rule and minority rights, constitutionalism, federalism, representation, pluralism, property, separation of powers, and judicial review based on the perspectives of representative early and contemporary American thinkers.

**115. Seminar in Modern Political Analysis (3)**

Prerequisite: Pol Sc 1, 2, or permission of instructor. Theoretical approach to contemporary methods of analysis; systems, functions, processes, culture, decision making, conflict theory, power, elitism, model building and cybernetics. Relation of theories of knowledge to the above methods and their applicability to a science of political development.

**119T. Topics in Political Theory (1-4; max total 8 if no topic repeated)**

Prerequisite: Pol Sc 1 or permission of instructor. Soviet thought, pluralism, authoritarian political thought, democratic political thought, liberalism, socialism, and conservatism.

**INTERNATIONAL RELATIONS****120. International Relations (3) (Former Pol Sc 127)**

Prerequisite: Pol Sc 1 or permission of instructor. Analytical introduction to international relations; nationalism; imperialism; racial, population, and economic factors; war; settlement of international disputes by methods other than war; foreign policies of the major powers.

**121. American Foreign Affairs (3) (Former Pol Sc 132)**

Prerequisite: Pol Sc 1 or permission of instructor. 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.

**122. Contemporary World Politics (3) (Former Pol Sc 128)**

Prerequisite: Pol Sc 1 or permission of instructor. World affairs from 1914 to the present; present foreign policies of the major powers from historical, political, and economic viewpoints; events leading to World War II and United Nations organizations.

**125. Soviet Foreign Policy (3) (Former Pol Sc 136)**

Prerequisite: Pol Sc 1 or permission of instructor. Sources of Soviet foreign policy, historical and ideological; continuity and change in methods, strategy and tactics; policy formulation and application in specific geographic and subject matter areas.

**126. International Organizations (3)**

Prerequisite: Pol Sc 120 or permission of instructor. Developing role of international organizations; historical roots of organized cooperation; League of Nations, United Nations, regional pacts; political and organizational issues confronting the United Nations.

**128T. Topics in International Relations (1-4; max total 8 if no topic repeated) (Former Pol Sc 139T)**

Prerequisite: Pol Sc 1 or permission of instructor. Nationalism, imperialism, communism, balance of power concepts, the superpowers (United States and USSR).

**129T. Seminar in International Politics (1-4; max total 8 if no topic repeated)**

Prerequisite: Pol Sc 1 or permission of instructor. Neutralism and nonalignment, regionalism, foreign policies of underdeveloped countries and of communist states (excluding USSR).

**130. Contemporary International Problems (2; max total 4) (Former Pol Sc 129)**

Prerequisite: Pol Sc 1, upper division standing, permission of instructor. Reading, research, and discussion of current international problems.

**COMPARATIVE GOVERNMENT****140. Approaches to Comparative Politics (3)**

Prerequisite: Pol Sc 1, 2, or permission of instructor. Exploration of theories, models, and conceptual frameworks for the comparative study of political systems and subsystems; methodological rather than areal emphasis.

**141T. Area Studies in the Commonwealth (1-4; total 8 if no topic repeated)**

Prerequisite: Pol Sc 1, 2, or permission of instructor. Government and politics of England and the Commonwealth Countries or government, politics, and institutions of selected countries.

**142T. Area Studies in Western Europe (1-4; max total 8 if no topic repeated)**

Prerequisite: Pol Sc 1, 2, or permission of instructor. Government and politics of Western Europe (France, Germany, Italy), Northern European Countries (Finland, Denmark, Norway, Sweden); or government, politics, and institutions of selected countries.

**143T. Area Studies in Eastern Europe (1-4; max total 8 if no topic repeated)**

Prerequisite: Pol Sc 1, 2, or permission of instructor. Government and politics of Soviet Union, 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)**

Prerequisite: 1, 2, or permission of instructor. Government and politics of Sub-Saharan 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)**

Prerequisite: Pol Sc 1, 2, or permission of instructor. Government and politics of East Asia; or government, politics, and institutions of selected countries.

**146T. Area Studies in Latin America (1-4; max total 8 if no topic repeated)**

Prerequisite: Pol Sc 1, 2, or permission of instructor. Possible topics include politics of South America; politics of Central America and Caribbean countries; roles of selected groups in Latin America politics.

**149T. Seminar in Comparative Government (1-4; max total 8 if no topic repeated)**

Prerequisite: Pol Sc 1, 2, or permission of instructor. Parliamentary systems, problems and goals of developing nations, federal systems, comparative local government, parties and pressure groups, and multi-party systems.

**149.1. France****AMERICAN GOVERNMENT****150. Politics: Public Policy Making (4) (Former Pol Sc 156)**

Prerequisite: Pol Sc 1, 2, or permission of instructor. The relationship of persons, groups, and institutions to the making and implementing of public policy in the United States; consideration of the participants and the modes of analysis and thought influencing public policy.

**151. Politics: Electorate and Political Parties (4) (Former Pol Sc 152)**

Prerequisite: Pol Sc 2 or permission of instructor. 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)**

Prerequisite: Pol Sc 1, 2, or permission of instructor. Voting behavior, political alienation, leadership, political perceptions and knowledge, environmental effects on political participation, group processes, and political socialization.

**158T. Topics in Political Institutions (1-4; max total 8 if no topic repeated)**

Prerequisite: Pol Sc 1, 2, or permission of instructor. Executive, legislative, judicial, independent regulatory agencies; interstate compacts; specific departments or agencies; relationships.

**159T. Seminar in American Government and Politics (1-4; max total 8 if no topic repeated)**

Prerequisite: Pol Sc 1, 2, or permission of instructor. 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.

**159.1. Civil Liberties****LOCAL GOVERNMENT****160. State and County Government (3) (Former Pol Sc 161)**

Prerequisite: Pol Sc 2 or permission of instructor. The organization, structure, powers, and functions of state and county governments.

**163. Municipal Government (3)**

Prerequisite: Pol Sc 2 or permission of instructor. Organization, powers, and functions of city government; types of city charters, relationship between city and state government; police and fire protection, education, water supply, health and sanitation, city planning, debts and taxation, public utilities.

**169T. Seminar in Metropolitan Government and Politics (1-4; max total 8 if no topic repeated)**

Prerequisite: Pol Sc 1, 2 or permission of instructor. Regional and area inter-governmental relations, urban renewal, human relations agencies, and taxation methodologies.

**PUBLIC LAW****170. United States Constitution: Growth and Development in Theory and Practice (3) (Former Pol Sc 157)**

Prerequisite: Pol Sc 1, 2, or permission of instructor. Law of the Constitution and its underlying political theory, with leading cases.

**PUBLIC ADMINISTRATION****181. Public Administration (3) (Former Pol Sc 164A)**

Prerequisite: Pol Sc 2 or permission of instructor. 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) (Former Pol Sc 164B)**

Prerequisite: Pol Sc 181 or permission of instructor. Administrative organization; methods and procedures; problem solving; reports and records; resource management.

**183. Comparative Administration (3) (Former Pol Sc 167)**

Prerequisite: Pol Sc 1, 2 or permission of instructor. Theories of comparative public administration; cross-national comparisons of administrative processes; institutions, policy formation, and behavior with consideration of cultural, social, and economic environments.

**187. Internship in Public Administration (2-6; max total 6) (Former Pol Sc 180)**

Maximum credit toward major, 3 units. Prerequisite: Pol Sc 1, 2, and permission of instructor. Supervised experience in government-in-action; work assignments in public agencies; written projects. (1 weekly seminar; minimum of 4 field hours per unit)

**188T. Topics in Public Administration (1-4; max total 9 if no topic repeated)**

Prerequisite: Pol Sc 1, 2, or permission of instructor. Treatment of current topics and problems in fiscal administration, personnel management, and planning.

**189T. Seminar in Public Administration (3; max total 6 if no topic repeated)**  
(Former Pol Sc 174T)

Prerequisite: Pol Sc 1, 2, or permission of instructor. The values and philosophy of administration; management and dynamics of change; public relations and communication problems in public administration; planning problems and techniques; systems approach to resource management.

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

See *Regulations and Procedures—Independent Study*.

**199. Scope and Method in Political Science (3)**

Prerequisite: junior standing. Approaches to the study of political science with emphasis on analysis, methodology, and bibliographic technique.

**GRADUATE COURSES**

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

**210. Seminar in Political Theory (3; max total 6 if topics not repeated) (Former Pol Sc 212)**

Prerequisite: permission of instructor. Advanced research and analysis of problems of sovereignty; relationships between the individual and the state; limitations of governmental authority; effect of crisis and challenge in international relations.

**220. Seminar in International Relations (3; max total 6)**

Prerequisite: Pol Sc 120, permission of instructor. Research and analysis in an area of international politics: theory, law, organization, conflict resolution, foreign policy formulation.

**249. Seminar in Comparative Government (3; max total 6)**

Prerequisite: Pol Sc 120, 140, and permission of instructor. Advanced level synthesis of basic concepts, issues, and problems of comparative government.

**250. Seminar in American Government (3; max total 6) (Former Pol Sc 240)**

Prerequisite: Pol Sc 2, permission of instructor. Research and analysis of issues, concepts, and problems in the field of American Government; federalism, political parties, pressure groups, electoral behavior, legislative process, constitutional law.

**270. Seminar in Public Law (3; max total 6 if topic not repeated) (Former Pol Sc 269)**

Prerequisite: Pol Sc 114, 170, and permission of instructor. Role and function of the judiciary and judicial systems in the formulation of governmental policy; problems in constitutional law, administrative law, international law, judicial process, and judicial administration.

**280. Seminar in Public Administration (3; max total 6 if topic not repeated)**  
(Former Pol Sc 264)

Prerequisite: permission of instructor. Problems in administrative analysis and organization, tools and techniques of administrative research, interpretation and application of research findings.

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

See *Regulations and Procedures—Independent Study*.

**299. Thesis (2-4; max total 4)**

Prerequisite: see *Master's Degrees—Thesis Requirement*. Preparation, completion, and submission of an acceptable thesis for the master's degree.

**PSYCHOLOGY DEPARTMENT**

Professors: Abou-Ghorra, Burton, Button, Cooper, Fisher, W. Holder, Leavitt, Lindquist, H. E. Madden, Powell

Associate Professors: James Mitchell Smith (Chairman), Coe, Grossman

Assistant Professors: D. Basden, Breen, Franklin, Kirtley, Moerk, Newell, Shanab

Part-time: K. Coleman, Hanley, Hodge, Holder, Holmen, Kranz, Krueger, McCuiston, Sacks, J. J. Smith, Swiercinsky, Toews, S. Walker

The Psychology Department offers work leading to the bachelor of arts and the master of arts degrees.

Required core courses provide the basic language, the empirical and conceptual knowledge, and the research experiences necessary to deal with psychological materials. Twelve additional units from outside the field of psychology are required to encourage breadth in the major. Students should work closely with their advisers in selecting the psychology electives which will best satisfy their individual needs and interests. Those students planning to pursue graduate work in psychology should check carefully with their advisers and the graduate schools of their choice regarding requirements for admission and should plan to use their electives within the major largely to satisfy such requirements.

**PREPROFESSIONAL PREPARATION**

A psychology major is often used as preparation for other professions. For pre-professional programs in law, dentistry, medicine, and the ministry, see the *Preprofessional Preparation* section and consult an adviser in the Psychology Department.

**PSYCHOLOGY MAJOR**

The major consists of a core of five basic courses, selected specialized courses, and electives in psychology. With departmental approval students may make adaptations in their programs to fulfill specific needs and career objectives.

	<i>Units</i>
Psych 25, 50, 110T, 125T, 150T.....	20
Psych 130T, 135T, 140T, 155T, 160T.....	4
Psychology electives .....	12
(6 units may be lower division psychology courses, excluding Psych 10; up to 6 units may be substituted from Anthro 102, 104, Soc 153, Biol 120, Phil 110.)	

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36

*Additional Requirements:* 12 units from at least three fields—anthropology, biological science, foreign language, linguistics, literature, mathematics, philosophy; courses must be upper division except in foreign language and must be in addition to general education requirements.

**PHILOSOPHY-PSYCHOLOGY MAJOR**

Psych 25, 50, 110T, 125T or 150T, psychology electives .....	18
Philosophy (ud) .....	16

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34

**PSYCHOLOGY MINORS**

	<i>Units</i>
<b>General Psychology Minor</b>	
Psych 25, 50, 110T, 125T or 150T .....	16
Psychology electives .....	6
	22

*Recommended:* Math 51.

**Psychology Minor for Speech Pathology and Audiology**

Psych 66, 111, 145 .....	9
Elect from: Psych 25, 119, 120, 152, 168, 175 .....	12
	21

**CREDENTIAL PROGRAM**

For information on the current credential program, consult departmental advisers and the School of Education; see section on *Public School Credential*.

**STANDARD DESIGNATED SERVICES CREDENTIAL WITH SPECIALIZATION  
IN PUPIL PERSONNEL SERVICES**

(See *Advanced Studies Department*)

**MASTER OF ARTS DEGREE**

The graduate program for the master of arts degree in psychology is based on the equivalent of the undergraduate major in psychology at Fresno State College. To be classified as a graduate student in psychology the student must have an undergraduate average in psychology of B or better. The master's degree program in psychology may serve as preparation for junior college teaching, for professional employment requiring a master's degree, or for additional work toward a doctorate. The program may be arranged to include interest areas such as clinical-developmental, general-experimental, and personality-social. Additional details pertaining to the master's degree may be obtained from the chairman of the department; for general requirements see *School of Graduate Studies*. For detailed information about the graduate program at Fresno State College, see the *Graduate Bulletin*, available in the Office of the Dean, School of Graduate Studies.

**GENERAL EDUCATION REQUIREMENTS**

The following courses will satisfy general education requirements. *Area I:* Psych 10. *Area II:* Psych 60T, 145, 160T. *Area IV:* Psych 25. *Area V:* Psych 66, 111, 170T. (See *General Education—Courses*)

**Courses****PSYCHOLOGY**

*Note: Psych 10 is prerequisite to all upper division psychology courses.*

**10. Introduction to Psychology (3)**

Not open to students with more than six units in psychology. Introduction to psychology as an empirical science; biological and social bases of behavior; scientific principles of psychology in perception, learning, motivation, intelligence and personality. (2 lecture, 3 lab hours)

**25. Elementary Statistics (4)**

Prerequisite: two years high school algebra or Math 29; Math 51 recommended. Descriptive statistics and elementary hypothesis testing in the behavioral sciences. (3 lecture, 2 lab hours)

**50. Research Design and Methods (4)**

Prerequisite: Psych 10, 25. Basic course in experimental psychology; research design statistics; introduction to scientific attitude and methods in psychology; emphasis on student participation in research and report writing. (2 lecture, 4 lab hours)

**60T. Psychology as Social and Behavioral Science (2-5; max total 9 if no topic repeated)**

Not open to students with more than 7 units in psychology. Problems in approaching man as a social animal; sections in basic or applied processes in personality, interpersonal relations, adjustment to social environment, and group participation. (Some sections may have lab hours.)

**66. Differential Psychology (3)**

Basic considerations in the problems of individual and group data, heredity and environment, genetics and maturation.

**104. Intermediate Statistics in Psychology (3)**

Prerequisite: Psych 25, 50. Advanced procedures in analysis and interpretation of psychological data. (2 lecture, 2 lab hours)

**110T. Problems in Psychological Theory (4; max total 12 if no topic repeated)**

Sections covering theoretical issues in psychology; topics in history of psychology and contemporary systems.

**111. Mental Hygiene (3)**

Basic processes in adjustment; mental health and social problems; application of principles of emotional health.

**115T. Theoretical Formulations in Psychology (2-5; max total 9 if no topic repeated)**

Specialized theories in psychology and foundations for theory building; intensive investigation of theories of limited scope.

**119. Child Psychology (3)**

The dynamics of development and adjustment.

**120. Adolescent Psychology (3)**

Adjustment of youth to self and society.

**123. Maturity and Old Age (3)**

Psychological study of maturity and old age; physiological and sociological considerations.

**125T. Problems in Learning and Motivation (4; max total 12 if no topic repeated)**

Prerequisite: Psych 50. Empirical evidence and theoretical issues in learning and motivation processes; research activity and reporting. (3 lecture, 3 lab hours)

**130T. Topics in Psychological Processes (2-5; max total 12 if no topic repeated)**

Prerequisite: Psych 25. Basic psychological processes such as sensation, perception, thinking, and comparative psychology; conceptual and empirical issues. (Usual section 4 units, 3 lecture, 3 lab hours.)

**135T. Topics in Physiological Psychology (4; max total 8 if no topic repeated)**

Prerequisite: Psych 25, 50, or permission of instructor. Physiological structures and functions which underlie behavior; sections include such topics as brain processes; physiological bases of learning, emotions, motivation, and behavior; specialized lab experience. (2 lecture, 4 lab hours)

**140T. Topics in Quantitative Psychology (2-5; max total 12 if no topic repeated)**

Prerequisite: Psych 25, 50 or permission of instructor. Sections designed to concentrate on measurement, statistics, mathematical applications, computer applications, and instrumentation. (Most sections have lab hours.)

**145. Social Psychology (3)**

The interaction of individuals in groups. (2 lecture, 2 lab hours)

**150T. Problems in Personality, Developmental, and Social Psychology (4; max total 12 if no topic repeated)**

Prerequisite: Psych 25, 50 or permission of instructor. Wholistic levels of analysis in psychology such as personality, social, and developmental; conceptual and empirical issues. (Usual section 3 lecture, 3 lab hours)

**152. Abnormal Psychology (3)**

Theoretical examination of origins, symptoms and treatments of personality disturbances.

**155T. Topics in Personality and Social Processes (2-5; max total 12 if no topic repeated)**

Prerequisite: Psych 25. Specialized subjects in social and personality psychology such as attitude change, social conformity, personality test construction, culture and personality. (Some lab or field work)

**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; includes such topics as clinical psychopathology, sensitivity training, and intragroup dynamics.

**163. Psychological Tests (3)**

Prerequisite: Psych 25 or equivalent. Theory of psychological measurement with emphasis on group testing. (2 lecture, 3 lab hours)

**167. Psychology of Mental Retardation (3)**

Psychological aspects of mental retardation; parent-child problems, etiology, nosology, school placement, institutionalization, treatment and recognition of all types; parent and child counseling.

**168. Psychology of Exceptional Children (3)**

Not open to students with credit in A Ed 115. The atypical child; etiology, symptomology, nosology, recognition and recommendations.

**170T. Topics in Applied Psychology (2-5; max total 12 if no topic repeated)**

Applications of psychology; human factors; clinical psychology, learning applications, creativity, psychology of religion, and others. (Some lab sections)

**174. Principles and Techniques in Guidance (3) (See A Ed 174)****175. Family Counseling (3)**

Prerequisite: permission of instructor. Psychodynamic treatment of family problems; methods of counseling; psychotherapy.

**180T. Seminar in Psychology (1-5; max total 12 if no topic repeated)**

Prerequisite: 9 units in psychology, permission of instructor. Undergraduate seminar in specialized areas and new developments in psychology.

**181. Industrial Psychology (3)**

Occupational assessment; training procedures; production efficiency; morale determinants; human engineering; decision processes; organization theory.

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

See *Regulations and Procedures—Independent Study*.

**199. Senior Thesis (2-4)**

Concentrated empirical or theoretical study of specific topic in psychology; emphasis on independent and creative activity; completed thesis defended before three-man committee including thesis sponsor. (Copy of thesis remains on permanent file in Psychology Department)

**GRADUATE COURSES**

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

**200. Seminar in Psychology (3)**

May be repeated with different topics. Prerequisite: permission of instructor. Seminars in psychodynamics, personality, psychological measurement, counseling and psychotherapy, genetic psychology, experimental psychology, social psychology, applied psychology, learning, research design, physiological and comparative psychology, theoretical problems.

**201. Seminar in Experimental Methods (3)**

Prerequisite: permission of instructor. Measurement and analysis in behavioral research. (2 lecture, 3 lab hours)

**202. Seminar in Psychometrics (3)**

Prerequisite: Psych 104, permission of instructor. Survey and test design and analysis in behavioral research. (2 lecture, 3 lab hours)

**203. Proseminar in Psychology (2)**

Prerequisite: permission of instructor. Presentation of faculty and student reports; discussion of contemporary issues in psychology.

**204. Advanced Statistical Methods (3)**

Prerequisite: Psych 104 or equivalent. Advanced parametric and non-parametric statistics and their application in psychological research. (2 lecture, 3 lab hours)

**205. Readings in Psychology (1-3; max total 8 if no topic repeated)**

Prerequisite: permission of instructor. Individually directed readings in areas of interest or need; appropriate reports and evaluation required. Individual conferences.

**207. Seminar in Learning and Related Areas (3)**

Prerequisite: undergraduate core in psychology or equivalent. Advanced current developments in learning, sensation and perception, physiological and comparative psychology. (2 lecture, 3 lab hours)

**208. Seminar in Personality and Related Areas (3)**

Prerequisite: undergraduate core in psychology or equivalent. In-depth examination of the recent developments in personality, clinical, genetic, social thought and language, and psychometric psychology.

**209. Seminar in Advanced Psychological Theory (3)**

Prerequisite: permission of instructor. Current psychological literature; theoretical significance.

**218. Mental Hygiene and Guidance of Children (3) (See A Ed 218)****224. Counseling Techniques (3) (Same as A Ed 224)**

Prerequisite: A Ed 174 or permission of instructor. Interviewing; directive and nondirective counseling techniques.

**224F. Field Work in Counseling (2-12) (Same as A Ed 224F)**

Prerequisite: Psych 224, 25 units of pupil personnel services credential sequence, permission of instructor one semester in advance of assignment. Supervised practice in counseling in a college or high school counselor's office.

**262. Diagnostic Clinical Interviewing (3)**

Prerequisite: Psych 152 and permission of instructor. Principles and techniques of interviewing; integration of case history, case study, psychodynamics, and psychometric data.

**263. Therapeutic Clinical Interviewing (3)**

Prerequisite: Psych 262 and permission of instructor. Practice in interviewing; use of available field resources such as schools, clinics, hospitals. (3 lecture hours, field work)

**264. Diagnosis of Exceptional Children (3; max total 6, 3 on master's degree)**

Prerequisite: Psych 265, permission of instructor. Advanced administration and interpretation of individual and group techniques. Field work under supervision.

**265. Individual Mental Testing (3) (Same as A Ed 255)**

Prerequisite: Psych 163, permission of instructor. Administration, interpretation, and use of current individual intelligence tests. Field work. (2 lecture, 3 lab hours)

**266A. Projective Techniques (3)**

Prerequisite: Psych 152, 265, permission of instructor. Seminar on basic assumptions and applications of projective devices.

**266B. Projective Techniques (3)**

Prerequisite: Psych 266A, permission of instructor. Seminar on administration and scoring of projective devices.

**267. Externship-Internship: Case Studies (2-12; max total 12, for master's degree 6)**

Prerequisite: Psych 224, 265, 268, admission to candidacy for master's degree or to credential program; permission of instructor. Diversified experience in evaluation and case study; reading, speech and children's clinics, schools, special classes, hospitals, staff conferences and clinical practicum. Supervision by college and facility staffs.

**268. Advanced Psychological Testing (3)**

Prerequisite: Psych 265, permission of instructor. Administration, scoring, and interpretation of psychological tests; to include social maturity measures, physical-motor development, group and nonverbal intelligence measures, specific learning problems, emotional and personality appraisal. Field work. (2 lecture, 3 lab hours)

**270T. Seminar in Applied Behavioral Science (1-6; max total 15 if no topic repeated)**

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.

**271. Group Techniques (3)**

Prerequisite: Psych 262, permission of instructor. Application of group process techniques to counseling, therapy, schools, and industrial settings. (3 lecture hours, field work)

**290. Independent Study (2-6; max total 6)**

See *Regulations and Procedures—Independent Study*.

**299. Thesis (2-4; max total 4-6)**

Prerequisite: see *Master's Degrees—Thesis Requirement*. Preparation, completion, and submission of an acceptable thesis for the master's degree.

**IN-SERVICE COURSES**

*Note: In-service courses (300 series) are not intended for use on degrees except by special, prior approval. See Extension and Summer Session Bulletins for course descriptions.*

**302. Selected Topics in Psychology (1-3; max total 9 if no topic repeated)**

## SOCIAL SCIENCE

A major in social science is offered for the bachelor of arts degree. This major meets the requirements for a diversified/interdepartmental major for a standard teaching credential. Since there is no social science department, students following this program will be assigned to a faculty adviser in one of the following departments: Anthropology, Economics, Geography, History, Political Science, and Sociology.

### SOCIAL SCIENCE MAJOR

The social science major shall consist of a minimum of 36 units. Fifteen upper division units shall be taken from one of the six social science areas. Nine upper division units shall be selected from other social science areas. The student shall arrange his program so that no one of the remaining social science areas has fewer than six units. All lower division prerequisites will meet general education requirements provided they are not counted as part of the major. (Geography 3 and 4 are prerequisite to upper division geography courses for the social science major.)

For help in planning his program, the student is urged to consult the adviser in his area of major concentration.

### CREDENTIAL PROGRAM

For information on the current credential program, consult departmental advisers and the *School of Education*; see the section on *Public School Credentials*.

## SOCIOLOGY DEPARTMENT

Professors: Beatty (Chairman), Dienstein

Associate Professor: Washburne

Assistant Professors: Claassen, Gregg, McLeod, Tinker, Weber, York

Lecturer: Barron

The department offers a major for the bachelor of arts degree and a minor for students majoring in other departments. The major is designed to provide a broad liberal arts background, as well as an adequate basis for graduate education. Cooperation is given to other departments in providing for students with such majors as social science and child-development.

## MAJOR

The following degree major requirements are in addition to general education requirements.

<b>Sociology</b>	<i>Units</i>
Soc 1, 25, 152, 153, 175 .....	15
Sociology electives (ud) .....	24
	—
	39

## MINOR

The following minor requirements are in addition to general education requirements.

<b>Sociology</b>	
Soc 1, 25 .....	6
Electives in sociology (ud) .....	15
	—
	21

## CREDENTIAL PROGRAM

For information on the current credential program consult the departmental advisers and the School of Education; see the section on *Public School Credentials*.

## GENERAL EDUCATION REQUIREMENTS

The following courses will satisfy general education requirements. *Area II: Soc 1, 2, 25, 111, 112, 130, 143, 145, 151, 152, 155, 157, 159, 162, 163, 165, 169.* (See *General Education—Courses*)

*Courses*

## SOCIOLOGY

**1. Principles of Sociology (3)**

Basic principles and concepts of sociology; scientific study of society, important group types, and primary social processes; norms, roles, interaction, social systems, socialization, stratification, and social control.

**2. Social Problems (3)**

Analysis of those prevalent conditions in American society considered undesirable and remediable.

**25. Elementary Statistics (3)**

Required of students majoring in sociology. Prerequisite: Soc 1 or permission of instructor. Techniques for describing and analyzing quantitative data specifically related to sociology. Tabular and graphic presentation; commonly used measure of association; samples and sampling error; commonly used statistical tests. (2 lecture, 1 lab hour)

**111. Sociology of Minority Relations (3)**

Prerequisite: Soc 1 or Anthro 2, or permission of instructor. Social processes involved in minority relations in the United States in terms of race, class, caste, ethnicity, politics, and religion; sources of minority attitudes; patterns of minority adjustment; trends in minority relations.

**112. Collective Behavior (3)**

Prerequisite: Soc 1 or permission of instructor. Theoretical and systematic treatment of episodes of collective behavior: panic, craze, hostile outburst, norm-oriented movements, and value-oriented movements. Collective behavior as a type of social phenomenon and an aspect of modern society.

**125. Seminar in Experimental Sociology (3)**

Prerequisite: Soc 1 or permission of instructor; Soc 25 recommended. Selected sociological experiments related to social principles and processes.

**130. Contemporary Social Issues (3)**

Units cannot be applied to the sociology major or minor. Study in depth of current social issues on which the attention of the society is focused.

**143. Deviation and Control (3)**

Prerequisite: Soc 1 or permission of instructor. Deviance as a social phenomenon; positive and negative consequences; theories of deviance; formal and informal social control of deviance.

**145. Social Organization (3)**

Prerequisite: Soc 1 or permission of instructor. Factors related to social organization: complex organization, bureaucracy, formal and informal processes, authority systems; open-systems theory.

**146. Industrial Sociology (3)**

Prerequisite: Soc 1 or permission of instructor. Formal and informal character of work relations and their significance in the context of the larger community.

**147. Medical Sociology (3)**

Prerequisite: Soc 1 or permission of instructor. Social relations and culture as factors affecting health; illness, prevention and treatment.

**148. Sociology of Education (3)**

Prerequisite: Soc 1 or permission of instructor. A sociological examination of education as an institution, including its social determinants, functions, and consequences.

**149. Sociology of Law and Society (3)**

Prerequisite: Soc 1 or permission of instructor. Functions of law in society; social sources of legal change; social conditions affecting the administration of justice; role of sociology in jurisprudence.

**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 Stratification (3)**

Prerequisite: Soc 1 or permission of instructor. 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. Seminar in the History of Social Thought (3)**

Prerequisite: Soc 1 or permission of instructor. History of sociological theory; major theoretical schools and important theorists.

**153. Seminar in Contemporary Sociological Theory (3)**

Prerequisite: Soc 1, 152, or permission of instructor. Nature of theory and its verification; critical examination of current theoretical formulation.

**155. Social Institutions (3)**

Prerequisite: Soc 1 or permission of instructor. Major social institutions—familial, economic, political, educational, religious; origin and development; functions and interrelationships in contemporary phases of development.

**157. Social Change (3)**

Prerequisite: Soc 1 or permission of instructor. Analysis of trends in and process, directions, and patterns of social change.

**158. Seminar: Sociology of Knowledge (3)**

Prerequisite: permission of instructor. How social processes affect what is to be considered "knowledge" and the attainment of "knowledge." The social limits of models of thought and meaning.

**159. Sociology of Religion (3)**

Prerequisite: Soc 1 or permission of instructor. Major sects, denominations and churches; integrative and disintegrative processes in the United States; contemporary religious phenomena. (1 lecture, 4 field hours)

**161. Seminar in Population Analysis (3)**

Prerequisite: Soc 1 or permission of instructor. Population theories and history; demographic processes and variables in contemporary society. Analysis of census data.

**162. Social Psychology (3)**

Not open to students with credit in Psych 145. Prerequisite: Soc 1 or permission of instructor. A multiple systems approach to personality; analysis of the effect of social and psychological variables; attitudes, social perceptions, collective behavior, conformity, and leadership.

**163. Urban Sociology (3)**

Prerequisite: Soc 1 or permission of instructor. The urban concept; form and development of urban areas; scientific study of urban places and populations; effect of urbanization on social institutions and social relations.

**164. Political Sociology (3)**

Prerequisite: Soc 1 or permission of instructor. Political pressures and the social bases of power in society; the role of classes, groups, institutions and social values in political behavior.

**165. The Family (3)**

Prerequisite: Soc 1 or permission of instructor. The family in historic and contemporary society, theoretical frameworks for analyzing the family, family dynamics; changes in family functions, structures, and roles.

**167. Seminar in Self and Society (3)**

Prerequisite: Soc 1, 162, or Psych 145 or permission of instructor. Analysis of the relation of the self-system to society; symbolic interaction theory; role identity and social interaction; types of self developed under varying social conditions.

**169. Seminar in Power and Conflict (3)**

Prerequisite: Soc 1 or permission of instructor; Soc 151 recommended. Sociological theories of power; relation of power, authority, and legitimacy; allocation of power. Conflict theory relative to society, consensus, ideology, and revolution.

**175. Seminar in Sociological Research Methods (3)**

Prerequisite: Soc 1 and 25 or permission of instructor. Analysis of selected published research; individual field research and reports.

**181. Seminar in Small Groups (3)**

Prerequisite: Soc 1, 162, or permission of instructor. Microsociology; group types and basic processes. Effects of selected variables: group size, composition, task difficulty, role allocation, communication networks. Experimental research and reports.

**183. Mass Society and Communications (3)**

Prerequisite: Soc 1; 145 or Soc 163, or permission of instructor. Analysis of social conditions producing mass society; its characteristics; communication systems; mass media and opinion formation.

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

See *Regulations and Procedures—Independent Study*.

**SPEECH ARTS DEPARTMENT**

Professors: Burriss, Campbell, Highlander, Lombard, Loring, C. Taylor, P. Walker, D. Wilson

Associate Professors: G. Graham (Acting Chairman), J. Bryon, Henderson, McGuire, Randall

Lecturer: Sortini

Assistant Professors: Adams, Bochin, Briggs, Diestel, Dirks, Emanuel, Fitch, Fulkerson, Hennings, W. Jacobson, M. Johnson, R. Johnson, Lane, Miller, Monson, Natharius, Newcomer, Sagen, Salgado, K. Taylor, Tuder, Ullmann, Wadsworth

Part-time: Abell, J. Jacobson, O'Banion, Ozier

The Speech Arts Department offers majors for those who seek professional qualification in one or more of the specialized fields of speech: drama, radio-television broadcasting, public address-communication, and communicative disorders. Students may choose, with guidance, areas of experience to satisfy special needs. For those who intend to make teaching their profession, the department offers programs for public school credentials. Master of arts degrees in both speech and in mass communications are available under the general provisions listed in this section.

**SPEECH TEST**

(See *Entrance Examinations*)

**MAJORS AND MINORS**

The Speech Arts Department offers bachelor of arts degree majors and minors in drama, radio-television broadcasting, and speech with three options.

The *drama* major provides training for actors, directors, designers, teachers, technicians, playwrights, and historians.

The *radio-television* major provides for an understanding and critical appraisal of these media as forces of social, educational, and economic significance. The courses offered in radio, television, and film provide preparation for careers in commercial and educational broadcasting and for teaching. The study of theory and practices is combined with laboratory and broadcast experiences. Advisement procedures and flexibility within the major allow each student's program to be tailored to his needs and interests. Additional relevant study in other fields is encouraged. Areas of emphasis in the major include performance, production, management, film, writing, and educational broadcasting.

The *speech* major is offered with three options. Option I is designed to provide competencies in public address, communication, and oratory for students preparing for careers in public service, working with relatively mature groups of people. Option II is designed to provide competencies in public address and communication for students who desire careers in public service, working with younger groups of people. Option III is designed to provide a broad and basic understanding of communicative disorders. The program provides a foundation for the master of arts degree in this field which is required for certification by the American Speech and Hearing Association and the Council on Education of the Deaf.

**MAJORS**

	<i>Units</i>
<b>Drama</b>	
Drama 1, 33, 34-134, 133 or 140, 135, 139, 3 units from 180A-B, 181A-B, or 182A-B; 185 or 186 .....	24
Approved electives .....	12
	<hr style="width: 100%; border: 0.5px solid black; margin-bottom: 5px;"/> 36

*Special Requirements:* (Waiver of these requirements may be by written consent of the dramatic art faculty only. Students majoring in dramatic art are advised to enroll in no more than two production courses per semester.)

1. Enrollment in Drama 15 or 115 each semester.
2. Auditioning for each dramatic art area production while in attendance at Fresno State College; casting at any time.
3. Approval of the area chairman before participation in nondramatic art area production activity, extracurricular, or noncollege responsibilities.

<b>Radio-Television Broadcasting</b>	<i>Units</i>
Drama 1 .....	3
R-TV 15-115, 40, 41, 44, 140, 141, 160 .....	20
Approved electives .....	17
	40

**Speech (Public Address and Communication) Option I**

Spch 5, 7, 8, 15-115, 140, 142, 146 or 148, 160, 162, 166, 187 .....	32
Approved upper division electives from speech (Credential candidates must have at least 24 upper division units in speech.), anthropology, economics, English, history, linguistics, philosophy, political science, psychology, sociology, journalism, business administration, marketing, drama, radio-television, communicative disorders, or any discipline from which a cohesive program can be selected .....	15
	47

**Speech (Public Address and Communication) Option II**

Spch 7 or 8, 134, 160, 162 .....	13
Drama 1, 137, CD 101, 102 .....	11
Approved electives .....	12
	36

**Speech (Communicative Disorders) Option III**

CD 101, 102, 131 .....	9
Spch 134, 160 .....	6
Elect one area .....	9
Speech Pathology: CD 100, 103, 104	
Audiology: CD 100, 132, 133	
Education of the Deaf: CD 132, 133, 135	
Approved electives: Spch 162, Drama 137, Psych 119, 163, Biol 66, AEd 153, 160; CD 106, 128A, B, or C (maximum total 2 units); other CD courses, maximum total 6 units .....	15
	39

**MINORS**

<b>Drama</b>	
Drama 1 .....	3
Drama 15-115, 33, 34-134, 133 .....	11
Approved electives .....	6
	20

**Radio-Television Broadcasting**

R-TV 15 or 115, 40 or 140, 41 or 44, 141 .....	14
Approved electives .....	6
	20

	<i>Units</i>
<b>Speech (Public Address and Communication) Option I</b>	
Spch 5, 7, 8, 15 or 115, 142, 160, 162 .....	20
	—
	20
<b>Speech (Public Address and Communication) Option II</b>	
Spch 160, 162 .....	6
Drama 1, 137, CD 101, 102 .....	11
Approved electives .....	3
	—
	20
<b>Speech (Communicative Disorders) Option III</b>	
CD 101, 102, 131, Spch 160 .....	12
Elect one area .....	9
Speech Pathology: CD 100, 103, 104	
Audiology: CD 100, 132, 133	
Education of the Deaf: CD 132, 133, 135	
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	21

**CREDENTIAL PROGRAM**

For information on the current credential program consult departmental advisers and School of Education, Advanced Studies Department. See the section on *Public School Credentials*.

**SPECIALIZED PREPARATION TO TEACH EXCEPTIONAL CHILDREN  
IN THE AREA OF SPEECH AND HEARING HANDICAPPED**

The specialized preparation to teach exceptional children in the area of speech and hearing handicapped may be substituted for the requirement of a minor in the standard teaching credential (see *School of Education*). The program also meets the requirements for certification by the American Speech and Hearing Association and is the basis for the undergraduate preparation for the master of arts degree in speech pathology-audiology. For additional information see credential adviser.

The specialized preparation in the area of speech and hearing handicapped includes course work, clinical practice, and student teaching as follows:

	<i>Units</i>
Psych 119, A Ed 153, 160, 218, E Ed 100 or S Ed 151 .....	15
CD 100, 101, 102, 103, 104, 105, 106, 109, 110, 131, 132 .....	33
Approved electives .....	6
	—
	54
<i>Professional Requirements:</i> CD 130 (2-4 units), 230 (1-6 units), A Ed 164 (4 units) .....	10
	—
	64
<i>Additional Requirements:</i> CD 205, 210, 215, 232	

**RESTRICTED CREDENTIALS**

For general provisions for obtaining a restricted credential, consult departmental advisers and see *School of Education, Advanced Studies Department*.

<b>Speech and Hearing Specialist</b>	<i>Units</i>
CD 100, 101, 102, 103, 104, 105, 106, 109, 110, 131, 132 .....	33
A Ed 153, 160, 218, E Ed 100 or S Ed 151, Psych 119, 163, Spch 134, 160.....	24
	57
<i>Professional Requirements:</i> CD 130 (2-4 units), 230 (1-6 units), A Ed 164 (4 units) .....	10
	67
<i>Additional Graduate Requirements:</i> CD 205, 210, 215, 232	

#### **Teacher of Deaf and Severely Hard of Hearing Children**

The following course work, clinical practice, and student teaching are offered for students interested in teaching in the area of the Deaf and Severely Hard of Hearing.

	<i>Units</i>
A Ed 160, 218, Psych 119 .....	9
CD 100, 104, 132, 133, 135, 162, 163, 164, 262, 263, 264 .....	33
	42
<i>Professional Requirements:</i> CD 130 (2-4 units), 260 (1-3 units), A Ed 154 (4 units) .....	8
	50

#### **MASTER OF ARTS DEGREE IN SPEECH ARTS**

The graduate program for the master of arts degree in speech is based on the equivalent of the undergraduate major or minor in speech at Fresno State College. From 18 to 24 of the 30 units required for the degree must be in speech. For specific requirements, consult the head of the department; for general requirements see *School of Graduate Studies* and the *Graduate Bulletin*.

#### **MASTERS OF ARTS DEGREE IN MASS COMMUNICATIONS**

The graduate program for the master of arts degree in mass communication is an interdisciplinary degree program jointly offered by the journalism and radio-television faculties of the college. See *School of Graduate Studies-Mass Communications*.

#### **GENERAL EDUCATION REQUIREMENTS**

The following courses will satisfy general education requirements. *Area I:* CD 104. *Area II:* Spch 7, 8, 142, 160. *Area III:* CD 101, Drama 15, 22, 33, 34, 62, 115, 122, 137, 138, 139, 184, 185, 186, 187, R-TV 40, 128, 140, 143, 160, 173, Spch 146, 148. *Area IV:* Spch 3. *Area V:* Drama 188T, R-TV 188T, Spch 167. (See *General Education—Courses*)

#### *Courses*

#### **COMMUNICATIVE DISORDERS (CD)**

##### **76. Problems in Oral Expression (2) (Former Spch 76)**

Primarily for prospective teachers. Oral presentation of materials; analysis and elimination of individual limitations in oral expression.

##### **100. Introduction to Speech Pathology (3) (Same as A Ed 150. Former Sp Corr 150)**

Problems of speech and language, types of communicative disorder including delayed speech and language development; classification of speech and language defects; causes and therapeutic procedures; development of spoken language in the child; speech theory in the educational processes.

**101. Phonetics of American English (3) (Former Sp Corr 151)**

Perceptual and physiological characteristics of speech sounds of American English; application of phonetics to the study of normal and aberrant speech patterns and to American regional dialects.

**102. Psychology of Speech and Language Development (3) (Former Sp Corr 157)**

Normal process of speech and language development in children; genetic, cultural, psychological, and educational concepts related to the learning of speech and language.

**103. Evaluation of Speech and Hearing Disorders (3) (Former Sp Corr 152)**

Prerequisite: CD 100, 101. Diagnostic and therapeutic procedures applicable to a broad spectrum of speech and hearing problems; tests and methodologies, utilizing speech and hearing equipment in a clinical setting.

**104. Physiology and Anatomy of Speech and Hearing Mechanisms (3) (Former Sp Corr 156)**

Physical, physiological, and neurological basis of speech and hearing mechanisms and pathology.

**105. Voice and Articulation Disorders (3)**

Prerequisite: CD 100, 101, 104. The symptomology, etiology, diagnosis, and treatment of pitch, loudness, and quality as related to organic pathologies of the voice and psychological factors of voice. A comprehensive analysis of etiology, diagnosis, and rehabilitative techniques for articulatory disorders.

**106. Seminar in Stuttering (3) (Former Sp Corr 153)**

Undergraduate seminar exploring theories and therapies; psychological and educational concepts of stuttering; parent-child relationships.

**109. Speech and Hearing Programs in Public Schools (3)**

Prerequisite: CD 100, 101, 104, 105. Application of diagnostic, clinical, and administrative procedures in the public schools environment.

**110. Diagnostic Procedures (3) (Former CD 203)**

Prerequisite: CD 103, 104. Selection and use of various speech, language, hearing, psychological, and sensory-motor tasks used in the diagnostic process. Team approach concepts.

**128A. Observation in Communicative Disorders: Speech Pathology (1-3; max total 3)**

Observation of diagnostic evaluations; speech, language, and hearing disorders in Language, Hearing, and Speech Clinic.

**128B. Observation in Communicative Disorders: Audiology (1-3; max total 3)**

Observation of diagnostic evaluations; speech, language, and hearing disorders in Language, Hearing, and Speech Clinic.

**128C. Observation in Communicative Disorders: Education of the Deaf (1-3; max total 3)**

Observation of diagnostic evaluations; speech, language, and hearing disorders in the Language, Hearing, and Speech Clinic or in schools for the deaf.

**130. Clinical Practice in Speech, Hearing, and Deaf Therapy (2; max total 6) (Former Sp Corr 155)**

Prerequisite: CD 103, or permission of instructor. Supervised clinical practice in speech, hearing, and deaf therapy; diagnosis of speech and hearing deficiencies, procedures of referral to other agencies, parent counseling; case records. (6 hours arranged)

**131. Principles of Audiology (3) (Former Sp Corr 162)**

Anatomy, physiology, and neurology of the hearing mechanism; medical aspects of deafness and surgical treatment of hearing loss; psychological and social factors.

**132. Speech Reading and Auditory Training (3) (Former Sp Corr 163)**

Problems of auditory discrimination of deaf and severely hard of hearing children, methods of developing listening ability with and without amplification; survey of classical speech reading procedures. (2 lecture, 2 lab hours)

**133. Audiometry (3) (Former Sp Corr 164)**

Prerequisite: permission of instructor. Concepts of perception of speech; testing procedures utilized in detection and evaluation of hearing loss; application of testing procedures for diagnostic and rehabilitative purposes.

**134. Utilization of Amplification Systems in Educational Process (3)**

Amplification systems; hearing aids and group amplification systems; techniques of their selection and utilization; physics of sound. Observation and conduct of hearing aid evaluations at the Language, Hearing, and Speech Clinic.

**135. History, Education, and Guidance of the Deaf (3)**

History of the education of the deaf; source material; research studies related to psychology, social adjustment, and learning problems of the deaf.

**162. Speech of the Deaf (3)**

International Phonetic Alphabet, Bells, Visible Speech, diacritical marking system and/or Yale charts, methods and devices for developing all English sounds; principles of good voice placement, enunciation, pronunciation, and phrasing. Demonstration and practice.

**163. Language of the Deaf (3)**

Techniques employed in the development of language with deaf children; systems of teaching techniques, construction of English sentences and grammar; methods of correcting language mistakes of the deaf child.

**164. Elementary School Subjects for the Deaf (3)**

Methods of teaching reading to deaf children; classroom procedure and presentation of content subjects (arithmetic, science, social studies); sources and use of visual materials.

**188T. Topics in Communicative Disorders (2; max total 6) (Former Sp Corr 188T)**

Speech pathology, audiology, education of the deaf, speech and hearing science, language disorders.

**190. Independent Study (1-3; max total 6)**

See *Regulations and Procedures—Independent Study*.

**GRADUATE COURSES, COMMUNICATIVE DISORDERS (CD)**

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

**205. Seminar in Functional Speech Disorders (3) (Former Spch 253)**

Theories, etiologies, and therapy procedures necessary for understanding functional aspect of speech and language disorder.

**210T. Seminar in Organic Speech Disorders (3; max total 6) (Former Speech 254)**

Theories, etiologies, and habilitative processes necessary for understanding specific organic speech and language disorders.

**210.1. Structural Disorders**

Prerequisite: CD 101, 104, 105.

**210.2. Neurological Disorders**

Prerequisite: CD 100, 104.

**215T. Seminar in Communicative Disorders (3; max total 6)****215.1. Voice Disorders**

Prerequisite: CD 101, 104.

**215.2. Language Disorders**

Prerequisite: CD 100, 104, 105.

**228A. Observation in Communicative Disorders: Speech Pathology (1; max total 3)**

Observation in speech pathology.

**228B. Observation in Communicative Disorders: Audiology (1; max total 3)**

Observation in audiology.

**228C. Observation in Communicative Disorders: Education of the Deaf (1; max total 3)**

Observation of diagnostic evaluations; speech, language, and hearing disorders in Language, Hearing, and Speech Clinic or schools for the deaf.

**230. Advanced Clinical Practice, Speech Pathology (1-3; max total 3)  
(Former Spch 255)**

Prerequisite: CD 101, 103, 105, 130. Supervised clinical practice in diagnosis and treatment of complex speech and hearing problems; causative factors; outlining plan of therapy; counseling parents; referrals.

**231. Seminar in Audiology (3; max total 6) (Former Spch 260)**

Prerequisite: CD 131 or permission of instructor. Projects in library research or experimentation.

**232. Seminar in Differential Diagnosis of Auditory Disorders in Children (3)**

Procedures for differentiating children who may have hearing deficits, mental retardation, emotional disturbances, or brain disfunction. Syndromes characteristic of these disorders.

**250. Advanced Clinical Practice, Audiology (1-3; max total 3)**

Prerequisite: CD 130, 131, 132, 133. Supervised clinical practice in diagnosis and treatment of complex hearing problems; causative factors, counseling parents, etc., therapy planning.

**260. Advanced Clinical Practice, Education of the Deaf (1-3; max total 3)**

Prerequisite: CD 130, 131, 132, 133. Supervised clinical participation and practice in clinical/classroom teaching of the deaf and severely hard of hearing child and adult. Therapy planning, parent counseling.

**262. Seminar in Speech of the Deaf (3)**

Prerequisite: CD 162. Development of oral communication for the child who is deaf. Detailed study of the essentials of good speech and of methods of building or correcting the speech of the deaf. Projects in library research or experimentation.

**263. Seminar in Language of the Deaf (3)**

Prerequisite: CD 163. Investigation of language errors of the deaf. Comparative study between the hearing and the deaf in syntax of language and structure of thought. Projects in library research or experimentation.

**264. Seminar in Elementary School Subjects for the Deaf (3)**

Prerequisite: CD 164. Special problems and techniques of adjusting the elementary school curriculum to the needs of deaf children; innovations and research in curriculum development. Project required.

**265. Seminar in Secondary School Subjects for the Deaf (3)**

Prerequisite: permission of instructor. Special problems and techniques of adjusting the secondary curriculum to the needs of deaf children: innovations and research in curriculum development. Project required.

**270. Seminar in Organization and Management of Audiology Clinics (3)**

Prerequisite: CD 131, 133. Establishing, organizing, and maintaining audiology clinics in colleges and universities, hospitals, and private organizational settings. Project required.

**DRAMA (Drama)****1. Fundamentals of Voice and Articulation (3) (Former Spch, 1, 20)**

Primarily for majors and minors in the speech arts. Principles of voice and articulation with demonstration in various aspects of oral communication.

**15. Dramatic Arts Laboratory (1-2; max total 6)**

Prerequisite: permission of instructor. Group laboratory experience in presentation of major productions for public performance. (4-8 hours arranged)

**22. Fundamentals of Interpretation (3) (Former Spch 22)**

Discovering and communicating intellectual and emotional meaning of the printed page through preparation and presentation of selected readings from prose, poetry, and drama.

**32. Stage Techniques (3)**

Coordination, gesture, and stage business training for student actors, singers, and directors; development and improvement of creativity, awareness, and body control. (3 2-hour activity and 4 arranged hours)

**33. Fundamentals of Acting (3)**

Prerequisite: Drama 1 or permission of instructor. Fundamental techniques and theories of acting; development of individual insight, skill, and discipline in the presentation of dramatic materials. (3 2-hour activity and 4 arranged hours)

**34. Theatre Craft (3) (Same as IA 34)**

Introduction to the crafts in technical theatre: scene construction, scene painting, property selection, stage lighting, sound production; costume construction and make-up; laboratory experience in preparing major plays for public performance. (3 lecture-lab and 9 arranged hours)

**62. Introduction to Theatre Arts (3)**

Evolution of theatre and related performing arts, contemporary theatre; changing aspects of the theatre; styles and structure of dramatic composition and production. Attendance at selected rehearsals and performances required.

**115. Advanced Dramatic Arts Laboratory (1-2; max total 9)**

Prerequisite: permission of instructor. Group laboratory experience in presentation of major productions for public performance. (4-8 hours arranged)

**122. Oral Interpretation of Literature (3) (Former Spch 122)**

Not open to students with credit in Drama 22. Analysis and communication of selected readings from prose, poetry, and drama.

**123. Oral Studies in Poetry (3; max total 6) (Former Spch 123)**

Prerequisite: Drama 22. Appreciation and communication of types of poetry, lyric, narrative, dramatic, emphasizing their differentiation for oral presentation; problems of content, structure, and style.

**128. Oral Studies in Prose (3; max total 6) (Former Spch 128)**

Prerequisite: Drama 22. Appreciation and communication of types of prose, emphasizing problems of content, structure, and style as they relate to oral presentation.

**129. Oral Studies in Drama (3; max total 6) (Former Spch 129)**

Prerequisite: Drama 22. Appreciation and communication of types of dramatic literature, emphasizing problems in structure and content from the point of view of the oral interpreter.

**130. Choral Reading (2) (Former Spch 130)**

Selection and presentation of literature appropriate for choral reading on various educational levels; role of choral reading in speech teaching.

**131. Fundamentals of Playwriting (2; max total 9)**

Play analysis, exploration of folk material, fundamentals of playwriting, critical analysis and revision of manuscripts, experimental production of completed scripts. (2 lecture-lab and arranged hours)

**132. Oral Interpretation of Individual Literary Styles (3) (Former Spch 132)**

Prerequisite: Drama 22. Intensive, critical study of selected writings of one or two significant literary figures in terms of the oral presentation.

**133. Advanced Acting (3) (Former Spch 139A)**

Prerequisite: Drama 33, 62, or permission of instructor. Advanced techniques of emotion, timing, characterization, and style, developed by study and evolution of characters from the classic plays through the body of contemporary literature. (3 2-hour activity and 4 hours arranged)

**134. Advanced Theatre Craft (3) (Former Spch 182) (Same as IA 134)**

Prerequisite: Drama 34 or permission of instructor. Advanced training in the crafts of technical theatre; preparing plays for major public performances. (3 lecture-lab and 9 arranged hours)

**135. Make-up for Theatre (3)**

Theory and practice of make-up for theatre; techniques for characterization, style, and technical processes; aesthetics, analysis of characters for make-up. Preparing plays for major public performances. (2-hour activity, 10 hours arranged)

**137. Creative Dramatics (2) (Same as E Ed 137)**

Basic techniques for the use of dramatization in elementary education; socio-drama, dramatization of school subjects, creative dramatic play; simplified staging techniques, story telling. (1 3-hour activity and 6 arranged hours)

**138. Children's Theatre (3) (Former Drama 159)**

Theories of children's theatre and application to problems in production; puppetry; preparing plays for major public performance. (1 3-hour activity and 9 hours arranged)

**139. Fundamentals of Play Direction (3)**

Not open to students with credit in Spch 133 prior to fall 1967. Prerequisite: Drama 33 or permission of instructor. Fundamental techniques and theories of stage direction; function, responsibility, movement, analysis, style; practice in directing scenes. (3 2-hour activity and 4 arranged hours)

**140. Advanced Play Direction (3)**

Prerequisite: Drama 139 or permission of instructor. Advanced techniques of play direction: prerehearsal problems and procedures; structural analysis of plays, composition, picturization, pantomimic dramatization, movement, rhythm. (3 2-hour activity and 4 arranged hours)

**150. Theatre Management and Promotion (3)**

Principles of organization, operation, and administration of educational, community, and professional theatre; box office operation, accounting procedures, ticket manipulation, house management, fund raising, promotional media. Supervised practical experience in dramatic art area production.

**155. Sound in the Theatre (3)**

Theory, techniques, and procedure necessary to develop and integrate sound, music, and effects in theatre production; hearing, acoustics, environment, sources, transducers, control, systems, equipment; organization and planning. Laboratory experience in preparing plays for a major public performance. (3 2-hour activity and 6 arranged hours)

**157. Theatre Graphics (3)**

Technical sketching, drafting working drawings, other graphic skills essential to the development of design for the theatre. (3 2-hour activity and 4 arranged hours)

**174. Seminar in Theories of Oral Interpretation (3) (Former Spch 174)**

Prerequisite: at least 6 upper division units of oral interpretation courses. Mechanical and natural schools of oral interpretation, their backgrounds and influence upon modern teaching and performance.

**176. Workshop in the Oral Presentation of Original Literature (2; max total 4) (Former Spch 176)**

Prerequisite: permission of instructor. Oral presentation of literature (prose, poetry, drama) written by students in the class.

**178. Oral Studies of Shakespeare (3) (Former Spch 178)**

Prerequisite: Drama 22, 140, 185, or 186. Appreciation and communication of representative histories, comedies, and tragedies; problems of content and structure from the point of view of the oral interpreter.

**179. Readers' Theatre (1-2; max total 6) (Former Spch 179)**

Prerequisite: permission of instructor. Directed study of spoken literature for presentation resulting in a major public performance.

**180A-B. Scene Design for Theatre (3-3) (Former Drama 180. Same as Art 180A-B)**

Prerequisite: Drama 34 or 134 or permission of instructor. (A) styles, techniques, and methods of scene design; history. Laboratory application, material for major public performance. (Lab hours arranged) (B) Scenery design; design problems of a complicated play; experimental ideas; new materials. Laboratory application, material for major public performance. (Lab hours arranged)

**181A-B. Costume Design for Theatre (3-3) (Former Drama 180. Same as Art 181A-B)**

Prerequisite: permission of instructor. A. History of costume design; construction techniques; design project for an historical play. Construction of costumes for major public performance. B. Advanced design and history; design project. Laboratory application and work on a major public performance.

**182A-B. Stage and Television Lighting (3-3) (Former Drama 180. Same as Art 182A-B)**

Prerequisite: Drama 34 or 134 or permission of instructor. (A) Instruments, control, color, electro-mechanical factors and simplified design and planning lighting leading to and resulting in a major public performance. (Lab hours arranged) (B) Lighting as an art, design concepts; lighting plots, projections, sequential cue relationships. Laboratory application, material for major public performance. (Lab hours arranged)

**184. Readings in Dramatic Literature (3; max total 6)**

Open to upper division students of all departments. Prerequisite: permission of instructor. Reading and discussion of great plays of history.

**185. Seminar: History of the Theatre I (3) (Former Drama 185A)**

Prerequisite: upper division standing or permission of instructor. History of European theatre and component arts from ancient Greece through the mid-nineteenth century; analysis of representative examples.

**186. Seminar: History of the Theatre II (3) (Former Drama 185B)**

Prerequisite: upper division standing or permission of instructor. From Ibsen to the present; analysis of representative examples.

**187. History of the American Theatre (3)**

Prerequisite: upper division standing or permission of instructor. History of the theatre in America from colonial times to the present; analysis of representative examples.

**188T. Seminar: Topics in Dramatic Art (3; 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.

**189. Projects in Production (1-3; max total 9)**

Prerequisite: permission of instructor. Group projects in all phases of production in laboratory theatre. (4 hours activity)

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

See Regulations and Procedures—Independent Study.

**191. Undergraduate Seminar in Dramaturgy (3; max total 9)**

Prerequisite: permission of instructor. Selected areas from the art of dramatic composition and theatrical representation.

**194T. Major Writers: Shakespeare (4) (See Engl 189)**

**200 series.** Graduate courses are listed under *Communicative Disorders and Speech*.

**RADIO-TELEVISION (R-TV)****15. Broadcasting Laboratory (2)**

Classroom demonstration in use and care of broadcast equipment; limitations and potentialities; application of basics through supervised activities. (2 lab and 2-4 arranged hours)

**40. Foundations of Broadcasting (3)**

Contemporary broadcasting; historical concepts, regulation; radio-television as instruments of social influence; standards of program criticism.

**41. Radio Production (3)**

Prerequisite: R-TV 40. Lecture and laboratory experiences in program development and production techniques as they apply in radio broadcasting and other sound media. (2 lecture, 2 lab hours)

**44. Television Production (3)**

Prerequisite: R-TV 40. Lecture and laboratory experiences in program development and production techniques as they apply in television. (2 lecture, 2 lab hours)

**115. Advanced Broadcasting Laboratory (2)**

Prerequisite: R-TV 15 or equivalent and permission of instructor. Individual and group laboratory experience in major productions for closed-circuit or broadcast distribution. (2 lab, 6-8 arranged hours)

**128. Motion Picture Evaluation (2)**

Criteria for motion picture selection; use of reviews and judgment by critics and organizations; critical observation; appreciation and enjoyment. (2 lecture-lab and arranged hours)

**129. Telefilm Production (3)**

Prerequisite: R-TV 128, permission of instructor. Theoretical and practical application of visualization techniques as applied in the media of television film. (4 lab, 2 arranged hours)

**140. Broadcasting and the Public (3)**

Critical study of both the real and potential cultural, economic, and political impact of broadcasting; factors which shape the structure, standards, and procedures of broadcasting.

**141. Broadcast and Film Writing (3) (Former R-TV 141A)**

Prerequisite: R-TV 40 or permission of instructor. Continuity types; theory, writing, and evaluation of announcements, commentaries, and program formats; adapting the spoken word to the media.

**142. Radio and Television News Broadcasting (3) (Same as Jour 142)**

Prerequisite: R-TV 40 or permission of instructor. Characteristics of electronic news media; local and national broadcast news operations; news sources and resources; social influence; policy and control; planning and producing news and public affairs programs. (2 lecture, 2 lab, and arranged hours)

**143. Producing the Educational Broadcast (3) (Same as A Ed 143)**

Objectives and uses of radio and television in education; place of radio and television in the curriculum, classroom utilization; advantages and limitations of the media; evaluation of school broadcasts; program production experiences. (2 lecture, 2 lab hours)

**144. Advanced Television Production (3)**

Development of creative and critical skills; study of production theory and practice; participation in organization, planning, and production activities. (4 lab, 2 arranged hours)

**147. Directing the Broadcast Program (3)**

Prerequisite: R-TV 41 or 44, permission of instructor. Theories and practices in producing and directing broadcast programs; planning and production for the directorial function. Laboratory goal to create airworthy products for closed-circuit or broadcast distribution. (1 lecture, 4 lab hours)

**149. Broadcast Performance (3)**

Prerequisite: R-TV 41 or 44, permission of instructor. Role of the broadcast performer; types of broadcast performance; development of professional skills and standards; laboratory, closed-circuit or broadcast performance. (2 lecture, 2 lab and arranged hours)

**160. Broadcast Regulation (3)**

Prerequisite: R-TV 40 or permission of instructor. Types and effects of broadcast regulation; Communications Act, FCC, FTC, industry codes, audience influences.

**170. Cinematography (3)**

Prerequisite: R-TV 129. Advanced study of problems of camera and sound; production organization and equipment; laboratory projects in film production. (2 lecture, 2 lab and arranged hours)

**173. Philosophy and Theory of Educational Broadcasting (3) (Same as A Ed 173)**

Theoretical constructs essential to broadcasting for instruction; student development of relevant and contemporary philosophy of broadcasting and its potential in education.

**181. Script Writing (3) (Former R-TV 141B)**

Prerequisite: R-TV 141 and permission of instructor. Advanced techniques and applications in creative writing projects for radio, television, and film; development of full-length drama and documentary program scripts.

**185. Proseminar in Station Management (3) (Former R-TV 145)**

Prerequisite: R-TV 160, permission of instructor. Organization, programming, and operation of radio and television stations; correlation of department functions.

**188T. Topics in Broadcasting (3; may be repeated in different areas)**

Selected timely and relevant areas of study: broadcast measurement and evaluation, documentary, film editing, economics, broadcasting in Asia.

**188.1. Broadcasting and Politics****189. Projects in Broadcasting (2; max total 6)**

Prerequisite: senior standing, permission of instructor. Creative group projects in broadcasting or film; public showing or distribution of product required. (6-8 hours arranged)

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

See *Regulations and Procedures—Independent Study*.

**200 series.**

Graduate courses are listed under *Communicative Disorders* and *Speech*.

**SPEECH (Spch)****3. Fundamentals of Oral Communication (3) (Former Speech 21)**

Meets speech requirement in general education. Understanding and practicing the skills of oral communication; observation, organization, reasoning, transmission, listening, and problem solving through a series of prepared speeches.

**5. Argumentation (3) (Former PAC, Spch 25)**

Prerequisite: Spch 3 or permission of instructor. Logical analysis, evidence, reasoning, and proof used in arriving at rational decisions as demonstrated through presentation of public speeches and debates.

**7. Persuasion (3) (Former PAC, Spch 24)**

Prerequisite: Spch 3 or permission of instructor. Persuasion viewed as a social tool for resolving controversy and forming opinions through presentation of and listening to public speeches.

**8. Group Discussion (3) (Former PAC, Spch 26)**

Prerequisite: Spch 3 or permission of instructor. Communication in group thinking and problem solving through preparation and presentation of panels and symposia on public issues.

**15. Forensics Laboratory (1-2; max total 4)**

Prerequisite: permission of instructor. Experience in the presentation of debates, oral interpretation programs, persuasive and expository speaking. Intramural and intercollegiate competition and forensics.

**103. Advanced Public Speaking (3) (Former PAC 174)**

Prerequisite: Spch 3. Advanced principles of expository and persuasive speaking; development of skills through analysis, preparation, organization, and delivery of various types of speech.

**105. Proseminar in 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.

**108. Communication and the Small Group (3)**

Prerequisite: Spch 8. 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. Speech for the Classroom Teacher (3) (Same as E Ed 158)**

Prerequisite: permission of instructor. Speech needs of teachers; management of speech activities in the classroom; diagnosis of student speech difficulties and techniques for alleviating deficiencies.

**115. Advanced Forensics Laboratory (1-2; max total 6)**

Prerequisite: permission of instructor. Experience in the presentation of debates, oral interpretation programs, persuasive and expository speaking. Intramural and intercollegiate competition and forensics.

**134. Structure of English (4) (See Ling 134)****135. General Linguistics (4) (See Ling 135)****137. American English (3) (See Ling 137)****140. Rhetorical Theory (3) (Former PAC, Spch 125)**

Examination and analysis of classical, renaissance, and modern rhetorical theory for the purpose of identifying the theories of speech.

**142. Rhetorical Criticism (3) (Former PAC 175)**

Examination of methods of the classical critics through the contemporary theorists in rhetorical criticism for the purpose of establishing standards for rhetorical analysis.

**145. History of Public Address: Ancient (3)**

Not open to students with credit in Spch 146 or PAC 170. Study of selected classical discourse. Special emphasis is given to the study of classical institutions within ambient societies.

**146. History of Public Address: British (3)**

Not open to students with credit in Spch 146, 164. The history and criticism of British public address from Pitt to modern times. Special emphasis is given to the social and political forces of the period.

**148. History of Public Address: American (3) (Former PAC, Spch 171)**

Not open to students with credit in Spch 124. Selections from speeches of great American speakers analyzed in a cultural, psychological, social, and historical context; historical-rhetorical method of speech criticism.

**149. Black Rhetoric (3) (Former Spch 188.4)**

Discussion of the origin, context, strategies, topics, and audience of the rhetoric of Black America.

**160. General Semantics (3) (Former PAC, Spch 121)**

Prerequisite: Spch 3. Study of the attempt to organize the findings of the sciences of men and to develop procedures for self-management of man as a symbol user; internalizing the procedures.

**162. Proseminar in Interpersonal Communication (3) (Former PAC, Spch 126)**

Prerequisite: Spch 3. Nature of the communication process; factors affecting the process and the individuals involved.

**163. Social Influence and Attitude Change (3)**

Prerequisite: permission of instructor. Discussion of research on the nature and effects of social influence, with special emphasis on attitude formation and change, conformity, behavior, "brainwashing", prejudice, and propaganda as functions of communication.

**164. Proseminar in Communication Problems of Culturally Different (3)**

Analysis of literature dealing with the relationship between the educational and social difficulties of the culturally different child and his communication abilities; individual research projects in current literature.

**166. Proseminar in Communication Research Methods (3)**

Prerequisite: basic statistics or permission of instructor. Application of behavioral research principles to problems in quantification, design, and analysis of data in communication research.

**167. Leadership in Groups and Organizations (3) (Former PAC, Spch 127)**

Theory and practice of selected leadership variables in groups and organizations; functions of leadership in formal and informal structures, understanding and analysis of role-playing techniques.

**168. Communication in Organizations (3)**

Application of communication principles to the improvement of organizational efficiency.

**187. Seminar in Speech (3)**

Prerequisite: senior standing and permission of instructors. A student colloquy to synthesize the undergraduate program in speech.

**188T. Topics in Speech (3; max total 9)**

Prerequisite: permission of instructor. Selected topics in speech education.

**189. Projects in Speech (2; max total 6)**

Prerequisite: permission of instructor. Group projects in all phases of production in public address-communication. (4 hours activity)

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

See *Regulations and Procedures—Independent Study*.

**GRADUATE COURSES SPEECH (Spch)**

(See *Course Numbering System—Definitions and Eligibility*. See *Communicative Disorders for additional graduate courses*.)

**200. Introduction to Graduate Study (3)**

Prerequisite: speech minor or equivalent. Seminar in research procedures and materials in speech. Required of all majors in speech arts during the first semester of graduate work.

**210. Graduate Survey in Speech Arts (3)**

Prerequisite or concurrently: Spch 200; permission of instructor. Seminar in review and analysis of advanced literature in an area of specialization.

**215. Seminar in Speech Arts (3; max total 9)**

Prerequisite: speech minor or equivalent. Research and individually directed work on problems within one area of speech arts: theatre, interpretation, radio-television, public address, and communications.

**220T. Seminar in Dramaturgy (3; max total 9 if no area repeated)**

Prerequisite: permission of instructor. Principle theories and research in the phases of the theatre: acting, directing, history, criticism, aesthetics, playwriting, scene design, costume design, sound, lighting, architecture.

**222. Seminar in Oral Interpretation (3)**

Prerequisite: permission of instructor. Research and analysis in theories, methods, and trends in interpretation; individual projects in the development of materials and techniques; relationship to literature, drama, public address.

**240T. Seminar in Rhetoric and Public Address (3; max total 9)**

Prerequisite: permission of instructor.

**240.1. Rhetorical Theory****240.2. Contemporary Criticism****240.3. History of Public Address****240.4. Contemporary Public Address****261T. Seminar in Communication Theory (3; max total 9)**

Prerequisite: permission of instructor.

**261.1. Communication Theory****261.2. Small Group Communication****261.3. Communication Research****290. Independent Study (1-3; max see reference)**

See *Regulations and Procedures—Independent Study*.

**299. Thesis or Project (2-6; max total 6)**

Prerequisite: see *Master's Degrees—Thesis Requirement*. Preparation, completion, and submission of an acceptable thesis or project for the master's degree.

**IN-SERVICE COURSES**

*Note: In-service courses (300 series) are not intended for use on degrees except by special, prior approval. See Extension and Summer Session Bulletins for course descriptions.*

**303. Topics in Speech (1-3; repeatable with different topics)**

**URBAN AND REGIONAL PLANNING DEPARTMENT**

Professors: Tokmakian (Chairman), Fey

Associate Professor: Merchen

Part-time: Capelle, Schutt, Wood, Worrell

The Department of Urban and Regional Planning offers a professional program leading to the master's degree in city and regional planning. The program has a multidisciplinary approach which seeks to develop planners equipped to understand both the physical and social aspects of community development, particularly those needs uniquely associated with the region, the medium-sized community, and rural areas and their service centers. The program is offered in cooperation with the Art, Economics, Geography, Political Science, and Sociology Departments of the School of Arts and Sciences, and the Schools of Business, Engineering, and Social Work.

**MASTER OF CITY AND REGIONAL PLANNING DEGREE**

The master's degree program in city and regional planning requires 60 semester units of study designed as preparation for careers in planning at a responsible level. It accepts an undergraduate degree in a field related to planning, such as geography, political science, public administration, economics, sociology, architecture, or engineering as the necessary foundation for entrance. Other fields may be acceptable, depending on an evaluation of the candidate's record and career goals.

The program is composed of a professional planning core and related supportive subjects designed to provide a framework sufficiently broad for specialized or general practice. Generally, students in their first year follow a program which provides a common body of knowledge in planning theory, research methods, design, and professional practice. Beginning with the second semester and continuing into the second year, students are encouraged to consider a minor specialization. With the assistance of his adviser, a student may undertake work which emphasizes interest in social concerns, in planning research, in regional and environmental studies, or in urban planning, policies, and programs. Each candidate should consult the department chairman prior to formal application. Applicants must also meet the entrance standards of the School of Graduate Studies. See *School of Graduate Studies and the Graduate Bulletin*.

**Courses****URBAN AND REGIONAL PLANNING (URP)****100. Introduction to Urban and Regional Planning (3)**

Prerequisite: junior standing. Theory and practice of urban and regional planning; role of planning in contemporary society; urban problems; introduction to concepts, literature, and history.

**GRADUATE COURSES**

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

**200. Seminar in Planning Theory (3)**

Prerequisite: permission of instructor. The origin and evolution of cities and the urban region; the urbanization process; historical and contemporary problems and goals; theories of urban and regional planning; evolution of the general plan and comprehensive planning.

**201A-B. Seminar in Planning Research (3-3)**

Prerequisite: permission of instructor. (A) Program formulation, information systems; methods of demographic, economic base and land use analysis; application to problems and projects. (B) Analytical techniques applied to transportation, housing, public facility and resource planning; applications to problems and projects.

**202. Seminar in Elements of Design (3)**

Prerequisite: permission of instructor. Theory of urban design and aesthetics, examination of underlying concepts and principles; case studies of historic and contemporary city designs and development of model forms.

**203A-B. Practicum in Physical Design (3-3)**

Prerequisite: URP 200 and 201A, or permission of instructor. Design of the physical environment; application of principles and theories in the preparation of limited scope and comprehensive plans; studies of spatial relationships; supervised laboratory and field projects.

**210. Seminar in Planning Process (3)**

Prerequisite: URP 200, 201A, 202 and 203A-B and permission of instructor. Goal and policy formulation; scheduling; methods of plan implementation; administration of laws and ordinances; role of politics and public relations in the decision-making process.

**215. Seminar in Land Development Controls (3)**

Prerequisite: graduate standing, URP 200, 202, 203A-B, 210 or permission of instructor. 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.

**220. Seminar: Planning for Housing (3)**

Prerequisite: graduate standing, URP 200, 201A-B, 202 or permission of instructor. Housing problems in America; the role of local, state and federal government and private enterprise; planning for adequate housing, carrying out policies and programs.

**225T. Seminar: Topics in Public Facilities and Services Planning (3; may be repeated in different areas)**

Prerequisite: graduate standing, URP 200, 201A-B, 210 or permission of instructor. Public facilities and services planning as a refinement of the comprehensive general plan.

**225.1. Transportation Systems**

Contemporary problems, policies, and models; planning techniques; case studies of alternative systems.

**225.3. Water Supply, Liquid and Solid Waste Management Systems**

Water and waste management planning problems, development of policies and plans, case-studies of alternative systems, implementation methods.

**225.5. Educational Facilities**

Planning methods and problems in locating and developing community educational facilities; relationship to the general plan; case studies.

**225.7. Open Space, Parks and Recreation Facilities**

Development of goals, policies and plans; relationship to the general plan; implementation methods; case studies.

**230. Seminar in Planning for the Region (3)**

Prerequisite: graduate standing, URP 200, 201A, or permission of instructor. Regional planning—approaches and methods; goal and policy implications of resource development, utilization and conservation; strategies for planning; case-studies.

**231. Practicum in Planning for the Region (3)**

Prerequisite: graduate standing, URP 200, 201A, 230, or permission of instructor. Application of principles and theories to the preparation of plans for regional development. Supervised individual field projects; laboratory preparation of individually supervised field work.

**280T. Professional Planning Practice (2-5; max total 13)**

Prerequisite: URP 200, 201A, 202, 203A-B, or permission of instructor. Professional practice in a public agency: preparation and implementation of comprehensive urban and regional plans; study of interrelationships and roles of governments, public agencies, and private enterprise.

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

See *Regulations and Procedures—Independent Study*.

**299. Planning Thesis (2-4; max total 4)**

Prerequisite: see *Master's Degrees—Thesis Requirement*. Preparation, completion, and submission of an acceptable thesis for the master's degree.



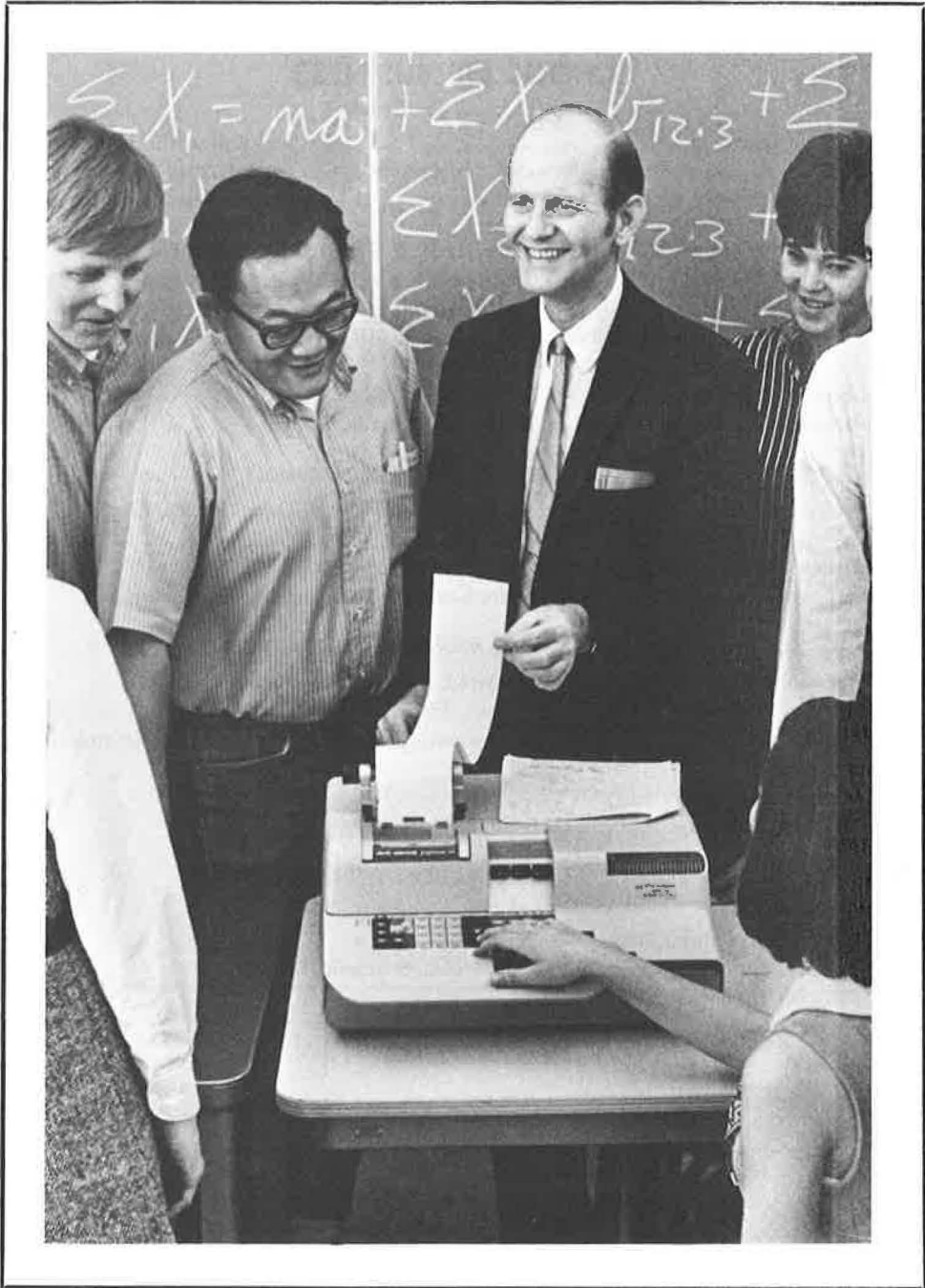


Photo by Don LeBaron

SCHOOL OF BUSINESS

# SCHOOL OF BUSINESS

C. E. Elias, Jr., Dean

Assistant Dean.....Robert E. Hampton  
Director, Bureau of Business Research and Service.....Marshall E. Minich  
Director, Institute of Industrial Relations.....Robert F. Pietrowski (fall)

## ACCOUNTING AND QUANTITATIVE STUDIES DEPARTMENT

Professors: Tidyman (Chairman), Bedrosian, Emerson, W. Parker, Wayne  
Associate Professors: Christensen, Costis, Mortimer, Titus  
Assistant Professors: Drummond, Feigo, Jensen, Miller, Posey, Stephens, Tahajian,  
F. Taylor, Weinel  
Lecturer: Niswonger  
Part-time: Chou, Crabtree, Daniel, deRemer, Estrada, Safer

## FINANCE AND INDUSTRY DEPARTMENT

Professors: Carr (Chairman), Austin, Brooks, Chawner, I. Davis, Dodds, Elias  
Associate Professors: Benson, Minich, O'Brien  
Assistant Professors: Blankenship, Figueras, Hagen, Hull, Lange, Nwoko  
Part-time: Andrews, Bartram, G. Gaab, Kutscher, Luppino, Massie, McKenna

## MANAGEMENT AND MARKETING DEPARTMENT

Professors: Cutler, Hampton, Jepsen, Mead, Reighard, Swanson  
Associate Professors: Kruger (Chairman), Piersol  
Assistant Professors: D. Anderson, Ashour, Barnouti, Brock, Cords, Reynolds,  
Singh, Trester  
Lecturer: Pietrowski  
Part-time: Berman, Coughran, D. Gaab, Kehlenbeck

## OFFICE ADMINISTRATION DEPARTMENT

Professor: Wight  
Associate Professors: Haggblade (Chairman), Agnew  
Assistant Professors: Coffey, Flam, MacMillan, Schramm, Sobolik  
Part-time: Luedeking, Pauls, Walker

The School of Business prepares students for professional careers in the business world and for teaching in secondary schools and junior colleges. The program is designed to provide a knowledge of the principles, procedures and practice of business management; an understanding of the role and responsibility of business in present day society; a foundation of basic background materials for participation in the American enterprise system; and the proficiency in technical skills and information required by our complex business society.

The school offers bachelor of science degree programs in the four specialized business areas of accounting, business administration, marketing, and office administration, and in agribusiness. Minors and special courses are offered to supplement work in other fields.

At the graduate level the master of business administration and master of science degrees are offered. The master of business administration degree is designed to prepare students for careers in management of business enterprises and other organizations, including public corporations, educational systems, and nonprofit institutions. The master of science degree provides specialized advanced work in business as distinguished from the broader program of management. Either degree may be used to deepen the competence of teachers of business subjects in secondary schools and junior colleges.

The school offers appropriate programs for students planning to work toward a teaching credential with a major in business. With the proper selection of courses, business administration is recognized as an academic major for credential purposes. Business teacher education students should consult the appropriate advisers in the Schools of Business and Education as early in their programs as possible. Students wishing to combine the credential with a master's degree should also consult the Assistant Dean of the School of Business and the Dean of the School of Graduate Studies.

The School of Business is a member of and is accredited by the American Association of Collegiate Schools of Business.

#### **BUREAU OF BUSINESS RESEARCH AND SERVICE**

The Bureau of Business Research and Service is organized within the School of Business to meet the research and service needs of the students and faculty of the School of Business and of the San Joaquin Valley business community. The Bureau compiles, interprets, and publishes statistics and studies on the local and regional economy, including *Fresno Facts and Trends*, which is published monthly in cooperation with the Fresno County and City Chamber of Commerce. It facilitates research in appropriate areas by the students and faculty; seeks cooperative arrangements with outside organizations for conducting specific research and service projects; and arranges and conducts executive development and other programs as part of the School's responsibility to provide continuing education in business.

#### **INSTITUTE OF INDUSTRIAL RELATIONS**

In cooperation with labor and management groups in the San Joaquin Valley, the Institute of Industrial Relations offers work both on campus and off campus. It also provides opportunities for students to participate in labor relations programs and to engage in research in the field.

#### **BUSINESS ADVISORY COUNCIL**

A group of 20 leading business executives of the San Joaquin Valley serves as an advisory body to the School of Business, helping to keep the program attuned to the changing needs of business. The Council meets periodically with the faculty and its members participate in a number of school functions. They are also available to faculty and students for consultation and as speakers. The Council sponsors the Executive-in-Residence Program, an Annual Awards Dinner for graduating students, and other events which benefit the School of Business.

### EXECUTIVE-IN-RESIDENCE

Under the sponsorship of the Business Advisory Council a nationally known business executive is brought to the campus for one or two weeks to participate both formally and informally in discussions, seminars, and class sessions with students and faculty.

### OTHER SPECIAL FEATURES

Opportunity is afforded students through classes and student organizations to become acquainted with business and industrial organizations in California and the San Joaquin Valley. Effort is made to adapt the program to meet the particular needs of the San Joaquin Valley. Business and industrial concerns in Fresno and vicinity cooperate to make possible practical application of the theory studied in the classroom through field trips and guest lecturers in classes. A special course, business lectures, brings to the campus each week a business executive who discusses some topic of current business and economic interest. The Beta Gamma Sigma Colloquium brings to the campus well-known top management men for discussions with selected senior and graduate students. The school sponsors professional organizations for both men and women. A convocation of all business students is held once each semester, bringing to the campus a well-known leader to discuss some scholarly aspect of business. This blending of the practical and theoretical is designed to insure vitality of instruction and breadth of vision.

In the belief that education for business leadership requires rigorous application of a variety of managerial techniques and principles, a special program for seniors has been instituted in which, for one semester, teams of students and instructors engage in an in-depth analysis of business problems and their solutions. Problem solving and field work are important elements of the semester, together with team instruction.

### HIGH SCHOOL PREPARATION

In addition to the usual college preparatory courses it is recommended that students include four years of English, mathematics at least through intermediate algebra, and one year each of typewriting and bookkeeping in their high school programs.

### JUNIOR COLLEGE PREPARATION

It is recommended that students taking their first two years of study at a community or junior college complete, if possible, general education requirements, including the appropriate required courses in behavioral sciences, communications, mathematics, and a year of principles of economics. The following business courses, which are required in the majors, are also recommended: principles of accounting, one semester of automation and data processing, one semester each of business law, business statistics, introduction to business, and some courses in office administration. Certain other courses offered in the two-year colleges, but taught at the upper division level at Fresno State College, may be accepted for equivalent course credit without reducing the number of upper division units required for the baccalaureate degree. With this exception, other transfer business courses taken in junior or community colleges are accepted as elective credit. Transfer students must see the School of Business evaluator prior to registering for business classes.

### BACHELOR OF SCIENCE DEGREE MAJORS

Majors are offered in the following fields for the bachelor of science degree. See general degree requirements under *Degrees and Credentials*.

The *accounting* major, consisting of 124 units, prepares for the California examination for Certified Public Accountant and for positions in governmental, public, internal, and general accounting.

The *agribusiness* major prepares students for positions in businesses allied with agriculture. These include farm credit and finance, agricultural purchasing, proc-

essing, and marketing, as well as management and office positions in agricultural industry. The degree requires 128 units including course work in both business and agriculture.

The *business administration* major, consisting of 124 units, prepares for positions in the fields of agricultural economics, banking and finance, business and industrial management, small business operation, and personnel administration.

The *marketing* major, consisting of 124 units, prepares for positions in agricultural marketing, advertising, marketing management, marketing research, retailing, and sales.

The *office administration* major, consisting of 124 units, prepares students for responsible positions as administrative assistants, office supervisors, and personal and executive secretaries.

**MAJOR REQUIREMENTS**

Each student desiring to major in a business field must select one of the majors listed below. The accounting major requires 42 upper division units, business administration and marketing majors each require 39 upper division units, and the office administration major requires 36 upper division units for the bachelor of science degree.

*Additional Requirements:* Majors must complete 12 lower and/or upper division units outside the school in addition to the 40-unit general education course requirement for a degree. Within these 52 units the following specific requirements of the school must be met: 3 units each of Econ 1A and 1B, English composition, Math 51 or 71 (71 and 72 for the accounting major) and speech; any combination totaling 9 units from the areas of cultural anthropology and/or psychology and/or sociology. In addition, Chem 2A and Phys 2A are required for the agribusiness major, business option, agricultural mechanics area, and Chem 2A-B and 8 are required for the animal and plant science areas.

**MAJORS FOR BACHELOR OF SCIENCE DEGREES**

(See *Additional Requirements* above)

	<i>Units</i>
<b>Accounting</b>	
Acct 1A-B, 120A-B, 132, 144, 162, 167A or B .....	24
Bus Ad 18, 62B, 65, 103, 110, 118, 133, 151, Mkt 100 .....	27
Elect from: Bus Ad 100 or Econ 100A, Bus Ad 124, 166 .....	6
	<hr/> 57
<b>Agribusiness (Business Option)</b>	
<i>Business Courses</i>	
Acct 1A-B, Bus Ad 18, 65, 100, 110, 115 or 118 or 119, 133, 151, Mkt 100.....	30
Elect from: Acct 128, 132, Bus Ad 124, 170, 171, 172, 177, 179, Mkt 101, 104, 130, 140, 155, 176.....	9
<i>Agriculture Courses</i>	
Elect one area.....	30-31
(a) <i>Agricultural Mechanics</i>	
AgM 15, 17, 18A-B, 25, 81, 91, 111, 111L, 115, 116, 121, 151A-B, 159	
(b) <i>Animal Science</i>	
Ag 112, AnSc 70, 110, 120, 170, PISc 30	
Elect 12 units from one category: Animal Husbandry—AnSc 10, 21, 31, 41; Dairy Science—AnSc 12, 62, 112, DI 53; Poultry Husbandry— AnSc 14, 104, 154, 164, 174	
(c) <i>Plant Science</i>	
Ag 112, PISc 30, 50, 121, 131, 171	
Elect 12 units from one category: Agronomy—PISc 13, 14, 23, 33 or 34 or 43; Horticulture—PISc 16, 56, 66, 116; Ornamental Horticul- ture—PISc 15, 20, 25, 35; Viticulture and Enology—Enol 15, PISc 17, 117, 127	

**Business Administration***Units*

Acct 1A-B, Bus Ad 18, 65, 110, 115 or 118 or 119, 133, 151, Mkt 100.....	27
Bus Ad 100, 120, 124.....	9
Elect from: Acct 120A-B, 128, 132 (If Acct 120A is elected, 120B must also be taken; see Accounting, below).....	3-6
Elect 12 units from one of the following areas of concentration, or 6 units from each of two areas. Where appropriate, 189T offerings may be used to complete concentrations. (If fewer than 12 units are listed in an area, all courses listed may be taken but sufficient courses to total 12 units must be selected from one other area).....	12
<i>Accounting:</i> Acct 120A-B (If Acct 120A-B is elected above, Acct 120B is allowed on this concentration), Acct 132 (if not elected above), Acct 140, 144, 162, 167A or 167B, 189T	
<i>Agricultural Economics:</i> Bus Ad 170, 171, 172, 177, 179	
<i>Business Economics:</i> Bus Ad 101, 103, 104, 105, 115, 161A-B, Mkt 104, Econ 103	
<i>Economics:</i> Elect 6 to 12 units of upper division economics courses	
<i>Finance:</i> Bus Ad 132, 134, 135, 139, Econ 131	
<i>Insurance:</i> Bus Ad 143, 144	
<i>Legal Environment of Business:</i> Bus Ad 115, 118, 119, 156, 184, Econ 174	
<i>Marketing:</i> Bus Ad 105, 137, Mkt 101, 104, 109, 117, 130, 140, 150, 155, 176	
<i>Office Administration:</i> OAd 103, 105, 107, 116, 189T	
<i>Personnel and Industrial Relations:</i> Bus Ad 152, 153, 154, 156, 159, Econ 150, Psych 181	
<i>Quantitative Techniques and Applications:</i> Bus Ad 62A, 62B, 103, 104, 161A-B, 162	
<i>Real Estate and Land Economics:</i> Bus Ad 180, 181, 183, 184, 186	
<i>Transportation:</i> Bus Ad 146, 147, 148, Econ 170	

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51**Marketing**

Acct 1A-B, Bus Ad 18, 65, 110, 115 or 118 or 119, 133, 151, Mkt 100.....	27
Mkt 101, 104, 109, 155.....	12
Elect from: Bus Ad 104, 146, 147, 172, Mkt 117, 130, 140, 142, 176, 189T.....	12

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51

Recommended electives: Anthro 102, 104, 115, Acct 128, 132, Bus Ad 100, 105, 120, 137, 161A-B, Econ 114, 170, 174, Geog 120, IA 161, 162, 166, Jour 106, 113, 145, 155, OAd 105, Psych 125T, 145, Soc 112, 145, 155, 157

**Office Administration**

Acct 1A-B, Bus Ad 18, 65, 110, 115 or 118 or 119, 133, 151, Mkt 100.....	27
Bus Ad 62A, OAd 4, 103, 105, 107.....	15
Elect from one of the following series:.....	9
(a) OAd 112, 114, 121	
(b) Acct 120A or 128 or 132; 6 units from Bus Ad 137, 143, 153, 162	
Elect additional upper division units.....	3

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54

**BUSINESS MINORS****Administration of the Performing Arts**

Provides opportunity to study the economic and business problems of the arts, to explore their future implications, and to supply the necessary tools for administrative decision making.

Acct 1A, Bus Ad 18, 65, 110, 128 .....	<i>Units</i>
Mkt 140, OAd 105 .....	15
	6
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**General Business**

Designed for students with majors in other fields who wish a minor in the broad basic areas of business. A minor appropriate for use on a credential program may be developed by students from nonbusiness areas in consultation with the school credential adviser.

Acct 1A .....	<i>Units</i>
Elect from: Bus Ad 18, 65, 110, 133, 151, Mkt 100 .....	3
Elect from not more than two fields (8 ud): Acct, Bus Ad, Mkt, OAd.....	6
	11
	<hr/> 20

**Office Administration**

Designed primarily to enable students, especially those in professional studies, the humanities, and other liberal arts fields, to acquire the basic business preparation necessary to enter their chosen fields.

OAd 4, 23 .....	<i>Units</i>
OAd 112, 114, 121 .....	7
	9
	<hr/> 16

**CREDENTIAL PROGRAM**

For information on the current credential program, consult departmental advisers and see the sections on *Public School Credentials* and the *School of Education*.

**MASTER OF BUSINESS ADMINISTRATION DEGREE**

The degree of master of business administration is designed to prepare students for careers in management of business enterprises and other organizations, including public corporations, educational systems, and nonprofit institutions; and in college teaching. It is awarded upon satisfactory completion of a two-year program of study or its equivalent, normally 54 units. The first year is designed for students holding the bachelor's degree in some field other than business. Students with a bachelor's degree in business from an accredited institution may enter directly into the second-year program, but must take at least 30 units in graduate standing to complete the degree. Students whose undergraduate work includes courses normally required in the first-year graduate program may have their total program reduced. For details, consult the Assistant Dean, School of Business. For detailed information about the graduate program, see the *Graduate Bulletin*, available in the Office of the Dean, School of Graduate Studies.

**MASTER OF SCIENCE DEGREE**

The master of science degree is available for students in specialized programs in business. For details, consult the Assistant Dean, School of Business. For detailed information about the graduate program, see the *Graduate Bulletin*, available in the Office of the Dean, School of Graduate Studies.

**GENERAL EDUCATION REQUIREMENT**

The following courses will satisfy general education requirements. *Area II:* Bus Ad 18, 110, 118, 137, 151, Mkt 100. *Area IV:* Bus Ad 62A, 62B, 65, OAd 105. *Area V:* Bus Ad 8, 10, 50, 143, 144, 162, 165, 180, Mkt 140, 150. (See *General Education—Courses*)

**Courses****ACCOUNTING****1A-B. Principles of Accounting (3-3)**

Not open to freshmen. (A) Accounting principles, procedures, systems, concepts; statement preparation and analysis. (B) Accounting for partnerships and corporations; cost accounting, accounting managerial controls, budgeting; decision making involving accounting data; funds flow statements.

**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.

**120A-B. Intermediate Accounting (3-3)**

Prerequisite: for 120A, Acct 1A-B; for 120B, Math 71 and 72 recommended. Preparation and analysis of balance sheet and income statements; partnership and corporation accounts; basic accounting theory; theory of current and fixed assets, investments, liabilities, funds, reserves, and accounting ethics.

**128. Managerial Accounting (3)**

Not open to students with credit in Acct 120A or 132; not applicable for credit toward major in accounting. Prerequisite: Acct 1A-B. Uses of accounting data as an aid in business management; nature of accounting data, uses and limitations; relationships to quantitative methods and computer technology.

**132. Cost Accounting (3)**

Prerequisite: Acct 1A-B; Math 71 and 72 recommended. Industrial cost accounting; general principles of job-order, process and standard cost systems; special problems; use of linear programming and computer.

**140. Controllership (3)**

Prerequisite: Acct 128 or 132. Controller functions in decision-making processes, internal control and auditing, accounting planning models, accounting control models, accounting as an information system in relation to quantitative methods and computer science.

**144. Federal Tax Accounting (3)**

Prerequisite: Acct 120A recommended. Tax laws of the United States as they affect business and accounting procedures; preparation of personal income tax returns; computation of estate, gift, and social security taxes.

**162. Auditing (3)**

Prerequisite: Acct 120A-B (120B may be taken concurrently). 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.

**167A. Advanced Accounting Problems (3) (Former Acct 167)**

Prerequisite: Acct 120A-B or 120A and senior standing. Advanced accounting theory and practice; problems in partnership formation and liquidation, branches, business combinations, parent and subsidiary consolidated statements, and foreign exchange.

**167B. Advanced Accounting Problems (3) (Former Acct 167)**

Prerequisite: Acct 120A-B or 120A and senior standing. Advanced accounting theory and practice; fund accounting, problems in accounting for receiverships, estates, trusts, governmental units, cooperatives, other nonprofit organizations; applications of actuarial science.

**189T. Topics in Accounting (1-3; max total 6 if no topic repeated)**

Prerequisite: 12 units of accounting. Accounting theory; contemporary developments in financial, managerial, or public accounting.

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

See *Regulations and Procedures—Independent Study*.

**199. Supervised Work Experience (1; max total 4)**

Open only to accounting majors. Prerequisite: permission of instructor. Supervised work experience in business and industry; analyzed in weekly class meeting.

**200 series.** Graduate courses are listed under *Business*.

**BUSINESS ADMINISTRATION****8. Law and Society (3)**

For nonbusiness students. Legal concepts common to all; rights, duties, and obligations in the law of contracts, sales and business torts; functioning of judicial institutions.

**10. Business as a Social Institution (3)**

Open only to lower division students. The nature of business society and the management of firms in that society; interrelationships among business, government, labor, and the public; case studies.

**18. Law and the Business Environment (3) (Former Bus Ad 118A)**

Prerequisite: sophomore standing. Sources, forms, and expressions of law; general law of contracts, agency, and employment; case studies.

**21. Business Mathematics (3)**

Fundamental operations and arithmetical processes; equations and use of formulas; application to specialized fields.

**50. Business Lectures (1; max total 2)**

Not open to freshmen. Points of view of business executives on current business developments; problems of various businesses presented by visiting lecturers.

**62A. Automation and Computer Language—FORTRAN (3)**

Not open to students with credit in Engr 70, Bus Ad 62 or 160. Introduction to computer systems; programming in FORTRAN; social impact of automation and computers. (2 lecture, 3 lab hours)

**62B. Automation and Computer Language—COBOL (3)**

Not open to students with credit in Bus Ad 61. Programming in COBOL; data representation in files; records on cards, disc, tape; peripheral (EAM) equipment. (2 lecture, 3 lab hours)

**65. Statistical Analysis (3)**

Not open to students with credit in Bus Ad 102. Prerequisite: Math 51 or 71 or equivalent; Econ 1A-B recommended. Measures of central tendency; distributions; variations; time series analysis; seasonal variations; index numbers; joint, marginal and conditional probabilities; the Bayes theorem; discrete probability distributions.

**100. Business Economics (3)**

Prerequisite: senior standing. Applications of economic principles in business management; measure of profit, analysis of demand, cost analysis; price, wage, and public policies; case studies.

**101. Ethics and the Economy (3)**

Examination of ethical systems from moral-sense ethics to existentialism; situation ethics; implications for the businessman; case studies.

**103. Advanced Statistical Analysis (3)**

Prerequisite: Bus Ad 65 or 102, Math 71 or equivalent. Continuous probability distributions; theory of sampling; sampling distributions; point and interval estimations; significance tests; Bayesian statistics; the Chi-square and analysis of variance tests; regression and correlation models.

**104. Business Forecasting (3)**

Prerequisite: Bus Ad 65 or 102. Analysis of forecasting techniques currently utilized to estimate cyclical and secular-trend changes in both firm and industry output; correlation techniques, models, composite indexes; time series, lead-lag, and flow-of-funds analyses.

**105. Economics of Consumption (3) (Former Mkt 105)**

Prerequisite: Econ 1A-B. Theory of consumer equilibrium; theory of value and price under various market structures; market performance and public policy.

**110. Principles of Management (3)**

Primarily for juniors. Art, science, and theory of management, universal functions of the manager; development of analytical and administrative skills; case studies.

**111. Contemporary American Business System (3) (Former X 141)**

Required of entering foreign students; open to foreign students only. Nature, scope, and structure of modern American business; internal and external environment of business enterprise and effects on conduct of business and society; familiarization with American teaching methods. (field trip)

**115. Government Regulation and Control of Business (3)**

Prerequisite: Bus Ad 18. Role of government in regulation and control of enterprises and markets; legal principles and practices; case studies; analysis.

**118. Law and Business Activities (3) (Former Bus Ad 118B)**

Prerequisite: Bus Ad 18. Law of bailments, shipments; sale of personal property; negotiable instruments; personal property security; case studies.

**119. Law of Business Organizations (3)**

Prerequisite: Bus Ad 18 or equivalent. Law of partnerships, corporations, estates, wills, administration of estates, bankruptcy, debtor and creditor relations, surety; case studies.

**120. Proseminar in Business Policy (3)**

Prerequisite: second semester seniors only. Undergraduate seminar with emphasis on integration of business and behavioral disciplines in presenting solutions to case studies.

**124. Production Management (3)**

Prerequisite: Bus Ad 65 or 102, 110. Production systems and problems; facility location and design; material handling; production planning and control; purchasing; inventory control; product development; quality control; methods analysis and job design; work measurement; quantitative methods in solution of production problems. Field trip required.

**128. Business Environment of the Fine Arts (3)**

Proseminar for seniors. Integration of principles of business management with production in the fine arts; case studies; analysis.

**129. Association Management (3)**

Prerequisite: Bus Ad 110. Application of management theory and methods to nonprofit civic and service organizations; development of objectives; planning; organization; staffing; leadership; evaluation; case studies.

**132. Financial Institutions (3)**

Prerequisite: Econ 1A-B, Acct 1A-B. Theory of the financial system; intermediation; gross and net money doctrines; financial institutions; sources of funds; case studies.

**133. Business Finance (3)**

Prerequisite: Econ 1A-B; Acct 1A-B. Theory of financing the business firm under conditions of uncertainty. The supply of and demand for capital; asset management and capital structure analysis, cost of capital and the capital budgeting decision.

**134. Investments (3)**

Prerequisite: Bus Ad 133. Analysis of security markets; financial instruments; stocks, bonds and mortgages; fundamental analysis; public and private regulation of security markets.

**135. Monetary Theory and the Banking System (3)**

Not open to students with credit in Econ 135. Prerequisite: Econ 1A-B. Monetary standards, the commercial banking system, central banking and the Federal Reserve system; monetary theory; the international monetary system.

**137. Credit Management (3)**

Mercantile and consumer credit; derivation of credit information from business data; credit agencies and credit bureaus; valuation; analysis of financial statements; technical and legal problems; collections.

**139. Financial Management (3)**

Prerequisite: Bus Ad 133. Analysis of financial policies; flow of funds under changing economic conditions; alternate methods of financing; capital budgeting; valuation; case studies.

**143. Risk and Insurance (3)**

Prerequisite: Bus Ad 8 or 18 (may be taken concurrently). Fundamental principles of insurance; descriptive, nontechnical study of property and casualty insurance and insurance carriers.

**144. Life Insurance (3)**

Prerequisite: Bus Ad 8 or 18 (may be taken concurrently). Nature and use, scientific basis, types and forms of life insurance; organization, management; public regulation and control.

**146. Transportation Management (3) (Former Bus Ad 107)**

Prerequisite: Econ 1A-B. Major modes for movement of goods and people; comparison of alternatives; carrier organization and management; rate structures; government regulation; effect of transportation on plant location, pricing, and markets; urban and national transportation problems.

**147. Physical Distribution Management (3) (Former Bus Ad 109)**

Prerequisite: Mkt 100. Systems approach to physical distribution; traffic management; plant and warehouse location; inventory control; information flows and order processing; supply scheduling; total cost planning; organizational patterns.

**148. Advanced Transportation Management (3)**

Prerequisite: Bus Ad 146, 147, or equivalent. New tools and techniques in carrier management, physical distribution management, carrier-shipper cooperation; trends in intracarrier and intercarrier competition, pricing and regulatory philosophy; case problems; computer simulation; individual and group problem solving.

**151. Personnel Management (3)**

Prerequisite: Bus Ad 110. Acquisition and utilization of human resources in organizations: recruitment; selection; performance appraisal; individual and group relationships; motivation; compensation; communications; labor relations; role of government.

**152. Labor Relations and Collective Bargaining (3)**

Prerequisite: Bus Ad 151 or Econ 150. Relations between employers and organized employee groups; organization, election, and certification procedures; techniques of collective bargaining; labor agreements; grievance handling; settlement of industrial disputes.

**153. Management Development (3)**

Prerequisite: Bus Ad 151. Knowledge and skills leading to effective interpersonal relations; understanding one's self as leader and others as individuals and members of working groups; leadership practice and decision making as individuals and small groups.

**154. Wage and Salary Administration (3)**

Prerequisite: Bus Ad 151. Economic forces and institutional factors in wage determination; wage programs; job evaluation; wage payment methods; wage supplements.

**156. Labor Law (3)**

Prerequisite: Econ 1A-B; Bus Ad 18, 110. State and federal labor statutes, workmen's compensation, social security; procedures and methods in handling labor problems; leading decisions of courts and other bodies in settling labor-management disputes.

**159. Field Work in Labor Relations (2; max total 4)**

Prerequisite: Bus Ad 152. Observation and research of selected collective bargaining activities; organizing; negotiations; grievance handling; arbitration and mediation; governmental procedures; participation in or attendance at labor relations conferences, legislative hearings, labor relations research; individual and group discussion.

**161A-B. Principles of Operations Research (3-3)**

Bus Ad 161A not open to students with credit in Bus Ad 161. (A) Prerequisite: Bus Ad 65 or 102. Systems approach to decision making; mathematical models and management; OR tools and techniques; modern decision theory. (B) Prerequisite: Bus Ad 103, 161A. Stochastic models, single station finite and infinite populations, probability distributions, queueing theory, simulation, Monte Carlo method, (PERT/CPM).

**162. Advanced Computer Programming (3)**

Prerequisite: Bus Ad 62A-B. Algorithmic and procedure-oriented languages; arrays, graphs, sorting, merging, symbol tables, searching, list processing, simulation techniques, discs and tape program segmentation and linkage. (2 lecture, 3 lab hours)

**165. Work Simplification (2)**

Offered in extension. Recommended prerequisite: work experience. Basic principles of motion economy and industrial engineering applied to office and shop; flow process charts, man and machine charts; social and personnel problems involved in work simplification procedures.

**166. Applied Computer Systems (3)**

Prerequisite: Acct 1A-B, 128 or 132, Bus Ad 62B (Bus Ad 62A and 161A-B desirable). Development and programming of management information systems; accounting subsystems for external reporting and for internal control; synthesis of operations research, accounting, and management control techniques. (3 lecture, 1 lab hour)

**168. Data Processing Management (3)**

Prerequisite: Acct 1A-B, 128 or 132, Bus Ad 62A-B (Bus Ad 124 desirable). Theories, cost and problems of operation of a computer center; standards; flow of work, scheduling, batching, spooling, multiprogramming, and multiprocessing techniques as methods of control and operation. (3 lecture, 1 lab hour)

**169. Machine Language Programming (3)**

Prerequisite: Bus Ad 62A-B. Machine assembly and symbolic languages; report generators; development of macro instructions. Requires development of programs in several languages. (2 lecture, 2 lab hours)

**170. Agricultural Production Economics (3)**

Prerequisite: Econ 1A-B. Study combining the resource structure and organization of agriculture as an industry with the application of economic principles in agricultural production.

**171. Rural Land Economics (3)**

Prerequisite: Econ 1A-B. Rural land use problems, policies and programs; land and water resource development; population influences.

**172. Marketing of Agricultural Products (3) (Former Mkt 102)**

Prerequisite: Econ 1A-B. Basic marketing functions, policies, and problems involved in handling agricultural products; economic concepts, business decisions, and practical applications.

**173. Computer Configurations (3)**

Prerequisite: Bus Ad 62A-B, 169, and a basic electronics course. In-depth study of selection and installation of hardware and software of various computers; feasibility studies, comparisons of self-managed versus service bureau operations; comparison of competitive systems; costs of reprogramming. (3 lecture, 1 lab hour)

**177. Agricultural Finance (3)**

Prerequisite: Econ 1A-B. Analysis of agricultural credit problems; acquisition and management of capital; financing the farm business enterprise.

**179. Agricultural Policy (3)**

Prerequisite: Econ 1A-B. Governmental policies and programs affecting the economic position of agriculture; evaluation of specific programs which influence agricultural production, marketing, prices, income, and financial aids.

**180. Urban Land Economics and Real Estate Principles (3)**

Prerequisite: Econ 1A-B. Processes and patterns of urban land utilization; urban land in a market process; competition among alternative uses; case studies.

**181. Valuation of Real Property (3)**

Prerequisite: Bus Ad 180. Theory of real property value; historical development; methods used in urban and rural property appraisals; special purpose appraisals. Field work required.

**183. Urban Real Estate Investment and Management (3)**

Prerequisite: Bus Ad 180. Acquisition, development, management, and sale of investment properties; guest lecturers; case studies.

**184. Real Estate Law (3)**

Prerequisite: Bus Ad 118 or equivalent. Legal aspects of acquisition and ownership of real estate; conveyances, mortgages, evidences of title; planning and zoning.

**186. Land Use in Urban Areas (2)**

Prerequisite: Bus Ad 180 or equivalent. Urban growth and development; relative land values in different uses; urban economics; investment decisions and analysis in land use; case studies.

**189T. Topics in Business Administration (1-3; max total 9 if no topic repeated)**

Prerequisite: senior standing or permission of instructor. Studies in business administration including agricultural economics, business economics, business law, computer applications, finance, industrial relations, insurance, management, operations research, personnel, production, quantitative studies, real estate and urban land economics, transportation.

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

See *Regulations and Procedures—Independent Study*.

**199. Supervised Work Experience (1; max total 4)**

Open only to business administration majors. Prerequisite: permission of instructor. Supervised work experience in business and industry; analyzed in weekly class meeting.

**200 series.** Graduate courses are listed under *Business*.

**MARKETING****10. Introduction to Marketing (3)**

Students with credit in Mkt 10 may not take Mkt 100 for credit. Distribution of goods and services from the producer to the consumer, with emphasis on the products of the San Joaquin Valley; marketing functions—buying, selling, transporting, storing, standardizing and grading, risking, and financing.

**100. Principles of Marketing (3)**

Primarily for juniors. Not open to students with credit in Mkt 10. Prerequisite: Econ 1A-B. Economic and social problems involved in moving goods and services from the producer to the consumer; major kinds of goods and services to be marketed; the institutions and agencies of distribution, and the series of functions involved.

**101. Consumer Behavior (3)**

Prerequisite: Mkt 100. Consumer motivation and behavior based on analysis of the findings of the behavioral sciences.

**104. Proseminar in Marketing Research (3) (Former Mkt 108)**

Prerequisite: Econ 1A-B; Mkt 100; Bus Ad 65 (may be taken concurrently). Fundamentals of market and marketing analysis, research procedure, methods of analysis; individual and group problem analysis and presentation of results.

**109. Marketing Problems (3) (Former Mkt 106)**

Prerequisite: Mkt 104, and senior standing. Distribution of goods and the rendering of services; case studies and current thought on problems of marketing, institutions and practices, from the standpoint of theory and technique.

**112. Product and Pricing Policies (3)**

Prerequisite: Mkt 100. Policies and practices involved in developing and maintaining products, services, and prices.

**115. Distribution Systems and Controls (3)**

Prerequisite: Mkt 100. Planning, development, and control of distribution systems and supporting facilities.

**117. Industrial Marketing (3)**

Prerequisite: Mkt 100. Analysis of marketing systems serving business, industry, government, and other institutions; industrial procurement practices; individual and group problem research, analysis and presentation of results.

**130. Retailing Management (3)**

Prerequisite: Mkt 100. Management operations and functions of retailing organizations; structure, personnel, impact on the community; buying, pricing and selling of merchandise.)

**140. Advertising Principles (3)**

Analytical approach to advertising as a broad social influence; functions in our culture; application as a marketing and communication force; individual and group problem analysis and presentation of results; individual field research.

**142. Advertising Problems (3)**

Prerequisite: Mkt 140. Not open to students with credit in Mkt 141 or 144. Advertising production and media problems; market research techniques; selection of campaign themes, copy preparation, art and layout. Field trips required.

**150. Principles and Psychology of Salesmanship (3)**

Offered in extension. Personal factors and techniques influencing other people; personal development, types of customers, mental and emotional appeals; mechanics and techniques of salesmanship.

**155. Sales Administration (3)**

Prerequisite: Mkt 100. Techniques of personal persuasion; behavioral science methods; selection, training, and supervision of sales staff.

**176. International Marketing (3)**

Prerequisite: Mkt 100. Examination and evaluation of business policies and practices of firms engaged in world trade; the marketing area; organization, product, channels of distribution, marketing research, demand creation, and other management problems.

**189T. Topics in Marketing (1-3; max total 6 if no topic repeated)**

Prerequisite: senior standing or permission of instructor. Topics in advertising, consumer behavior, distribution, industrial procurement, marketing research, retailing, wholesaling.

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

*See Regulations and Procedures—Independent Study.*

**199. Supervised Work Experience (1; max total 4)**

Open only to marketing majors. Prerequisite: permission of instructor. Supervised work experience in business and industry; analyzed in weekly class meeting.

**200 series.** Graduate courses are listed under *Business*.

**OFFICE ADMINISTRATION****\* 1. Basic Typing (2)**

Development of typewriting techniques and their applications to practical usage. Students with one or two semesters of high school typewriting should enroll in OAd 2. (5 lab hours)

**\* 2. Intermediate Typing (1)**

Prerequisite: OAd 1 or equivalent. Students with more than one year of high school typing should enroll in Off Ad 4. Review of keyboard; development of typewriting technique and its application to business situations. (3 lab hours)

**\* 4. Office Production (3)**

Prerequisite: OAd 1, or equivalent. Modern office production standards, planning, layout, execution; use of offset, mimeograph, and fluid duplicators; electric typewriters; advanced problems. (2 lecture, 2 lab hours)

**16. Machine Calculation (2)**

Basic operations in use of rotary and electronic calculators; programming of desk computer. (4 lab hours)

**† 23. Gregg Shorthand (4)**

Not open to freshmen. Prerequisite: adequate typing ability. Acquisition of proficiency in writing and transcribing shorthand notes.

**103. Principles of Office Management (3)**

Office management in business and industry; organization and control of office services; selection, training, and supervision of personnel; utilization of the computer and peripheral equipment in the office; improvement of office efficiency; office planning and layout; equipment and supplies.

**105. Business Communication (3)**

Prerequisite: 3 units of English composition and junior standing. Business communication theory; analysis of communication alternatives; effective business writing and dictating; case studies.

**107. Records Management (3)**

Records organization, management, and control; basic principles and procedures of information storage and retrieval; impact of data processing on the records area.

**† 112. Advanced Shorthand (3)**

Prerequisite: OAd 23 or one year high school Gregg or equivalent. Review of theory and development of proficiency in writing and transcribing shorthand notes; speed and endurance in writing and transcribing shorthand notes.

**114. Transcription (3)**

Prerequisite: OAd 112 or equivalent (may be taken concurrently). Transcription from shorthand and machine dictation; development of production standards for office transcription.

**116. Office Appliances for Business Teachers (3)**

Not open to students with credit in OAd 4. For students working toward a standard secondary credential in business and those wishing to teach business subjects in junior colleges. Operation of all modern business machines.

\* Not more than six units of credit in typing will be allowed toward any degree.

† Not more than ten units of credit in shorthand will be allowed toward any degree.

**121. Office Services and Procedures (3)**

Prerequisite: OAd 114 or equivalent. Duties and responsibilities of executive secretarial positions.

**189T. Topics in Office Administration (1-3; max total 6 if no topic repeated)**

Prerequisite: 3 units in office administration or permission of instructor. Seminar in special areas of office administration: communications, management, records management, secretarial science.

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

See *Regulations and Procedures—Independent Study*.

**199. Supervised Work Experience (1; max total 4)**

Open only to office administration majors. Prerequisite: permission of instructor. Supervised work experience in business and industry; analyzed in weekly class meeting.

**200 Series.** Graduate courses are listed under *Business*, below.

**GRADUATE COURSES**

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

**BUSINESS**

*100G Series (open only to graduate students whose undergraduate degrees are not in business)*

**101G. Fundamentals of Economics (3)**

Not open to students with credit in Econ 1A-B. The pricing process in commodity and factor markets; national income analysis, income determination, and rates of growth.

**105G. Essentials of Accounting (3)**

Not open to students with credit in Acct 1A-B. Basic accounting concepts; account construction; statement preparation, utilization, and interpretation; alternative bases of valuation in measurement of income and financial condition.

**108G. Quantitative Methods in Business (3)**

Not open to students with credit in Bus Ad 65, 102, 103. Statistical analysis in business: tests of hypotheses, time series, correlation analyses, index numbers, estimation models and Bayesian statistics in business decision making.

**115G. Legal Environment of Business (3)**

Not open to students with credit in Bus Ad 115, 118, 119. Basic legal concepts; nature of the legal system, law of contracts, sales, negotiable instruments, agencies, partnerships, corporations.

**121G. Organization and Management Theory (3)**

Not open to students with credit in Bus Ad 110. Principles of management applied to business organization, structure of plans and decisions, business objectives, policies, functions, executive leadership and control; current management concepts.

**125G. Production Analysis (3)**

Not open to students with credit in Bus Ad 124 or 165. Prerequisite: Bus 108G, 121 G or concurrently, or equivalent. Production theory and methods; production planning and control; methods analysis; work measurements; materials handling and control; plant location and layout; application of statistical techniques and electronic data processing; relationships with other functional areas of management.

**130G. Principles of Finance (3)**

Not open to students with credit in Bus Ad 133. Financial management problems and policies; role of commercial banks, institutional, and other investors; case studies.

**145G. Marketing Organization and Policies (3)**

Not open to students with credit in Mktg 100. Environmental factors for marketing; elements of marketing and marketing systems; marketing activities and strategies of the firm; evaluating marketing programs and systems.

**150G. Manpower Management (3)**

Not open to students with credit in Bus Ad 151. Principles and methods for the acquisition and utilization of human resources in organizations; staffing; compensation and motivation; communications; employee evaluation; labor relations.

**164G. Computers and Programming (3)**

Not open to students with credit in Bus Ad 61, 62, 62A, or 62B. Basic programming languages and data processing techniques including COBOL and FORTRAN.

*200 Series (open only to graduate students in classified standing except that credential candidates may take Bus 280, 281, 282 in unclassified standing.)*

**200. Seminar in Business Research (3)**

Methods of research; applications to business problems.

**201. Seminar in Managerial Economics (3)**

Prerequisite: Bus 101G, 108G, or equivalents. Economic analysis of managerial problems; theory of the firm.

**203. Seminar in Office Management (3)**

Managerial control of office functions, services, and personnel; case studies.

**210T. Seminar in Business Topics (3; max total 9 if no topic repeated)**

Prerequisite: 9 units of 200 courses. Theory and developments in accounting, administration and organization, business education, communications, consumer economics, finance, industrial and regional studies, international business, law, management, marketing, personnel and industrial relations, quantitative studies, real estate and urban economics, records management, resource economics, risk and insurance, or transportation.

**215. Seminar in Public Policy and Enterprise (3)**

Prerequisite: Bus 115G or equivalent. Development of legal controls of business; constitutional problems; legal aspects of business organization; anti-trust laws and competition, securities regulation, consumer protection.

**220. Seminar in Business Policy (3)**

Prerequisite: Bus 121G or equivalent. Seminar in advanced problems in business policy; evaluation, determination, execution, administration, and control; policy objectives in integration of product, marketing, manufacturing, finance, and organization; analysis of administrative policy-making bodies and processes.

**223. Seminar in Organizational Behavior (3)**

Prerequisite: Bus 150G or equivalent. Problems of the individual and groups brought about by modern industrial organizations and techniques; motivations for work and cooperation between executives and different economic and social groups; analysis of effect of company policy on employee and public relations.

**225. Seminar in Production Management (3)**

Prerequisite: Bus 125G or equivalent. Seminar in current production management theories and problems; critical analysis and review of present practices and theories.

**232. Seminar in Money and Capital Markets (3)**

Prerequisite: Bus 130G or equivalent. Analysis of money and capital markets, their organization and role in economic activity.

**233. Seminar in Business Finance (3)**

Prerequisite: Bus 130G or equivalent. Critical review of theory and practice; supply and demand factors; sources and uses of business funds; management of financial assets; cost of capital; theory of financial structures; promotion; liquidation of firms; current trends; changing institutional environment.

**240. Seminar in Marketing (3)**

Prerequisite: Bus 145G or equivalent. Critical review of the literature of marketing, special reports and research dealing with marketing institutions and organization, and marketing functions.

**242. Seminar in Marketing Management (3)**

Prerequisite: Bus 145G or equivalent. Seminar in the analysis of basic problems of marketing management and alternative methods of approaching these problems; case studies; use of statistics, economics, psychology, and other tools in directing marketing activities; relation of marketing to other areas of business administration.

**250. Seminar in Personnel Management (3)**

Prerequisite: Bus 150G or equivalent. Trends and problems in management-employee relationships; administrative action in selection, motivation, and development of personnel; relation of personnel administration to other areas of management; concentrated study by each student of a special phase of personnel work.

**252. Seminar in Labor Relations (3)**

Prerequisite: Bus 150G or equivalent. Current trends in labor relations theory and practice; labor relations systems; contract negotiations; dispute prevention and settlement; role of government; applications of behavioral sciences; individual research.

**260. Seminar in Accounting Theory (3)**

Prerequisite: Bus 261 or equivalent. Seminar in development of accounting theory; current accounting theory; areas of accounting theory where professional differences exist; AICPA research studies, governmental regulations, recent literature, and accounting classics.

**261. Seminar in Accounting Control and Reporting (3)**

Not open to students with credit in Acct 120A-B, 132. Prerequisite: Bus 105G or equivalent. Procedures for financial reporting, systems and internal control, interpretation of administrative reports; accounting control—statistical inference, budgetary planning, standard costs, differential cost analysis, profit volume relationships, data processing.

**263. Seminar in Cost Accounting (3)**

Prerequisite: Bus 261 or equivalent. Advanced study of process and standard costs; overhead costs; budgeting; use of cost accounting data in economic analysis and managerial control; problems illustrating course material.

**264. Seminar in Quantitative Analysis (3)**

Prerequisite: Bus 108G, 125G, or equivalent. Quantitative analysis of business problems; development of models, simulation and matrices; applications.

**265. Seminar in Business Systems (3)**

Prerequisite: Bus Ad 62B or Bus 164G, Bus Ad 162, or equivalent. Development and programming of management information systems for various types and sizes of businesses, including synthesis of operations research technique and accounting and management control technique. External and internal practices for control and reporting.

**266. Data Processing Management and Computer Selection (3)**

Prerequisite: Bus Ad 62A-B, Acct 1A-B and 128, or equivalent. Theories, costs, and problems of operating computer centers: standards, flow of work, scheduling, batching, spooling, multiprogramming techniques. In-depth study of hardware and software of various computers; feasibility studies; comparisons of competitive systems; costs of reprogramming.

**271. International Business (3)**

Prerequisite: Bus 101G or equivalent. Principles of trade and finance; comparative business systems and national policies; organization and management of business enterprises under different national systems; cultural and environmental factors influencing business operations in various countries.

**272. Seminar in International Finance (3)**

Prerequisite: Bus 271 or equivalent. Theory and practice in international money and capital markets; foreign exchange; balance of payments; problems of adjustment; comparative financial systems.

**275. Seminar in International Business (3) (Former Bus 270)**

Prerequisite: Bus 271 or equivalent. Examination of the economic, social, and political environment for operation of the multinational enterprise; consideration of the policies, practices and problems of the firm in the international setting. Text, case, and literature analysis.

**280. Seminar in Business Education (3)**

Study of advanced problems in business education.

**281. Instructional Procedures in Business Education (3)**

Objectives, procedures, materials, and evaluation in the teaching of business subjects at the secondary school level.

**282. Seminar in Business Curricula (3)**

Seminar in objectives, principles, and curricula of business in secondary schools, including junior colleges; evaluation and trends of current programs.

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

See *Regulations and Procedures—Independent Study*.

**291. Management Project (3)**

Prerequisite: Bus 200, 220, 223, 261, or permission of instructor. Independent field analysis of an operating business firm or one of its principal functional areas. The managerial audit may be submitted to the faculty in lieu of a thesis.

**292. Readings in Business (2-3; max total 6)**

Prerequisite: Bus 200, 220, 223, 261, or permission of instructor. Individually directed readings in a field of special concern to the student's graduate program; appropriate reports and evaluation required. Individual conferences; no formal class meetings.

**299. Thesis (2-4; max total 4)**

Prerequisite: Bus 200, 220, 223, 261, or permission of instructor. See *Master's Degrees—Thesis Requirement*. Preparation, completion, and submission of an acceptable thesis for the master's degree. Elective for master of business administration and master of science.

**IN-SERVICE COURSES**

*Note: In-service courses (300 series) are not intended for use on degrees except by special, prior approval. See Extension and Summer Session Bulletins for course descriptions.*

**367. CPA Review (4)****380T. Topics in Business (2; may be repeated if no topic repeated)****381. Instructional Procedures in Vocational Business Education (2-3)****385. Bridging the Gap (2-4)****389. Workshop in Business Education (1-6; max total 6)****398. Business Internship (1-6; max total 6)**





*Photo by S. Louise Stull*

SCHOOL OF EDUCATION

# SCHOOL OF EDUCATION

Richard K. Sparks, Dean

<i>Department</i>	<i>Chairman</i>
Elementary Education .....	Jerome E. Leavitt
Laboratory School .....	David Haimbach
Secondary Education .....	Edwin J. Swineford
Advanced Studies .....	Orley W. Wilcox
Coordinator, Graduate Programs .....	Peter G. Fast
Coordinator, Teacher Education (Secondary) .....	M. Marty Santigian
Coordinator, Elementary Student Teaching .....	Thelma M. Rea

The School of Education utilizes the resources of the college in the preparation of teachers, administrative officers, and special service personnel for elementary and secondary schools. Teacher education curricula are developed on the assumption that a teacher or administrative officer needs a broad and liberal education, and should be master of the subject or subjects he teaches. This training, which is supplemented by professional education, provides a knowledge of pupils, familiarity with teaching problems, and meaning to the subjects of instruction.

Under the terms of the Licensing of Certificated Personnel Law of 1961, as amended by the 1963 and 1965 sessions of the Legislature, the School of Education provides professional preparation in elementary teaching, secondary teaching, junior college teaching, pupil personnel services, special education, and administration and supervision.

Based on the Teacher Education Internship Act of 1967, the School of Education at present has district internship agreements with Fresno, Kings, Madera, and Tulare Counties. Individuals interested in an appointment should consult the District Internship Coordinator in the County Schools offices indicated above. All applicants for appointment as district intern must meet the Fresno State College admission requirements and the requirements of the School of Education.

The School of Education is organized on a departmental basis and each department offers its appropriate state credential programs, its master of arts degree programs, and its internship programs. Operation Fair Chance, approved by the California State Board of Education is an additional intership program for the training of teachers of culturally disadvantaged children. Bachelor's degree majors in education are also offered on a limited basis. Supporting services included in the organizational structure of the school are the College Laboratory School, Curriculum Library, Children's Library, Instructional Materials Center, Reading Center, Teacher Education Office, and School Graduate Office.

## STANDARD CREDENTIAL REQUIREMENTS

Since September 14, 1966, California school credentials have been issued only in compliance with the Licensing of Certificated Personnel Law of 1961 and the regulations of the State Board of Education based on that law.

Under the terms of the revised credential structure, five standard credentials authorizing public school service are established. The following is a partial list of the specializations under the standard credentials for which course work is available at Fresno State College. For a complete list see the *California Administrative Code, Title 5, Sections 6100-6590*. Information regarding specific requirements for the credentials listed can be secured from the department indicated in the *School of Education*. See also section on *Degrees and Credentials*.

**The Standard Teaching Credential**

With a Specialization in Elementary Teaching (See *Elementary Education Department*)

With a Specialization in Secondary Teaching (See *Secondary Education Department*)

With a Specialization in Junior College Teaching (See *Secondary Education Department*)

Specialized Preparation Which May Be Substituted for a Minor

Teacher of Exceptional Children (See *Advanced Studies Department*)

Area of Mentally Retarded

Area of Speech and Hearing Handicapped

Restricted Credentials

Teacher of Educable Mentally Retarded Children

Teacher of Deaf and Severely Hard of Hearing Children

Speech and Hearing Specialist

**The Standard Designated Subjects Teaching Credential**

In Public Safety and Accident Prevention, including Driver Education and Driver Training Authorization (See *Health Science Department, in the School of Professional Studies*)

**The Standard Designated Services Credential**

With a Specialization in Pupil Personnel Services (See *Advanced Studies Department*)

Child Welfare and Attendance

Psychometry and Psychology

Pupil Counseling

School Social Work

With a Specialization in Health (See *Nursing Department, in the School of Professional Studies*)

Service as a Nurse

**The Standard Supervision Credential**

(See *Advanced Studies Department*)

**The Standard Administration Credential**

(See *Advanced Studies Department*)

**MAJOR AND MINOR REQUIREMENTS FOR STANDARD TEACHING CREDENTIALS**

Candidates for the standard teaching credential with specialization in elementary or secondary teaching must complete a major and an optional minor in accordance with the outlines appearing below. For specific requirements in any area students should consult the school or department in which the work is offered.

**Elementary Specialization (Minimum Requirements)****Majors**

- A. *Academic subject commonly taught in public elementary schools*  
 (a) *Single subject*: 24 semester hours at upper division or graduate level, except for 28 in biological sciences; or  
 (b) *Interdepartmental*: 24 semester hours at upper division or graduate level; or  
 (c) *Diversified*: 88 semester hours.
- B. *Nonacademic single subject commonly taught in public elementary schools*  
 28 semester hours at upper division or graduate level.
- C. *Academic subject not commonly taught in public elementary schools*  
 24 semester hours at upper division or graduate level.
- D. *Nonacademic subject not commonly taught in public elementary schools*  
 24 semester hours at upper division or graduate level.

**Minors**

- No minor is required; one or more of the following may be taken if desired: 20 semester hours in a single academic or nonacademic subject; or 20 semester hours in an academic interdepartmental group, including 12 in one subject; or  
 An area of specialized preparation.
- 20 semester hours in a single academic subject including 12 at upper division or graduate level; or  
 20 semester hours in an academic interdepartmental group including 12 in one subject at the upper division or graduate level.
- Two minors of 12 semester hours each, one academic. The other may be nonacademic or in an area of specialized preparation.
- Two minors of 12 semester hours each, both academic.

**Secondary Specialization (Minimum Requirements)****Majors**

- A. *Academic subject commonly taught in public high schools*
- B. *Nonacademic subject commonly taught in public high schools*
- C. *Academic subject not commonly taught in public high schools*

**Minors**

- No minor is required; one or more of the following may be taken if desired: 20 semester hours in a single academic or nonacademic subject; or 20 semester hours in an academic interdepartmental group, including 12 in one subject; or  
 An area of specialized preparation.
- 20 semester hours in a single academic subject, including 12 at upper division or graduate level; or  
 20 semester hours in an academic interdepartmental group, including 12 in one subject, of which 6 are upper division or graduate.
- Two minors of 20 semester hours each, one academic. The other may be nonacademic or in an area of specialized preparation.

**Secondary Specialization (Minimum Requirements)****Majors**

D. *Nonacademic subject not commonly taught in public high schools*

**Minors**

Two minors of 20 semester hours, both academic. (20 semester hours in a single academic subject, or 20 in an interdepartmental group with 12 in one subject constitute a minor.)

At the present time the *California Education Code, Section 13188*, defines academic subject matter areas as the natural sciences, the social sciences, humanities, mathematics, and fine arts. At Fresno State College the majors so defined include general agriculture and business. To determine whether a major is in a subject area commonly taught in the public schools, consult the Elementary or Secondary Education Department chairman. For requirements in specialized preparation, see the *Advanced Studies Department*.

**EDUCATION MAJOR**

The major in education consisting of 24 semester units of upper division work may be used as a basis for the bachelor's degree. Students selecting education as a degree major must also present a subject matter major in order to qualify for a teaching credential. Students desiring to major in education should consult the Dean of the School of Education.

**APPLICATION FOR ADMISSION TO CREDENTIAL PROGRAMS**

Students planning to undertake a program of studies leading to a credential must file with the School of Education, through its Teacher Education Office, an application for admission to the credential program. This should normally be done during the first semester of the junior year. Candidates for credentials entering the college as juniors, seniors, or graduate students should make application for admission to the credential program immediately following admission to the college.

Under normal circumstances students will not be permitted to enroll in any of the professional course work leading to any credential until official admission to the credential program has been granted.

Acceptance for a credential program does not guarantee the granting of the credential, nor does acceptance for one credential or specialization imply acceptance for another credential or specialization. Final admission to a credential program must follow admission to the college and to graduate standing, where appropriate.

The following minimum requirements must be met for acceptance in the programs of professional preparation. Additional criteria may be used for acceptance to programs leading to professional master of arts degrees.

1. **Academic Aptitude.** Students who fall below the percentile rank of 25 on the college aptitude and reading tests must demonstrate compensating strength in other areas listed in the following sections.
2. **Scholarship.** Candidates for credentials with elementary or secondary specialization must present a minimum grade-point average of 2.50 in the total college program. A grade-point average of less than 2.0 must be maintained in all work taken at Fresno State College.
3. **Professional Aptitude.** Ability to work with pupils, parents, and school officials must be demonstrated in field work assignments.
4. **Physical Fitness.** All candidates for public school credentials must secure a special medical clearance form by the staff of the college Student Health Service. Each candidate must make an appointment with the college physician for the completion of this clearance before admission to a credential program is approved.

5. **Language Usage.** Habitual use of clear, correct, and appropriate language, both written and oral, is required, including demonstrated competency in composition. This requirement is met by securing clearance statements in writing from both the English and Speech Arts Departments. The School of Education Admissions Committee reviews cases in which questions arise relative to this requirement.
6. **Personality and Character.** Personal qualifications required for professional service are expected. These include appearance, dress, poise, force, vitality, social attitudes, cooperativeness, temperament, emotional stability, integrity, and such personal habits and manners as are not offensive to pupils, co-workers, and school patrons.
7. **Many-sided Interests.** Participation in community enterprises, discussions of social problems, reading, music, conversation, social contacts, clubs, hobbies, and travel are considered important.
8. **General Fitness for Teaching.** Weakness in the foregoing items, or evidence of unfavorable traits of character or personality, will disqualify a student from candidacy for a credential program. Each candidate must secure approval from the School of Education Admissions Committee to continue through any credential program; approval is granted upon satisfactory completion of all requirements listed above.

The School of Education Admissions Committee is responsible for admitting applicants to credential programs. Students who do not meet all of the criteria for admission to a credential program may submit written petitions to the chairman of the Admissions Committee requesting review of their applications.

#### **ADMISSION TO MASTERS DEGREE PROGRAMS**

Additional requirements must be met by students seeking admission to the professional master's degree programs. For further information regarding these requirements, the School of Education Graduate Office, and the department offering the desired degree should be consulted. The School of Education Graduate Office provides a record center for all students who are working toward the master's degree in the School of Education. It also maintains liaison between the School of Graduate Studies and departments in the School of Education offering master's degree programs. See *School of Graduate Studies*.

## ELEMENTARY EDUCATION DEPARTMENT

Professors: J. E. Leavitt (Chairman), Dandoy, Haimbach, Leslie, J. E. Martin, T. Rea, Rippey, L. Roth, Sloan, C. Smith

Associate Professors: G. Avery, Henfling, Huggins, Lundberg, Stutzman

Assistant Professors: Bradley, Brenner, N. Cochran, Ham, Lark, Nicklett, Rietman, Rowe, Shaeffer, Shore, Simpson, Stull

Part-time: A. Brown, I. Cochran, Cooney, Garver, Melton, Robinson, Toddhunter, Wienke

**Laboratory School**

Principal: Haimbach

Teachers (grades): Bakkegard (Music); Berry, Bloesser, Bowers (K-1); Cady, Code, (Intermediate), Firmery (Upper Primary), Johnson (Upper Primary), Meeker (Intermediate)

Librarian: Berry

Nurse: Emler

The Elementary Education Department provides professional preparation for the standard teaching credential with specialization in elementary teaching. The department also offers a program leading to the master of arts degree in education with concentration in elementary teaching.

**COOPERATING PUBLIC SCHOOL DISTRICTS**

The professional preparation program of the Elementary Education Department utilizes the services and facilities of a number of cooperating public school districts in the area for assignments in observation and student teaching. Public school teachers, administrators, consultants, and other personnel provide excellent opportunities for students to gain practical experience in the field.

The Clovis City Unified and Fresno City Unified school districts are currently cooperating in the college program of elementary education.

**COLLEGE LABORATORY SCHOOL**

The College Laboratory School is of special interest to students preparing for teaching and related fields. The school's philosophy, facilities, and program reflect the interest of the people of California in the education of their children. The school functions to provide demonstration, observation, participation, leadership, and some experimentation and research through its facilities and personnel to all persons interested in professional preparation and improvement. Group demonstrations and individual study may be arranged in connection with courses taught on the college campus and as a service to educational units in the service area of Fresno State College. The school consists of a kindergarten and six elementary grades housed in a modern elementary school surrounded by five acres of fenced campus. A Library and Educational Materials Center with more than 10,000 books and a wide variety of instructional materials is available within the school for use by college students as well as the pupils enrolled in the school. It is maintained as an inquiry center and has received a federal grant for purchase of books and audio-visual materials to make it an exemplary center. A curriculum library serving the School of Education is also housed in the Laboratory School. Selected teachers guide the program of studies for pupils in each grade. The curriculum of the elementary school implements the accepted *Framework for Public Education in California*. The school provides a laboratory in which students, in-service teachers, administrators, and parents may develop their understanding of children and of educational concepts and methods by observing and working with children. Demonstrations, observation, and individual study opportunities may be used in connection with such classes as psychology, growth and development, curriculum, arts, vocal and instrumental music, physical education, home economics, and family life education.

## THE STANDARD TEACHING CREDENTIAL WITH SPECIALIZATION IN ELEMENTARY TEACHING

Candidates for the Standard Teaching Credential with Specialization in Elementary Teaching must complete four years of college or university education with a baccalaureate degree. In addition, a fifth year of college or university postgraduate education consisting of upper division or graduate courses must be completed. The credential can be issued on the basis of a partial fulfillment of requirements upon the completion of the bachelor of arts degree and the required student teaching. For additional information concerning this aspect of the new credential law, consult the department chairman. Requirements for admission to the credential program are listed under *School of Education*. Completion of the college credential program entitles a candidate to the Standard Teaching Credential with appropriate endorsements, issued by the State Department of Education.

Candidates for the Standard Teaching Credential with Specialization in Elementary Teaching must complete the following requirements:

### General Education

The general education requirements for credential candidates differ from those required for the degree. Forty-five semester units of course work are required including special requirements in English and mathematics. Course work in five of the following areas must be included:

1. Humanities, excluding foreign language for the purpose of this requirement but including a year of English. (See English requirement below.)
2. Social sciences (Including study of United States Constitution).
3. Natural sciences.
4. Mathematics, requiring as a prerequisite an understanding and knowledge of geometry.
5. Fine arts.
6. Foreign language.

**Special English Requirement:** A year of English and a course in advanced composition are required. (See 1 above.) Students may meet the requirement by completing English 1, 20, and 134.

**Special Mathematics Requirement:** A course of at least three units in the arithmetic and algebra of the real number system is required. (See 4 above.) This requirement may be satisfied by (a) Mathematics 41 or 141, (b) a similar course with prerequisite of high school algebra and geometry, or (c) a college level course in calculus.

### Majors

The candidate for the Standard Teaching Credential with Specialization in Elementary Teaching should select a major from a subject matter area commonly taught in the public elementary schools. Majors classified as nonacademic, such as health science, home economics, industrial arts, and physical education, may be used as majors for the elementary credential, but the credential authorizes the holder to teach only in his major and minor fields. Majors in subject matter areas not commonly taught in the public elementary schools may be used if accompanied by two minors in subject matter areas commonly taught in the public elementary schools. Students considering nonacademic majors or majors not commonly taught in the public elementary schools should consult the chairman of the Elementary Education Department. (See *School of Education—Major and Minor Requirements for Standard Teaching Credentials*)

**Major in Child Development**

An academic major leading to the Bachelor of Science Degree in Child Development is offered by the Elementary Education Department. This major may be used as a basis for the standard teaching credential with a specialization in elementary teaching. For further information, consult the Chairman of the Elementary Education Department.

**Minors**

A minor is not required of a candidate for the Standard Teaching Credential with Specialization in Elementary Teaching if he plans to teach in a self-contained classroom. A candidate with a nonacademic major must complete an academic minor. For details consult the chairman of the Elementary Education Department. (See *School of Education—Major and Minor Requirements for Standard Teaching Credentials*)

**Professional Preparation**

The minimum professional requirements necessary to qualify for the Standard Teaching Credential with Specialization in Elementary Teaching include 24-25 units. The required instruction in reading methods enacted by the 1968 Legislature is contained in the requirements listed below.

	<i>Units</i>
E Ed 105, 107A-B, 120.2, 132A-B .....	22
Elect one course from: E Ed 100, S Ed 184, 186 .....	2-3
	24-25

Students are not permitted to enroll in any of the courses listed under professional preparation until official admission to the credential program has been granted.

**Internship**

An internship which permits the student to teach on a half-time salaried basis while he is completing the 30 units of postgraduate work required for the credential may be arranged for superior students in the elementary teaching credential program. Plans for entering the program should be made at the beginning of the senior year. Consult the chairman of the Elementary Education Department for details.

**MASTER OF ARTS DEGREE**

The Elementary Education Department offers a program leading to the master of arts degree in education with a concentration in elementary teaching. Emphasis is on developing highly qualified professional personnel for the elementary schools. Prospective candidates can usually plan to coordinate many of the requirements for the master of arts degree in education with the fifth year which must be completed by every candidate for a standard teaching credential. A student may enter the master's degree program following completion of fifteen semester units of acceptable work in professional education or following completion of the minimum requirements for a standard teaching credential, provided all criteria for classified graduate standing have been met. Students must also comply with policies and procedures established by the School of Education Graduate Committee.

For specific requirements consult the department chairman; for general requirements, see *School of Graduate Studies*. For detailed information about the graduate program at Fresno State College, see the *Graduate Bulletin*, available in the Office of the Dean, School of Graduate Studies.

**Courses****ELEMENTARY EDUCATION (E Ed)****50. Preprofessional Orientation (2; max total 4)**

Orientation to problems and practices in professional education via working assignments in the public schools.

**100. School and Society (3)**

Prerequisite: admission to credential program (concurrent enrollment in E Ed 131.2 allowed). Function of education in American culture; role of the school and teacher; impact of social conflict on the school's function; relationship between school and community; designated field experiences.

**105. Development and Learning (3)**

Prerequisite: admission to credential program (concurrent enrollment in E Ed 131.3 allowed). Facts, ideas, and principles fundamental to an understanding of educational procedures in teaching and learning, and to the growth and development of children.

**107A. Proseminar in Curriculum and Instructional Materials (3)**

Prerequisite: E Ed 105, 132A (concurrently); admission to credential program. Current conceptions of reading, spelling, written and oral communications; their roles in the elementary curriculum.

**107B. Proseminar in Curriculum and Instructional Materials (4)**

Prerequisite: E Ed 107A, 132B (concurrently); admission to credential program. Current conceptions of history, geography, civics and the sciences; their roles in the elementary curriculum.

**120T. Problems in Elementary Education (3; repeatable with different topics)**

Prerequisite: admission to credential program; E Ed 105. Study in depth of various areas in elementary education.

**120.1. Social Studies****120.2. Reading****120.3. Culturally Disadvantaged****120.4. Kindergarten****120.5. Children's Literature****120.6. Childhood Education****120.7. Mathematics****120.8. Nursery School****120.9. Outdoor Education****120.10. Language Arts****120.11. Classroom Organization and Management****120.12. Curriculum****120.13. Fine Arts****120.15. Tutorial Reading****120.18. Storytelling****120.19. Reading Disability****120.20. Material Development****122F. Field Work in Outdoor Education (1-2; max total 2)**

Prerequisite: E Ed 105 or S Ed 152; permission of instructor. Practice at camp with responsibilities of counseling, camp leadership, curriculum planning and evaluation; and utilization of resource people from several disciplines.

**126. Directed Observation for Teachers (1-4; max total 6)**

Does not duplicate E Ed 131. For teachers in service, primarily provisionally credentialed teachers. Directed observation to accompany theory classes.

**131T. Observation and Participation (1; max total 3)**

Prerequisite: permission of instructor. Directed observation and participation to prepare for teaching, develop traits and qualities which make for success in teaching, and provide basic experiences for interpreting theories developed in education courses.

**131.1. Tutorial Field Experiences****131.2. Psychological Foundations Observations****131.3. Sociological Foundations Observations****131.4. Field Work in Outdoor Education****132A. Student Teaching in Elementary Schools (3)**

Prerequisite: E Ed 107A (concurrently); admission to credential program. Observation and participation and a minimum of 45 clock hours of directed teaching with one hour conference weekly.

**132B. Student Teaching in Elementary Schools (2-12)**

Prerequisite: E Ed 132A or equivalent; one semester residence; admission to credential program. Directed teaching, participation, and teaching in public schools under supervision. One unit of credit equivalent to 22.5 clock hours of directed teaching.

**135. Audio-Visual Education (2) (Same as S Ed 135)**

Prerequisite: E Ed 105. Types and use of materials and equipment in the classroom; laboratory work in operation of equipment and appraisal of materials.

**137. Creative Dramatics (2) (See Drama 137)****146. In-Service Child Study (1-2; max total 4)**

Prerequisite: E Ed 105 or Psych 119, teaching experience. Child-study skills and techniques adaptable for use by the regular classroom teacher; methods of studying individuals in classroom groups; case studies.

**147. Administration of School Library Services (3)**

Prerequisite: teaching credential. The materials-centered library; effective organization and maintenance based on standards, aims, and policies for the library in relation to curriculum; budgeting, reporting, and evaluating.

**148. Organization of School Library Materials (3)**

Prerequisite: E Ed 147 and standard teaching credential. Acquisition, cataloging, classification, and allied processes for a materials-centered school library. Practice in cataloging and classifying library materials; development of a sample catalog.

**149. The School Library as an Educational Force (3)**

Prerequisite: E Ed 148 and standard teaching credential. Depth study of the role of the school library; functions, aims and policies for libraries in relation to curriculum, teachers, and children.

**157. Conservation of Natural Resources (3) (See Biol 157)****158. Speech for the Classroom Teacher (3) (See Spch 114)****175. Seminar and Practicum in Elementary Teaching (6-8)**

Prerequisite: baccalaureate degree (concurrent registration in E Ed 267 required). On-school-site seminar and practicum to train teachers for service in economically depressed areas. Growth and development, principles of learning, curricular and methodological focus on language development and reading.

**176. Seminar and Practicum in Elementary Teaching (6-8)**

Prerequisite: E Ed 175 (concurrent registration in E Ed 267 required). On-school-site seminar and practicum to train teachers for service in economically depressed areas. Relationship between school and community; scope and function of elementary school. Curricular and methodological focus on social studies, science, and mathematics.

**180. Modern Trends in Education (1-4; max total 4) (Same as S Ed 180)**

Recent trends in educational objectives; selection and revision of curricular materials; methods of instruction.

**185. In-Service Curriculum Development (1-4; max total 4) (Same as S Ed 185)**

Prerequisite: E Ed 105, or S Ed 152 teaching experience. Methods of evaluating and improving curriculum on problems identified by the participants; problems may be system-wide or involve only one subject in one school.

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

(See *Regulations and Procedures—Independent Study.*)

**GRADUATE COURSES**

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

**211. Issues in Teaching Social Sciences in the Elementary School (3)**

Prerequisite: E Ed 107B, graduate standing or permission of instructor. Seminar in study of selected curricula; planning curriculum in social sciences; problems related to social sciences in a changing society; project required.

**212. Diagnosis and Correction of Reading Disabilities (3)**

Prerequisite: E Ed 120.2, graduate standing; Psych 111 recommended. Causes of reading disabilities; observation and interview procedures; diagnostic instruments; standard and informal tests; materials and methods of instruction.

**213. Language in the Elementary School (3)**

Prerequisite: E Ed 107A, graduate standing or permission of instructor. Seminar in the study of the English language arts. Objectives, curriculum, materials, and research in oral and written communication; project required.

**214. Children's Literature (3)**

Prerequisite: E ED 107A, graduate standing, or permission of instructor. Seminar in children's literature; critical interpretation of children's literature; emphasis upon impact of changing social and cultural patterns in books for children; project required.

**219. Practicum in Reading Disabilities (3)**

Prerequisite: E Ed 212 or permission of instructor. Laboratory experiences in the diagnosis and correction of reading disability cases under supervision.

**220. Research in Education (3) (See A Ed 220)****221. Early Childhood Education (3)**

Prerequisite: E ED 105, graduate standing, or permission of instructor. Seminar in early childhood education; philosophical and sociological development of early childhood education; alternate philosophies and programs; current trends and controversial issues; project required.

**250. Elementary School Curriculum Development (3)**

Prerequisite: teaching credential or permission of instructor. Seminar on concepts and principles of curriculum planning; evaluation of processes and programs; availability and use of resources; innovations and research in curriculum development. Project required.

**252. Supervision and Curriculum in Reading (3)**

Prerequisite: E Ed 250 and permission of instructor. Study of selected curricula; planning curriculum in reading; effective ways of dealing with the functions and duties of reading supervisors and consultants.

**267. Teaching Internship (3-12)**

Prerequisite: approval by departmental admission and internship committees, E ED 132A, E ED 268 (concurrently). One-half day teaching experience with contract for one school year under supervision of college and assigned district personnel.

**268. Seminar for Interns (2-4; max total 4)**

Prerequisite: E ED 267 (concurrently). Curricular and instructional materials and procedures with emphasis upon internship assignment.

**275. Workshop in Curriculum Development (1-6; max total 6) (Same as S Ed 275)**

Practical assistance in solving curriculum problems; problems determined by in-service teachers enrolled.

**280. Current Problems in Elementary Education (3)**

Prerequisite: possession of a standard teaching credential or permission of instructor. Problems of teaching in the public elementary school; recent reports of national professional groups; newly developed research; significant movements in education.

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

See *Regulations and Procedures—Independent Study*.

**298. Seminar in Elementary Teaching (3-6; max total 6)**

Prerequisite: advancement to candidacy for MA degree; B average on 24 units of MA program including E Ed 220 and 6 units on Fresno campus. Research in solution of problems in elementary teaching. Individual research papers required. Weekly group discussions, weekly individual conferences, and hours arranged.

**299. Thesis (3-6; max total 6)**

Prerequisite: see *Master's Degrees—Thesis Requirement*. Preparation, completion, and submission of an acceptable thesis for the master's degree.

**IN-SERVICE COURSES**

*Note: In-service courses (300 series) are not intended for use on degrees except by special, prior approval. See Extension and Summer Session Bulletins for course descriptions.*

**353. Curriculum Problems and Practices (1-3; max total 12 if no topic repeated)****380T. Topics in Education (1-3; max total 12)****381. Planning and Organizing Outdoor Education (2)****383. Problems in Child Study (2; max total 12)****395. Supervision of Student Teachers (2; max total 4) (See S Ed 395)**

## SECONDARY EDUCATION DEPARTMENT

Professors: Ballou, Bigge, Brown, Gilbert, Hunt, Murphy

Associate Professors: Swineford (Chairman), Santigian

Assistant Professors: Hasson, Quirk

Part-time: Farley, Garver

In addition to coordinators listed below, who act as official liaison between the subject matter department and the Department of Secondary Education, there may be departmental supervisors and advisers in the major and minor for secondary credential candidates. They advise on credential matters, teach methods courses in their subject fields, and supervise student teachers.

### *Department*

Agriculture: Dowler

Art: Dolarian

Biology: D. Falk

Business: Schramm

Chemistry: Vavoulis

English: Karr

Foreign Language: Poythress

Geography: Koller

Health Science: Fricker

Home Economics: Hornbacher

Industrial Arts and Technology:  
Bliss

### *Department*

Journalism: J. Tucker

Mathematics: Quirk

Music: Bakkegard

Physical Education—Men: Murray

Physical Education—Women: Flake

Physical Science: Quirk

Psychology: James Mitchell Smith

Social Science: Echols

(Political Science, Latin American  
Studies)

Speech: Newcomer

The Secondary Education Department provides professional preparation, advising, and evaluating services to students in secondary education. General responsibility for the standard teaching credential with specialization in secondary teaching is assigned to this department. Information is also available regarding junior college teaching. The department includes in its program the master of arts degree in education with concentration in secondary teaching.

### COOPERATING PUBLIC SCHOOL DISTRICTS

The professional preparation program of the Secondary Education Department utilizes the services and facilities of a number of cooperating public school districts in the area for assignments in observation, student teaching, and internship. Teachers, administrators, consultants, and other personnel provide excellent opportunities for students to gain practical experience in the field. The department works closely with the public schools in planning and implementing credential programs. A School and College Secondary Liaison Committee has been established to serve this purpose.

The following school districts are currently cooperating in the college program of secondary education:

Central Union High School  
Clovis Unified Schools  
Fowler Unified School District  
Fresno City Unified Schools  
Kingsburg Joint Union High School  
District  
Kings County Schools (Hanford,  
Lemoore, Corcoran)

Madera Unified School District  
Reedley Joint Union High School  
Sanger Unified School District  
State Center Junior College  
Tulare Union High School District  
Visalia Union High School District

## THE STANDARD TEACHING CREDENTIAL WITH SPECIALIZATION IN SECONDARY TEACHING

Candidates for the Standard Teaching Credential with Specialization in Secondary Teaching must complete four years of college or university education with a baccalaureate degree. In addition, a fifth year of college or university postgraduate education consisting of upper division or graduate courses must be completed. Requirements for admission to the credential program are listed under *School of Education*. Completion of the college credential program entitles a candidate to the Standard Teaching Credential with appropriate endorsements, issued by the State Department of Education.

Candidates for a Standard Teaching Credential with Specialization in Secondary Teaching, authorizing assignment in grades 7 through 12 in major and minor subjects, must complete the following requirements:

### GENERAL EDUCATION

The general education requirements for credential candidates differ somewhat from those required for the bachelor's degree. Forty-five semester units of course work, including the English and the competency requirements in composition described in paragraph 1 below are required of secondary credential candidates. Course work must be taken in at least *four* of the six areas included in the following list. Not more than six semester units of course work taken to satisfy this requirement shall apply toward the fulfillment of the requirements for a major or a minor. The degree general education requirements are listed in the section on *Degrees and Credentials*.

1. Humanities, excluding foreign language for the purpose of this requirement, but including English. Three semesters of English, including work in advanced composition are required. Engl 1, 20, and 134 meet this requirement.

2. Social Sciences (including study of the United States Constitution).

3. Natural Sciences.

4. Mathematics, requiring as a prerequisite an understanding and knowledge of high school algebra and geometry.

5. Fine Arts.

6. A Foreign Language: This requirement may be satisfied by passing an examination given without college credit.

### MAJORS AND MINORS

Candidates for the Standard Teaching Credential with Specialization in Secondary Teaching must complete one of the following.

1. A major in an academic subject commonly taught in the public high schools.

2. A major and a minor, each of which is in a subject matter area commonly taught in the public high schools, and one of which is in an academic subject matter area.

3. Two minors in subject matter areas commonly taught in the public high schools, and a major not commonly taught in the public high schools. If the major is nonacademic, both minors must be in academic subjects. If the major is in an academic subject, then one minor shall be in an academic subject.

For a detailed outline of major-minor options see *School of Education—Major and Minor Requirements for Standard Teaching Credentials*.

### Majors

1. Single Subject: Twenty-four upper division or graduate semester units, six of which are taken in graduate level courses. If six semester units are taken in graduate level courses in the minor, the requirement does not apply to the major. For purposes of this requirement, each of the following, among other subjects, is considered to be a single subject:

- |                         |                       |
|-------------------------|-----------------------|
| a. Agricultural Science | e. Home Economics     |
| b. Biological Sciences  | f. Industrial Arts    |
| c. Business Education   | g. Nursing Education  |
| d. Health Science       | h. Physical Education |

2. Interdepartmental: Twenty-four upper division or graduate semester units, at least fifteen of which must be in one of the subjects constituting the interdepartmental major. The fifteen-unit concentration constitutes a single subject major for the purpose of satisfying credential requirements. Interdepartmental majors may be offered in the following subject matter areas:

- |   |  |
|---|--|
| a. Physical Sciences                                  | d. Any Biological Science or Physical Science, and Mathematics |
| b. Social Sciences (including Latin American Studies) | e. Fine Arts   |
| c. Humanities   |  |

### Minors

1. Single Subject: Twenty semester units in a subject normally taught in the public high schools. When the major is classified as nonacademic, 12 semester units of upper division or graduate work must be taken as part of the minor.

2. Interdepartmental: Twenty semester units in two or more subjects in any one of the academic subject matter areas listed under *Interdepartmental Majors* above. Twelve semester units must be earned in one of the subjects included in the interdepartmental minor. When the major is classified as nonacademic, 6 of the 12 semester hours taken in one subject must be at the upper division or graduate level.

3. Special Education: Specialized preparation to teach exceptional children may be substituted for the minor when the major is in an academic subject matter area (see *Advanced Studies Department*).

### PROFESSIONAL PREPARATION

The minimum professional requirements necessary to qualify for the Standard Teaching Credential with Specialization in Secondary Teaching include courses in the categories listed below, including 6 units of student teaching. This sequence meets the state minimum requirements for the standard teaching credential with secondary specialization. Students may select additional courses from the recommended electives indicated below.

	<i>Units</i>
S Ed 151, 152, 153.....	9
S Ed 161 or equivalent (see below) .....	2-3
S Ed 166 (in major, and in minor if required).....	6

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17-18

*Recommended Electives:* S Ed 135, 164T, A Ed 154, 174, 284.

*Equivalent Departmental Methods Courses:* Ag Ed 186, an approved section of Art 120T, Bus 281, H Ec 140, IA 192, Jour 131, Mus 129.2, PE 161.

### Internship

An honors internship which permits the student to teach on a half-time salaried basis while he is completing the 30 units of postgraduate work required for the credential may be arranged for superior students in the secondary teaching credential program. Plans for entering the program should be made at the beginning of the senior year. The internship may be concurrent with work toward a master's degree. Consult the chairman of the Secondary Education Department for details.

## THE STANDARD TEACHING CREDENTIAL WITH SPECIALIZATION IN JUNIOR COLLEGE TEACHING

Candidates for the Standard Teaching Credential with Specialization in Junior College Teaching authorizing assignments primarily in grades 13 and 14, may complete recommended professional courses in the Secondary Education Department. The minimum requirements for the credential are included in the following statements:

**General Education:** The requirements are the same as those for the specialization in secondary teaching given above.

**Major and Minor:** A master's or higher degree granted by an approved institution in a single subject normally taught in the public schools is required. For purposes of this requirement, each of the following, among other subjects, is considered to be a single subject:

- |                         |                       |
|-------------------------|-----------------------|
| a. Agricultural Science | f. Home Economics     |
| b. Biological Sciences  | g. Industrial Arts    |
| c. Business             | h. Journalism         |
| d. Engineering          | i. Law                |
| e. Health Science       | j. Physical Education |

A master's or higher degree granted by an approved institution on the basis of an interdepartmental graduate major may be used. Such a major must include twelve semester units of graduate work in a single subject. The twelve semester unit concentration constitutes a single subject major for the purpose of satisfying credential requirements.

The requirements in the minor are the same as those indicated for the specialization in secondary teaching. The minor may be taken in whole or in part before or after the baccalaureate or higher degree is conferred.

**Professional Preparation for Junior College Specialization:** The department recommends that the candidate complete S Ed 258 and additional courses selected from the secondary credential sequence. Consult the chairman of the Department of Secondary Education.

## MASTER OF ARTS DEGREE

The Secondary Education Department offers a program leading to the master of arts degree in education with a concentration in secondary teaching. Emphasis is on developing highly qualified professional personnel for the secondary schools. Prospective candidates can usually plan to coordinate many of the requirements for the degree with the fifth year of work which must be completed by every candidate for a standard teaching credential. A student may enter the master's degree program following completion of fifteen semester units of acceptable work in professional education or following the meeting of minimum requirements for a standard teaching credential, provided all criteria for classified graduate standing have been met. In addition, students must also comply with policies and procedures established by the School of Education Graduate Committee. For specific requirements consult the department chairman; for general requirements, see *School of Graduate Studies*. For detailed information about the graduate program at Fresno State College, see the *Graduate Bulletin*, available in the Office of the Dean, School of Graduate Studies.

*Courses***SECONDARY EDUCATION (5 Ed)****135. Audio-Visual Education (2) (See E Ed 135)****147. Administration of School Library Services (3)**

Prerequisite: secondary teaching credential. The materials-centered library; effective organization and maintenance based on standards, aims, and policies for the library in relation to curriculum; budgeting, reporting, and evaluating.

**148. Organization of School Library Materials (3)**

Prerequisite: S Ed 147 and secondary teaching credential. Acquisition, cataloging, classification, and allied processes for a materials-centered school library. Actual practice in cataloging and classification of library materials and the development of a sample catalog.

**149. The School Library as an Educational Force (3)**

Prerequisite: S Ed 148 and secondary teaching credential. Depth study of the role of the school library: functions, aims, and policies for libraries in relation to curriculum, teachers, and children.

**151. Cultural Foundations of Education (3)**

Prerequisite: admission to credential program. Education in the United States, philosophical influences, socio-economic factors, educational developments and trends; professional basis of teaching; scope, function, and desirable outcome of public education; current educational issues.

**152. Psychological Foundations of Education (3)**

Prerequisite: S Ed 151 or permission of instructor; admission to credential program. Educational psychology; theories of growth and learning; concepts of growth, learning, mental hygiene, and personality development; implications for instruction and guidance programs.

**153. Curriculum and Instruction (3)**

Prerequisite: S Ed 152, or equivalent. Theory and practice of curriculum development; principles and organization of instruction; audio-visual education, classroom management and discipline, measurement and evaluation.

**161. Methods and Materials in Secondary Teaching (2-3)**

Prerequisite: S Ed 152 or equivalent, admission to credential program or teaching experience. A special methods course in major and minor subjects. Instructional procedures, techniques, and resources for teaching; appraisal of instructional innovations; classroom organization and management; measurement and evaluative techniques.

**163. Observation and Participation (1-4)**

Prerequisite: admission to credential program. Guided observation of public school services, programs, and procedures; a variable course that may include classroom participation. Scheduled separately and also in conjunction with S Ed courses.

**164T. Educational Practices (1; max total 3 if no topic repeated)**

Prerequisite: S Ed 152 or permission of instructor. Skill-development laboratory in audio-visual equipment, case studies, test construction.

**166. Student Teaching: Secondary (1-12)**

Prerequisite: admission to credential program, one-semester residence, baccalaureate degree (waived for honors interns), S Ed 151 and 152; completion of major, minor, and S Ed 153 prior to or concurrently with respective student teaching assignments. Supervised observation, participation, and teaching in public schools; minimum of 60 clock hours of actual teaching for each three units of credit. Scheduled conferences with college supervisors and supervising teacher.

**167. Teaching Internship (3-12)**

Prerequisite: Baccalaureate degree, approval of departmental admissions and internship committees, one semester residence, S Ed 166 (3 un), 168 (concurrent), completion of credential major. One-half day teaching under contract for one school year, supervised by assigned college and district personnel.

**168. Seminar for Interns (2)**

Prerequisite: S Ed 167 (concurrent). Curriculum and instructional materials and procedures in secondary teaching with emphasis on internship assignment; educational technology and measurement, evaluation of instruction.

**175. Seminar and Practicum in Secondary Teaching (4-6)**

Prerequisite: baccalaureate degree (concurrent registration in S Ed 167 required). On-school-site seminar and practicum to train teachers for service in economically depressed areas. Scope and function of secondary schools in American culture, socio-economic factors, educational trends, implications for curriculum and instructional techniques, methods and materials.

**176. Seminar and Practicum in Secondary Teaching (4-6)**

Prerequisite: S Ed 175 (concurrent registration in S Ed 167 required). On-school-site seminar and practicum for training teachers for service in economically depressed areas. Psychological foundations of educational practice, implications for guidance programs, curriculum and instructional techniques including audio visual and evaluation processes.

**180. Modern Trends in Education (1-4; max total 4) (See E Ed 180)****184. History of Education in the United States (3) (Former A Ed 184)**

Prerequisite: teaching experience or permission of instructor. Sources and development of modern American educational theory and practice; understanding and appreciation of educational development and reorganization now in progress.

**185. In-Service Curriculum Development (1-4; max total 4) (See E Ed 185)****186. Educational Sociology (2) (Former A Ed 186)**

Prerequisite: teaching experience or permission of instructor. Scope and methods of educational sociology; basic sociological concepts; problems involving child, school, and teacher in their cultural settings; social role of schools in a democratic society.

**188. Issues in Educational Theory (2) (Former A Ed 188)**

Prerequisite: teaching experience or permission of instructor. Relation of major philosophical positions to educational trends, issues, and procedures.

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

(See *Regulations and Procedures—Independent Study.*)

**GRADUATE COURSES***(See Course Numbering System—Definitions and Eligibility)***220. Research in Education (3) (See A Ed 220)****251. Secondary School Reading (3)**

Prerequisite: S Ed 152, teaching experience or permission of instructor. Recommended: A Ed 174; educational measurements course. Nature of reading; observation and analysis of reading behavior and needs of secondary school pupils; development of reading materials and techniques for specific needs.

**253. Secondary School Curriculum Development (3)**

Prerequisite: teaching credential or permission of instructor. Seminar on concepts and principles of curriculum planning; evaluation of processes and programs; availability and use of resources; innovations and research in curriculum development. Project required.

**258. The Junior College (3)**

The junior college movement in America, with emphasis upon California; role of junior colleges; characteristics of junior college students and programs; problems of general and terminal education. Research paper required.

**275. Workshop in Curriculum Development (1-6; max total 6) (See E Ed 275)****280. Seminar in Current Problems in Secondary Education (3)**

Prerequisite: possession of a regular teaching credential or permission of instructor. Problems of teaching in the public secondary school; recent reports of national professional groups; newly developed research; significant movements in education.

**282. Philosophy of Education (3) (Former S Ed 187)**

Prerequisite: teaching experience or permission of instructor. Educational significance of present philosophical outlooks; educational, psychological, and sociological implications of major philosophies of education.

**290. Independent Study (1-3; max see reference)***(See Regulations and Procedures—Independent Study.)***298. Directed Research (6)**

Prerequisite: advancement to candidacy for MA degree; B average on 24 units of MA program including S Ed 220 and 6 units on Fresno Campus. Research in solution of problems in secondary teaching. Individual research papers required. Weekly group discussions, weekly individual conferences; and hours arranged. Research paper required.

**299. Thesis (3-6; max total 6)**

Prerequisite: see *Master's Degrees—Thesis Requirement*. Preparation, completion, and submission of an acceptable thesis for the master's degree.

**IN-SERVICE COURSES**

*Note: In-service courses (300 series) are not intended for use on degrees except by special, prior approval. See Extension and Summer Session Bulletins for course descriptions.*

**353. Curriculum Problems and Practices (1-3; max total 6, if no topic repeated)****361. General Methods of Teaching (3)****362. Adult Education (2; max total 4)****363F. Field Work in Curriculum (1-3; max total 6, if no project repeated)****380T. Topics in Education (1-3; max total 12)****395. Supervision of Student Teachers (2; max total 4) (Same as E Ed 395)**

### ADVANCED STUDIES DEPARTMENT

Professors: O. Wilcox (Chairman and Administration-Supervision Coordinator), R. F. Evans, Fast, Griffiths, R. H. Harrison, Kremen (Pupil Personnel Services Coordinator), Mach (Special Education Coordinator), Valett, Wardle

Associate Professors: Brewer, G. F. Johnson, Wilkin

Assistant Professor: Monke

Part-time: Barnett, Jackson, Winner

The Advanced Studies Department provides preparation for educational specializations which require advanced study beyond the teaching credential and maintains credential records for students pursuing programs leading to specialized service credentials in education. It offers the master of arts degree in education with concentrations in administration and supervision, counseling and guidance, educational theory, and special education. Information is available in the department on credentials in supervision, administration, and pupil personnel services and on specialized preparation for teachers of exceptional children.

#### COOPERATING PUBLIC SCHOOL DISTRICTS

The professional preparation program of the Advanced Studies Department utilizes the services and facilities of a number of cooperating public school districts in the area for assignment of students to specialized field work. Public school teachers, administrators, consultants, and other personnel provide excellent opportunities for students to gain practical experience in pupil personnel, special education, supervisory, and administrative work.

#### THE STANDARD SUPERVISION CREDENTIAL

The Standard Supervision Credential permits service as a supervisor, consultant, coordinator (or other intermediate administrative position), and principal, when specifically authorized. The level at which a holder of this credential may serve in the capacities indicated above is determined by the level of the teaching credential held. See department chairman for requirements for admission to the credential program.

#### REQUIREMENTS

The minimum requirements for the Standard Supervision Credential are as follows:

1. Six years of college or university education in an approved institution, including two years of acceptable postgraduate work.
2. A master's degree or other postgraduate degree requiring not less than five years of college or university work, or in lieu of the degree, the certification by an approved institution that the completed graduate work is the equivalent of a master's degree. If the master's degree or the certificate of equivalency is not based on an academic subject matter area, the postgraduate work must include twelve semester units of work in academic subject matter.
3. The possession of a valid basic teaching credential.
4. Five years of successful full-time teaching experience in public elementary schools, secondary schools, or private schools of equivalent status.

#### PROFESSIONAL PREPARATION

The program of professional preparation for this credential requires course work in accordance with the distribution listed below. The professional require-

ments cover approximately one of the two postgraduate years needed for The Standard Supervision Credential.

1. The organization and administration of school systems: A Ed 261, 264, 266
2. Personnel administration: A Ed 262
3. Development and evaluation of instructional programs: A Ed 263, E Ed 250 or S Ed 253
4. Work related to specialized functions, including services as a principal or supervisor; appropriate courses from the following in consultation with the adviser: A Ed 154, 286, 287, 174 or 224, 225, 226, 240, 241, 242
5. Supervised field experiences: A Ed 268, 269
6. Electives: Sufficient units in education and related fields selected in consultation with the adviser to total the required program as indicated in *California Administrative Code, Title 5, Section 6554*.

### THE STANDARD ADMINISTRATION CREDENTIAL

The Standard Administration Credential authorizes the holder to serve as a superintendent, assistant superintendent, or in an equivalent intermediate administrative position. The credential also permits service as a principal and supervisor at all grade levels provided the holder possesses a valid Standard Teaching Credential or a valid General Teaching Credential and his college or university preparation included a major in an academic subject matter area. See department chairman for requirements for admission to the credential program.

#### REQUIREMENTS

The minimum requirements for the Standard Administration Credential shall include all of the following:

1. Seven years of college or university education, or its equivalent in an approved institution, including three years of acceptable postgraduate education.
2. A master's degree in an academic subject matter area, an acceptable equivalent of the master's degree, or a doctor's degree. If the doctorate is not in an academic subject matter area, the three years of acceptable postgraduate education shall include 24 semester hours of course work in academic subject matter areas.
3. The possession of a valid Standard Teaching Credential or a valid General Teaching Credential other than a credential issued on partial fulfillment of requirements or postponement of requirements and other than a provisional, limited, or exchange credential.
4. A minimum of five years of successful full-time classroom teaching experience in public elementary or secondary schools, or in private schools of equivalent status.

#### PROFESSIONAL PREPARATION

The three years of acceptable postgraduate work shall include graduate course work in professional education and related fields as indicated below:

1. Legal and financial aspects of education: A Ed 264, 266
2. School management: A Ed 267, 270, 271
3. Education and school administration in the community: A Ed 286
4. Staff development and advanced techniques of personnel management: A Ed 275
5. Curriculum development, evaluation and research: A Ed 272
6. Supervised field work experiences: A Ed 268
7. Electives: sufficient units in education and related fields selected in consultation with the adviser to total the required program as indicated in *California Administrative Code, Title 5, Section 6561*.

## THE STANDARD DESIGNATED SERVICES CREDENTIAL WITH A SPECIALIZATION IN PUPIL PERSONNEL SERVICES

A Standard Designated Services Credential with a Specialization in Pupil Personnel Services includes the following designated services: Pupil Counseling, Child Welfare and Attendance, Psychometry, Psychology, and School Social Work. Since the requirements differ for the various designations that may appear on the credential, and since only a brief summary of the requirements is included here, it is essential that the student planning to work toward this credential consult the Coordinator of the Pupil Personnel Services Credential Program as early as possible and be admitted to the credential program.

### REQUIREMENTS

In general, the basic requirements for the Standard Designated Services Credential with a Specialization in Pupil Personnel Services are described below.

1. A master's or higher degree from an approved institution. The master's degree must be in counseling, psychology, social work, rehabilitation counseling, or an academic subject matter area.

2. Sixty semester hours of postgraduate work of upper division or graduate level in the area of pupil personnel services taken in an approved institution. The master's degree program may be included within the required sixty semester units, provided all of the requirements can be met.

3. Applicants who have completed three years of successful full-time teaching experience may substitute for one-half of the required sixty semester units of course work in pupil personnel services, thirty semester units in other areas. This does not relieve the applicant of the sixty-unit requirement. It does, however, enable the experienced teacher to substitute thirty units of postgraduate work in other fields for one-half of the sixty-unit requirement in courses directly related to the pupil personnel services. In the event that an applicant elects to make such a substitution, only the Child Welfare and Attendance and Pupil Counseling designations will appear on the credential.

4. Applicants seeking Psychometrist and Psychologist designations may not make the substitution indicated under paragraph 3 above. Those who desire these designations must secure verification of their competency to administer psychological examinations and to recommend placement based upon the use of individual psychological examinations. Such institutional verifications are based on the completion of specific course work in psychology and psychological testing.

5. Candidates for the Standard Designated Services Credential with Specialization in Pupil Personnel Services must also complete appropriate supervised field experiences. This may be accomplished either by the completion of an approved pupil personnel services internship, or by the completion of 480 clock hours of supervised field experience, at least half of which must be in a school serving students between the ages of 4 and 21 years of age. Successful work experience may be substituted for 480 clock hours of supervised field experience at the rate of one-half of the requirement for each one year of full-time counseling experience. Three years of full-time teaching experience may be substituted for one-half of the requirement.

### PROFESSIONAL PREPARATION

Candidates for the standard credential authorizing the various designated pupil personnel services must complete, as part of the total requirements for the credential, specific course work in the areas listed below:

1. Pupil personnel services, concept and procedures
2. Counseling theory and procedures
3. Dynamics of individual behavior
4. Measurement theory and procedures
5. Group processes, theory and procedures

6. Educational and career planning
7. Research methodology
8. Remedial and special education
9. Laws relating to children
10. Organization of pupil personnel services

For more specific information regarding the program leading to the Standard Designated Services Credential with Specialization in Pupil Personnel Services, the student should consult the Coordinator of the Pupil Personnel Services Program, at the earliest possible date prior to beginning work on the credential.

## SPECIALIZED PREPARATION TO TEACH EXCEPTIONAL CHILDREN

### SPECIALIZED PREPARATION WHICH MAY BE SUBSTITUTED FOR A MINOR

Specialized preparation to teach exceptional children may be substituted for a minor in each of the programs leading to the Standard Teaching Credential with Specializations in Elementary Teaching, Secondary Teaching, and Junior College Teaching. Specialized preparation is offered in the areas of mental retardation, speech and hearing handicapped, and deaf and hard of hearing. Students wishing to minor in special education should consult the Coordinator of Special Education not later than the second semester of the sophomore year. Students selecting specialized preparation for a minor must select a major in an academic subject matter area.

#### AREA OF MENTALLY RETARDED

The course work for the credential to teach in the area of the mentally retarded includes the following 22-24 semester units and 4-8 units in student teaching:

	<i>Units</i>
A Ed 160; 218; 168 or CD 100; A Ed 166, 247.1, or PSY 167; A Ed 162, 247.2, or 247.3; 161 or 247.4; 115F or 256T; 245 .....	22-24
A Ed 163A .....	4-8
	26-32

#### AREA OF SPEECH AND HEARING HANDICAPPED

The course work for specialized preparation in the area of speech and hearing handicapped includes the following clinical practice and student teaching:

For additional information consult the speech correction adviser in the *Speech Arts Department*.

	<i>Units</i>
Psych 119, A Ed 153, E Ed 100 or S Ed 151, 160, 218 .....	15
CD 100, 101, 102, 103, 104, 105, 106, 109, 110, 131, 132 .....	33
Approved electives .....	6
	54
<i>Professional Requirements:</i> CD 130 (2-4 units), 230 (1-6 units), A Ed 164 (4 units) .....	10
	64
<i>Additional Requirements:</i> CD 205, 210, 215, 232	

**RESTRICTED CREDENTIALS**

For general provisions for obtaining a restricted credential, consult departmental and school advisers; see School of Education.

**SPEECH AND HEARING SPECIALIST**

	<i>Units</i>
CD 100, 101, 102, 103, 104, 105, 106, 109, 110, 131, 132 .....	33
A Ed 153, 160, 218, E Ed 100 or S Ed 151, Psych 119, 163, Spch 134, 160 .....	24
	—
	57
<i>Professional Requirements:</i> CD 130 (2-4 units), 230 (1-6 units), A Ed 164 (4 units) .....	10
	—
	67

*Additional Graduate Requirements:* CD 205, 210, 215, 232

**TEACHER OF DEAF AND SEVERELY HARD OF HEARING CHILDREN**

The following course work, clinical practice, and student teaching are offered for students interested in teaching in the area of the Deaf and Severely Hard of Hearing.

	<i>Units</i>
A Ed 160, 218, Psych 119 .....	9
CD 100, 104, 132, 133, 135, 162, 163, 164, 262, 263, 264 .....	33
	—
	42
<i>Professional Requirements:</i> CD 130 (2-4 units), 260 (1-3 units), A Ed 154 (4 units) .....	8
	—
	50

**TEACHER OF EDUCABLE MENTALLY RETARDED CHILDREN**

The restricted credential authorizing service as a teacher of educable mentally retarded children is available upon completion of the following requirements (consult the Coordinator of Special Education for general provisions):

	<i>Units</i>
A Ed 160, 218, CD 100 or A Ed 168, E Ed 105 .....	12
A Ed 166 or 247.1, 162, 247T (6 units), A Ed 115F or 256T .....	13-15
Elect from: A Ed 154, 244, 248T, 256T, CD 128A, B, C; Psych 167 168.....	4-6
	—
	29-33
A Ed 163A .....	4-8
	—
	33-41

**MASTER OF ARTS DEGREE**

The Advanced Studies Department offers the master of arts degree in education with concentrations in administration and supervision, counseling and guidance, educational theory, and special education. Students may combine their programs of study so that courses may be applied on both the master of arts degree and the desired advanced credential program. The master of arts degree in education with a concentration in educational theory is available for students who may already hold an advanced credential or who do not wish to relate their study for an advanced degree to a particular credential.

The master of arts degree in special education is also offered with concentrations in mentally retarded, educationally handicapped, gifted, learning disabilities, and remedial reading. Programs of study may also be combined to apply on the master of arts degree and the advanced credential.

For specific requirements for the master of arts degree consult the department chairman and the coordinator of the School of Education graduate program; for general requirements, see *School of Graduate Studies*. For detailed information about the graduate program at Fresno State College, see the *Graduate Bulletin*, available in the Office of the Dean, School of Graduate Studies. Students must also comply with policies and procedures established by the School of Education Graduate Committee.

## *Courses*

### **ADVANCED STUDIES (A Ed)**

*Note: Courses are offered in the following areas:*

*Educational Foundations: A Ed 153, 154, 284, 285, 286, 287*

*Counseling and Guidance: A Ed 174, 218, 221, 222, 223, 224, 224F, 225, 226, 227, 228, 229, 255*

*School Administration and Supervision: A Ed 261, 262, 263, 264, 266, 267, 268, 269, 270, 271, 272, 275*

*Special Education: A Ed 115F, 160, 161, 162, 163A, 163B, 163C, 164A, 164B, 165, 166, 167, 168, 240, 241, 244, 245, 247T, 248T, 249T, 250, 256T*

*All areas: A Ed 190, 280, 290, 298, 299*

#### **112. School Public Relations (3) (See Jour 112)**

#### **115F. Field Work With Exceptional Children (1-3; max total 6)**

Prerequisite: Permission of instructor. Supervised observation and participation in selected programs for exceptional children; educational planning, guidance, and counseling.

#### **143. Producing the Educational Broadcast (3) (See R-TV 143)**

#### **150. Introduction to Speech Pathology (3) (See CD 100)**

#### **153. Elementary Statistics (3)**

Not open to students with credit in Psych 25. Methods of collecting, organizing, interpreting, and applying data in quantitative studies.

#### **154. Measurement in Education (3)**

Objective measurement of capacities and achievement of pupils; construction of informal, objective examinations and criteria for selection of standardized measuring instruments; planning and administering a measurement program.

#### **160. Education of Exceptional Children (3)**

Historical development, status and trends in the education and guidance of exceptional children; legal provisions; certification requirements. (2 lecture, 2 supervised field hours).

#### **161. Training of the Severely Retarded Child (3)**

Prerequisite: Psych 167, 168, A Ed 160. Sensory development and training, growth and developmental processes of the severely mentally retarded child; techniques of working with parents. Includes observation and participation. (2 lecture, 2 supervised field hours)

#### **162. Curriculum and Methods: Mentally Retarded and Slow Learner (3)**

Methods of instructing the mentally retarded child and slow learner; examination and demonstration of materials. (2 lecture, 2 field hours arranged)

#### **163A. Student Teaching, Exceptional Children: Mentally Retarded (1-8) (Former A Ed 163)**

Prerequisite: concurrent enrollment for a teaching credential; approval by a departmental review committee. Directed observation, participation and teaching

in classes for the mentally retarded in public schools under supervision. Weekly conference with college supervisor.

**163B. Student Teaching, Exceptional Children: Educationally Handicapped (1-8)  
(Former A Ed 163)**

Prerequisite: concurrent enrollment for a teaching credential; approval by a departmental review committee. Directed observation, participation and teaching in classes for the educationally handicapped in public schools under supervision. Weekly conference with college supervisor.

**163C. Student Teaching, Exceptional Children: Gifted (1-8; max total 8)**

Prerequisite: concurrent enrollment for a teaching credential; approval by a departmental review committee. Directed observation and teaching in classes for the gifted and creative in public schools under supervision. Weekly conference with college supervisor.

**164A. Student Teaching: Speech and Hearing Handicapped (4-9; max total 9)**

Prerequisite: 4 units of CD 130 or 230; completion of 90 clock hours of clinical practice in the public schools, one semester residence; admission to the credential program. Directed observation, participation and clinical practice under supervision. Weekly conference with college supervisor.

**164B. Student Teaching: Deaf and Hard of Hearing (1-4)**

Prerequisite: 4 units of CD 130 or 230; completion of 90 clock hours of clinical practice in the public schools, one semester residence; admission to credential program. Directed observation; participation and clinical practice, under supervision. Weekly conference with college supervisor.

**165. Methods in Special Education (1-4; max total 4)**

Prerequisite: E Ed 105 or S Ed 152 or Psych 168; teaching experience or permission of instructor. Materials and methods for teaching the learning deviates commonly found in regular classrooms, especially the rapid and slow learners; case studies.

**166. Cultural and Organic Basis of Mental Retardation (3)**

Prerequisite: admission to special education program or permission of instructor. Organic and cultural factors affecting mental retardation; recent research and its impact on present and future classroom practice.

**167. Education of the Emotionally Disturbed (2)**

Prerequisite: E Ed 105 or S Ed 152 or Psych 168. Materials and methods for teaching emotionally disturbed children commonly found in regular classrooms; case studies, referral procedures, and working with parents.

**168. Language and Speech Development of Exceptional Children (3)**

Prerequisite: A Ed 160 or permission of instructor. Development of language and speech patterns and disorders for teachers of exceptional children; cultural and ethnic background problems, (bilingualism and alalia), investigations in communication processes; acquisition of language habits.

**174. Principles and Techniques in Guidance (3) (Same as Psych 174)**

Recommended for both elementary and secondary credential candidates. Prerequisite to all courses in the pupil personnel services credential sequence. Principles, procedures, and techniques in guidance; interrelationships and responsibilities of school personnel; identifying and meeting student needs.

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

(See *Regulations and Procedures—Independent Study.*)

**GRADUATE COURSES**

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

**218. Mental Hygiene and Guidance of Children (3) (Same as Psych 218)**

Prerequisite: E Ed 105. Seminar on emotional and social problems of children in their adjustments to school and home practices and pressures; critical evaluation of tests, tools, techniques, and procedures in guidance practices for parents and teachers. (2 lectures, 2 field hours arranged)

**220. Research in Education (3) (Same as E Ed-5 Ed)**

Prerequisite: graduate standing and 15 units of education including A Ed 153 or equivalent. Seminar in research methodology; identification of educational research problems; use of library resources, data gathering and processing, writing a research report.

**221. Laws Relating to Children (3) (Former A Ed 172)**

Prerequisite: A Ed 174 or permission of instructor. Current and proposed legislation in parent-child relationships, education of the minor. Individual research on recent court decisions.

**222. Occupational Analysis and Information (3) (Former A Ed 175)**

Prerequisite: A Ed 174. Theories of vocational development; measurement of occupational status, trends, outlook, and mobility; problems in vocational counseling; research problem acceptable to the instructor required.

**223. Child Welfare, Parent Education, and Counseling (3) (Former A Ed 176)**

Prerequisite: A Ed 174. Application of theories and research in child welfare, parent education, and counseling; problems of home, school and child welfare. Research paper required in a selected area.

**224. Counseling Techniques (3) (See Psych 224)****224F. Field Work in Counseling (2-12) (See Psych 224F)****225. Advanced Theories and Techniques in Counseling (3)**

Prerequisite: A Ed 222, 224. Advanced study of theories and techniques in counseling; emphasis on application to problems of childhood and adolescence. Case study, interviewing, critique.

**226. Organization and Administration of Guidance Services (3)**

Prerequisite: completion of 10 or more units in pupil personnel services credential sequence or in master of arts degree program with a concentration in guidance, including A Ed 222, 224. Organization, administration, and evaluation of guidance services.

**227. Tests in Counseling (3) (Former A Ed 177)**

Prerequisite: A Ed 153, 222. Evaluation and selection of psychological tests for guidance and counseling; use of psychometric data in counseling; preparation of case studies.

**228. Group Process in Pupil Personnel Services (3) (Former A Ed 179)**

Prerequisite: A Ed 174, 222. Theories and techniques in the group process; application to school guidance procedures.

**229. Counseling in the Elementary School (3)**

Prerequisite: A Ed 174, 224. Counseling theory and practice as they apply to the elementary school counselor. Research paper required in a selected area.

**240. Diagnostic Testing and Remedial Teaching (3)**

Prerequisite: E Ed 105, A Ed 154. Tools and procedures in diagnostic and remedial programs in arithmetic, reading, language, spelling, handwriting, health, and social studies. (2 lecture, 2 field hours arranged)

**241. Classroom Practice in Diagnostic Testing and Remedial Teaching (3)**

Prerequisite: A Ed 240. Work with individual pupils and small groups in diagnosing learning difficulties and providing remedial work. (2 lecture, 2 field hours arranged)

**244. Organization and Supervision of Special Education (3)**

Seminar in the organization, financing, housing, equipping, staffing, and supervision of the special education program; desirable educational provisions for each type of exceptionality; legal provisions for special education including curriculum development, in-service education, and teacher-pupil relationships.

**245. Seminar: Identification and Evaluation of Exceptional Children (3)**

Prerequisite: A Ed 153, 154, 160, or permission of instructor. Review of testing techniques, evaluation of psychological reports, development of psychoeducational recommendations as a clinical process. Independent child study; field testing with appropriate diagnostic instruments. (2 lecture, 2 field hours arranged)

**247T. Topics: Seminar in Mental Retardation (3; max total 9 if no topic repeated)**

Prerequisite: A Ed 160 or permission of instructor. Characteristics and identification procedures, principles of counseling, curriculum methods and materials, administrative and legal provisions. (2 lecture, 2 field hours arranged)

**247.1. The Mentally Retarded****247.2. Advanced Curriculum and Methods, Preschool and Elementary, MR****247.3. Advanced Curriculum and Methods, Secondary, MR****247.4. The Trainable Child****248T. Topics: Seminar in Educationally Handicapped (3; max total 9 if no topic repeated)**

Prerequisite: A Ed 160 or permission of instructor. Characteristics and identification procedures, principles of counseling, curricular methods and materials, administrative and legal provisions. (2 lecture, 2 field hours arranged)

**248.1. Education of the Emotionally Handicapped Child****248.2. Education of the Neurologically Handicapped Child****248.3. Curriculum for the Educationally Handicapped Child****249T. Topics: Seminar in Mentally Gifted (3; max total 12 if no topic repeated)**

Prerequisite: A Ed 160 or permission of instructor. Characteristics and nature of intelligence and creativity; analysis of curriculum patterns and administrative designs; research in contemporary problems. (2 lecture, 2 field hours arranged)

**249.1. The Gifted Child****249.2. Educational Provisions for the Gifted****249.3. Creative Children and Youth****249.4. Research in Contemporary Problems; Gifted and Creative****250. Seminar in Prescriptive and Individualized Instruction (3)**

Prerequisite: A Ed 160 or permission of instructor. Development and examination of methods and materials relative to individual learning problems; study of models of individual programs. (2 lecture, 2 field hours arranged)

**255. Individual Mental Testing (3) (See Psych 265)****256T. Topics in Clinical Practice in Special Education (3-9 each area; max total 18 if no topic repeated)**

Prerequisite: A Ed 160 or permission of instructor. Clinical experience in community agencies dealing with the identification, diagnosis, and education of exceptional children. Practical field experience in cooperating school districts with special and experimental programs.

**256.1. Practicum and Clinical Experience with the Mentally Retarded (3-9)****256.2. Practicum and Clinical Experience with the Educationally Handicapped (3-9)****256.3. Practicum and Clinical Experience with Remedial Reading and Learning Disability (3-9)****256.4. Practicum and Clinical Experience with the Mentally Gifted (3-9)****261. Organization for Administration and Support of Education (3)**

Prerequisite: teaching experience. Interrelationships of federal, state, county, city, and district units in the administration and promotion of programs of education.

**262. Seminar in School Principalship (3)**

Prerequisite: teaching experience; A Ed 261 or equivalent. Seminar on problems, procedures, and organizational relationships of elementary and secondary schools; principal's responsibilities in areas of organization and control; teacher personnel, pupil personnel, noncertificated personnel; special and auxiliary agencies; guidance; supervision; community relationships.

**263. Seminar in Supervision for Improvement of Instruction (3)**

Prerequisite: teaching experience; E Ed 250 or S Ed 253; A Ed 261; or equivalent. Seminar for clarification and application of modern concepts and techniques of supervision; practice in leadership roles, promoting productive human relationships, developing communication skills, and evaluation of teaching; ways of helping teachers in their credential fields.

**264. Seminar in the Legal Aspects of Education (3)**

Prerequisite: teaching experience; A Ed 261 or equivalent. A case study approach in reviewing important court decisions, both state and federal, that have directly affected the public schools. Legal relationships in public education applied to federal, state, and local levels.

**265. Seminar in Legal and Financial Principles in School Administration (3)**

Prerequisite: A Ed 261, permission of instructor. Fiscal policies controlling the management of the school and the responsibilities and obligations of the school principal in relation to staff, pupils, parents, and public. Legal liability and established defenses; personnel policies; admission and attendance regulations; pupil control measures.

**266. Seminar in School Finance and Business Administration (3)**

Prerequisite: A Ed 261 or equivalent. Principles and practices of school finance and business administration; local, state, and federal responsibility for financial support of education.

**267. Seminar in School Facilities (3)**

Prerequisite: A Ed 266 or equivalent. Seminar on instructional aspects of school plants and equipment; planning and utilization; citizens committees; school surveys; school-community relations.

**268. Field Work in School Administration (1)**

For in-service teachers working toward administration and/or supervision credentials. Prerequisite: admission to the credential program, permission of instructor. On-the-job participation in the solution of problems in administration; written report required. A minimum of three meetings on campus during the semester.

**269. Field Work in School Supervision (1)**

For in-service teachers working toward administration and/or supervision credentials. Prerequisite: admission to the credential program, permission of instructor. On-the-job participation in the solution of problems in supervision; written report required. A minimum of three meetings on campus during the semester.

**270. Seminar in School Business Administration I (3)**

Prerequisite: A Ed 266; 12 units of business administration and accounting or permission of instructor. Theoretical and practical treatment of school budget management; accounts, audits and reports, personnel administration, management of service functions including transportation and cafeterias; relationship of business management to the effectiveness of public education.

**271. Seminar in School Business Administration II (3)**

Prerequisite: A Ed 270. Theoretical and practical treatment of school capital outlay and debt service administration; protection and financing of capital outlay programs; bonding and management of bonded debt; management of school plant insurance programs; relationship of school plant to effective education.

**272. Seminar in Advanced Curriculum Evaluation and Development (3)**

Nature and scope of curriculum development: administrative determiners of curriculum; influence of governmental agencies and organizations, foundations, business and industry, and power structures as curriculum determiners; international influence on curriculum development and curriculum evaluation at various levels of governmental operation.

**275. Seminar in Advanced Techniques of Personnel Administration in Education (3)**

Prerequisite: A Ed 262, 264, 266, Bus Ad 151, 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.

**280. Seminar in Advanced Problems in Education (3-21; max total 21)**

Prerequisite: teaching experience or permission of instructor. Assessment and evaluation, computer programming, creativity in education, instructional innovations, in-service education, politics in education, advanced statistics.

**284. Seminar in International Education (3)**

Analysis of historical, social and political forces which shape national education endeavor. Emerging international education efforts and organizations.

**285. Seminar in Advanced Educational Psychology (3)**

Prerequisite: E Ed 105. Seminar on the psychological foundations of education; nature and characteristics of development, learning process, forces which affect educational growth.

**286. Seminar in Advanced Educational Sociology (3)**

Prerequisite: S Ed 186; or course in sociology or anthropology and permission of instructor. Seminar for analysis of effect of institutional and ideological trends and problems on the role and operation of the school in American society.

**287. Seminar in History of Educational Thought (3)**

Prerequisite: S Ed 282, or philosophy course and permission of instructor. Seminar on historical foundations of educational theory; growth of thought regarding teaching and learning; relationship of educational theory and practice in the United States.

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

See *Regulations and Procedures—Independent Study*.

**298. Directed Research (6)**

Prerequisite: advancement to candidacy for MA degree; B average on 24 units of MA program including A Ed 220 and 6 units on Fresno campus. Research in solution of educational problems; separate sections for administration and supervision, counseling and guidance, educational theory, special education. Individual research papers, and weekly seminar conferences arranged.

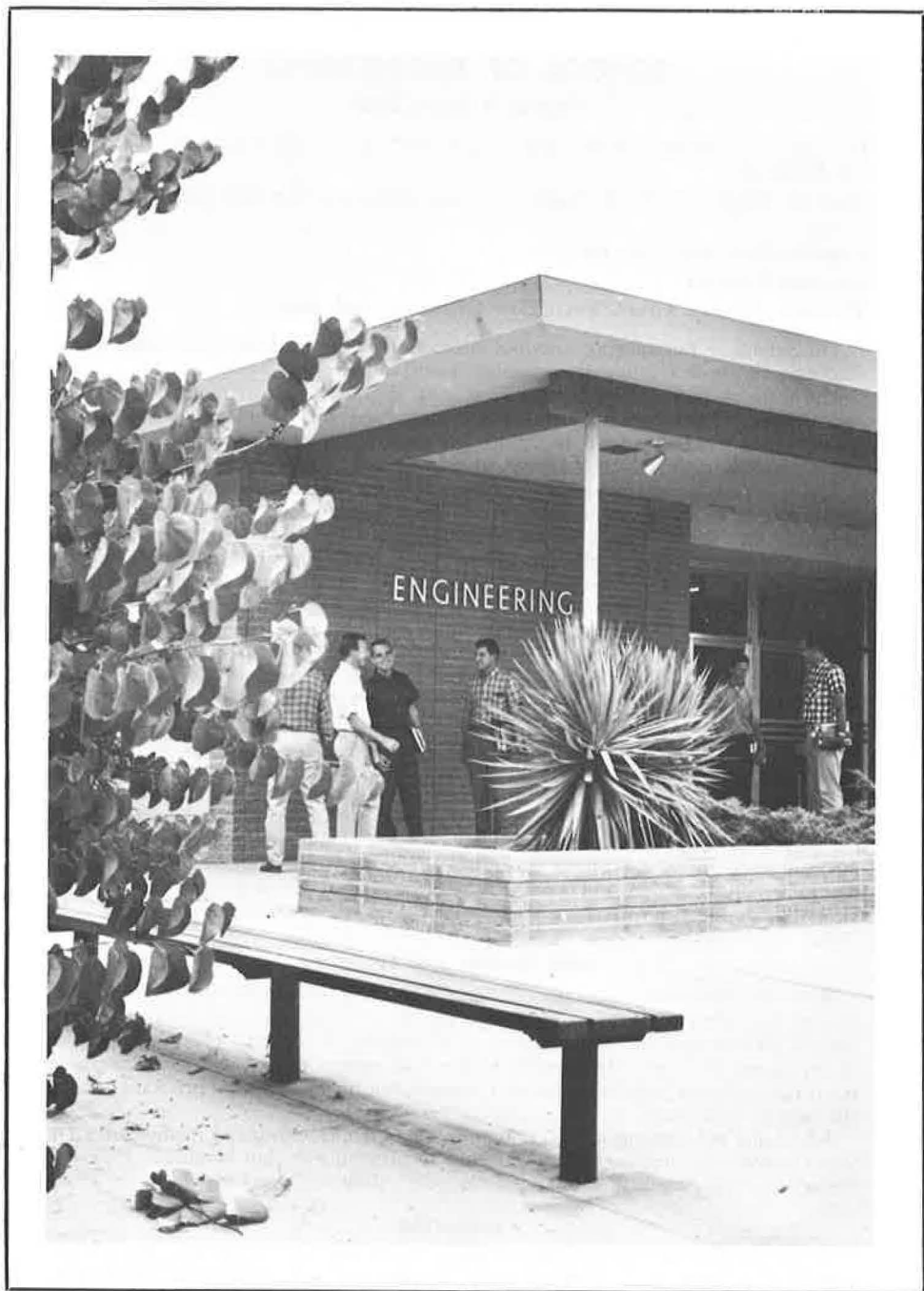
**299. Thesis (6)**

Prerequisite: see *Master's Degrees—Thesis Requirement*. Preparation, completion, and submission of an acceptable thesis for the master's degree.

**IN-SERVICE COURSES**

*Note: In-service courses (300 series) are not intended for use on degrees except by special, prior approval. See Extension and Summer Session Bulletins for course descriptions.*

**373. Instructional and Curriculum Problems and Practices (1–3; max total 12 if no topic repeated)**



SCHOOL OF ENGINEERING

# SCHOOL OF ENGINEERING

Thomas H. Evans, Dean

Professors: T. Evans (Dean), Barnhart, Cehrs\*, Foin, Higgins, Jarrett, Kuhlman, J. H. Smith

Associate Professors: Beville, Bodger, Deming, Dominick, Gaylord, Richards, Rowland

Assistant Professors: Liao, Phillips

Lecturer: Zumwalt

Part-time: Britton, Grote, Kevorkian, Ostrander, Sarkisian

The School of Engineering provides instruction in the fields of agricultural, civil, electrical-electronics, industrial, and mechanical engineering.

The training includes experience in solving typical problems involving analysis and design. The theoretical studies are supported by laboratory work which demonstrates the theory and also gives the student a familiarity with instruments and equipment with which professional engineers frequently deal.

The course work in engineering requires as a prerequisite a basic knowledge of mathematics and the physical sciences which, together with the general education program, give the student a broad education.

Most of the majors within the School of Engineering are accredited by the Engineers' Council for Professional Development, the national accrediting agency of the engineering profession.

The School of Engineering offers bachelor of science degree majors in agricultural, civil, electrical-electronics, industrial, and mechanical engineering. Students are prepared for professional engineering and graduate study. Science and mathematics are required in the undergraduate program in order that the student may gain the understanding necessary for engineering analysis and creative design. Projects in engineering design that integrate and apply previous fundamental knowledge are assigned in the senior year.

The undergraduate program for the degree is designed to meet national accrediting requirements by containing approximately one-fourth of the program in each of the following areas: basic science and mathematics; engineering science (such as mechanics of solids and fluids, materials, thermodynamics, electricity and magnetism); analysis, design, and support subjects in a professional major (such as civil, electrical, or mechanical); humanities, social sciences, electives and auxiliary subjects.

## HIGH SCHOOL PREPARATION

Recommended high school preparation for entering the engineering program consists of the following: English (3 years), algebra (2 years), geometry (1 year), advanced mathematics (or trigonometry or elementary functions) ( $\frac{1}{2}$  year), physics or chemistry (1 year). Deficiencies in the high school requirements can be made up at the college in regular or summer sessions, but may extend the program beyond the normal four years.

Additional recommended high school courses include: advanced mathematics ( $\frac{1}{2}$  year), physics or chemistry (1 year), biology (1 year), foreign language (2 years), history (1 year), mechanical drawing ( $\frac{1}{2}$  year), shop ( $\frac{1}{2}$  year).

## TRANSFERS

Transfers from junior colleges or other institutions of higher learning are accepted under provisions outlined under *Regulations and Procedures—Admissions*. Students planning to transfer to the Fresno State College engineering program should follow as closely as possible the programs outlined below. Significant devia-

\*Deceased

tion from the program in mathematics, science, and engineering courses may necessitate more than the normal four years to complete the engineering degree requirements.

### ENGINEERING FIELDS

The fields of engineering for which training is offered at Fresno State College are described below. Teams of engineers representing different fields are utilized on numerous projects, since no one field can adequately cover all technical aspects.

**Agricultural Engineering.** Agricultural engineering involves economic applications of the fundamentals of science and agriculture through engineering technology to agricultural production and processing. The field includes such subdivisions as agricultural machinery and equipment, irrigation and drainage, processing agricultural products and farm structures. The agricultural engineer deals with the development, design, manufacture, construction or planning of planting and harvesting equipment, irrigation and drainage structures on the farm, and processing machinery and methods.

**Civil Engineering.** Civil engineering is concerned with the science and technology of planning, analysis, design, and construction of structures, transportation facilities, environmental works, and water resource developments. Within these fields the civil engineer deals with buildings, bridges, foundations, highways, airports, waterways, pipelines, water supply facilities, surveying and mapping, sewerage systems and waste treatment operations, dams, hydropower installations, irrigation, flood control, and other fixed engineering works.

The civil engineer participates in structural and facility aspects of missile and aerospace developments; research on structural use of new materials; computer methods of analyzing and designing complex structures; design of protective structural features and radiation shielding in nuclear power plants; and municipal engineering, city planning, and urban traffic control.

**Electrical-Electronics Engineering.** Electrical engineering's many specialties are grouped under the two main areas of power and electronics. Power engineering involves the generation, distribution, and utilization of electricity to provide power, heat, and light, and various electronic devices are utilized in the process. Electronics engineering involves electrical communications, including electron devices for transmission and reception of intelligence over wires or through space; devices which control or aid industrial processes, medical science, guidance and detection of air and spacecraft; and exceedingly high-speed electronic computing machines.

Many interdisciplinary areas which have evolved lie wholly within engineering, such as the integrated circuits of microelectronics or the generation of power from nuclear energy; others, such as engineering science, illuminating engineering, and bio-engineering are combined with the arts and sciences. In engineering science electrical and other branches of engineering closely interact with natural sciences as in astronautics. Illuminating engineering is concerned with the use of optical radiation along with the physiological and psychological aspects of man to enhance his pleasure, creativity, and production. In bio-engineering the analysis and design of engineering systems are combined with the principles of the life sciences for man's betterment.

Electrical-electronics engineers are involved with the design, development, production, evaluation, and operation of electrical power generating stations; electrical power transmission and distribution lines, transformers, generators, motors, batteries, power control and protective equipment, household appliances; transportation equipment including land, water, air, and space vehicles; telephone and telegraph stations and associated equipment; radio and television broadcasting stations, microwave communications and receivers, radio astronomy, sound recording and reproduction systems, radar, telemetry, alarm, control, and servo-systems, radio-frequency heating and process controls; analog and digital computers, instrumentation of space equipment; lighting of homes, buildings, display cases, streets,

and transportation equipment; masers, lasers, X-ray and diathermy equipment; physiological measurement and control equipment such as the pacemaker and breathing machines.

**Mechanical Engineering.** Mechanical engineering deals with engineering problems relating to the generation, transmission, and utilization of energy in the thermal or mechanical form. It is concerned also with engineering problems related to the production of tools, machinery, and their products and to heating, ventilation, refrigeration, and plumbing in their research, design, production, operation, organization, and economic aspects.

Mechanical engineers are concerned with propulsion systems; cryogenics; environmental systems for control of humidity, temperature, and air cleanliness; transportation equipment including land, water, and space vehicles and mechanical, pneumatic, and hydraulic conveyor systems; power components including engines, turbines, rockets, jets, and fuel cells; and machinery such as pumps, fans, compressors, blowers, valves, and material handling and processing equipment including machine tools and food processing equipment.

**Industrial Engineering.** Industrial engineering is concerned with the design, improvement, and installation of integrated systems of men, materials, and equipment. 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.

Industrial engineers are invaluable to management in decision making relative to most efficient utilization of men, materials, equipment, and energy. Industrial engineers are a prime source of management talent and therefore are in demand by a wide variety of organizations, especially those engaged in industrial production.

#### CREENTIAL PROGRAM

For information on current credential programs, consult departmental advisers and the School of Education; see *Public School Credentials*.

#### BACHELOR OF SCIENCE DEGREE PROGRAM IN ENGINEERING

The bachelor of science degree is granted upon completion of the following units: agricultural engineering and electrical-electronics majors, 136; civil engineering and industrial engineering majors, 132; mechanical engineering major, 128. These units include the general education and degree requirements of the college. Typical programs in all engineering majors are shown below. The sequences listed require 16 or 17 units per semester (16 in mechanical engineering). A major in one of the fields of engineering consists of all engineering courses listed below, including approved electives; the first two years required of all engineering students and the last two years in one of the specific fields of concentration. The major in agricultural engineering includes listed courses in agriculture.

#### First and Second Year Programs Required of All Engineering Majors

1st Year: 1st Semester: Engr 26, Math 75, Chem 1A, general education, PE  
 2nd Semester: Math 76, Chem 8, Physics 4A; general education, Engr 70 (for CE); PE  
 2nd Year: 3rd Semester: Math 77, Physics 4B, general education, Engr 30, 70, (for IE, AgE); PE, Engr 1, 1L (for CE)  
 4th Semester: Math 81, Physics 4C, general education, Engr 32; for AgE (Engr 1, 1L), for ME and IE (Engr 11, 11L); PE; Engr 70 (for EE); Engr 2, 2L (for CE).

**Third and Fourth Year Programs for Specific Majors****Agricultural Engineering (AgE)**

- 3rd Year: 5th Semester: Engr 130, 131, 131L, 164, 164L, PlSc 30, AnSc 10  
 6th Semester: Engr 11, 11L, 121, 165, 165L, AgM 115, Bot 1
- 4th Year: 7th Semester: Psych 10, Engr 150, 150L; general education; approved electives; elective  
 8th Semester: Engr 151, 151L, 170, AgM 81, 159, general education; approved elective  
 (Approved electives: Pl Sc 50, 110, AgM 116, 151A-B, 158A, Geology, Engr 141)

**Civil Engineering (CE)**

- 3rd Year: 5th Semester: Engr 130, 131, 131L, 164, 164L, general education  
 6th Semester: Engr 135, 137, 137L, 165, 165L, approved electives
- 4th Year: 7th Semester: Engr 134, 143, 150, 150L, 170; approved electives  
 8th Semester: Engr 133, 151, 151L, or 156, 156L; 172; general education; approved electives (Approved electives: Engr 101, 102, 103, 104, 105, 124, 138, 139, 140, 141, 142, 144, 145, 146, 148, 149, 171, 173, 190, (geology). Recommended groups: (structures and soil mechanics) Engr 124, 139, 144, 146; (surveying and highways) Engr 101, 102, 103, 104, 105, 138, 140; (water resources) Engr 140, 141, 142, 145, 148, 149)

**Electrical-Electronics Engineering (EE)**

- 3rd Year: 5th Semester: Engr 130, 150, 150L, 164, 164L, general education  
 6th Semester: Engr 152, 152L, 155, 156, 156L, 165, 165L, general education
- 4th Year: 7th Semester: Engr 131, 151, 151L, 153, 153L, 157, 157L, 170, general education  
 8th Semester: Engr 131L, 159, 172, approved electives, general education (Approved electives: Engr 158, 158L, 171, 173, 180, 180L, 181, 181L)

**Industrial Engineering (IE)**

- 3rd Year: 5th Semester: Engr 130, 131, 131L, 164, 164L, Acct 1A, Econ 1A  
 6th Semester: Engr 110, 150, 150L, 165, 165L, Acct 1B, general education
- 4th Year: 7th Semester: Engr 111, 112, 112L, 151L (or 156, 156L), 170, Econ 1B, approved elective  
 8th Semester: Engr 113, 114, 121, 172, general education; approved elective (Approved electives: Bus Ad 110, 151, Acct 128; Engr 122, 139, 171, 173)

**Mechanical Engineering (ME)**

- 3rd Year: 5th Semester: Engr 70, 130, 131, 164, 164L, general education  
 6th Semester: Engr 121, 150, 150L, 165, 165L, general education
- 4th Year: 7th Semester: Engr 122, 131L, 151, 151L, 166, 166L, general education; approved elective  
 8th Semester: Engr 170, 172, general education; approved electives (Approved electives (11 units): Engr 123, 124, 136, 139, 145, 156, 156L, 162, 162L, 171, 173, 181, 181L)

**Courses****ENGINEERING**

*Note: Associated lecture and laboratory courses must be taken concurrently except as indicated in course sequences.*

**1. Plane Surveying: Elementary (2)**

Prerequisite: Math 29, 30, one year of mechanical drawing, or permission of instructor. Familiarization with surveying instruments; calculations; topographic surveying.

**1L. Plane Surveying: Elementary Laboratory (1)**

Field practice in measurements of distance, and in use of level, transit, and plane table in solution of practical problems. (3 lab hours; field trips)

**2. Plane Surveying: Advanced (2)**

Prerequisite: Engr 1, 1L. Theory and computations covering land surveying; engineering astronomy; introduction to route surveying.

**2L. Plane Surveying: Advanced Laboratory (1)**

Field practice in land surveying, astronomy, triangulation, and route layout. (3 lab hours; field trips)

**11. Manufacturing Processes (2)**

General purpose and production machine tools, metal cutting and welding, hot and cold forming, grinding, gages, jigs, fixtures, tooling.

**11L. Manufacturing Processes Laboratory (1)**

Operation of machine tools, welding equipment, hot and cold forming equipment, casting equipment; practice in the use of gages, jigs, and fixtures. (3 lab hours; field trips)

**26. Engineering Graphics (4)**

Prerequisite: Math 75 (or concurrently). Principles and applications of orthographic projection and graphical mathematics to the solution of engineering problems. (2 lecture, 2 3-hour labs)

**30. Engineering Mechanics: Statics (2)**

Prerequisite: Physics 4A; Math 77 (or concurrently). Statics, analysis of force systems, equilibrium problems, graphic and algebraic methods of problem solution.

**32. Engineering Materials (2)**

Prerequisite or concurrently: Engr 30, Chem 8. Fundamental nature and properties of engineering materials; structure of matter; mechanical, electrical, magnetic, and thermal properties.

**70. Computer Programming (2)**

Prerequisite: Math 76 (or concurrent). Introduction to digital computer programming. (1 lecture, 3 lab hours)

**101. Route Surveying (2)**

Prerequisite: Engr 2, 2L. Computation and field work covering surveys for highway, irrigation, construction and other kinds of engineering projects. (1 lecture, 3 lab hours; field trips)

**102. Geodetic Surveying (2)**

Prerequisite: Engr 2, 2L; Math 76. Triangulation; adjustment of geodetic figures; base line measurement, map projection; precise leveling. (1 lecture, 3 lab hours; field trips)

**103. Photogrammetry (2)**

Prerequisite: Math 30, Engr 1, or permission of instructor. Terrestrial and aerial photography applied to surveying and mapping; stereoscopy; application of aerial surveying to specific engineering problems. (1 lecture, 3 lab hours; field trips)

**104. Boundary Control and Legal Principles (2)**

Prerequisite: Engr 2. Legal principles that control the boundary location of real property.

**105. Advanced Survey Computations (2)**

Prerequisite: Engr 70, and 102. Computation and adjustment of problems encountered in the previous surveying courses by simple adjustment and method of least squares and with programming for electronic computers. (1 lecture, 3 lab hour)

**106. Cartographic Techniques and Map Reproduction (2)**

Prerequisite: Chem 2B, Engr 103. Cartographic color separation, scribing; line and half-tone copy, theory of photographic processes, photographic optics, emulsions, developers, lenses; offset lithographic process, single and multicolor photolithographic reproduction; modern edge enhancement and photo-tone techniques. (1 lecture, 3 lab hours)

**107. Electronic Distance Measurements (3)**

Prerequisite: Engr 102 and 156, or permission of instructor. Introduction of electronic surveying systems. Analysis of main elements in electronic surveying instruments; geometrical concepts in electronic measurements. Use of electronic distance measurements in surveying, traverse, and trilateration. Use of air borne systems. (2 lecture, 3 lab hour)

**110. Statistical Analysis and Control (3)**

Prerequisite: Math 76. Fundamentals of probability and statistics; general theory and practice of statistical quality control applied to industrial situations; sampling plans; introduction to statistical methods used in industrial research.

**111. Methods Analysis (2)**

Prerequisite: Senior standing in engineering, or permission of instructor. General approach to a design problem; application of the design approach to methods engineering; principles of motion economy; descriptive techniques useful to the methods designer; work measurement; work sampling; special problems in methods engineering. (2 2-hour lecture-labs)

**112. Statistical Design of Experiments (3)**

Prerequisite: Engr 70, 110; concurrent registration in Engr 112L. Analysis of variance, regression and correlation, analysis of covariance, randomized blocks and Latin square, design of experiments, response surface analysis and determination of optimum conditions.

**112L. Statistical Design of Experiments Laboratory (1)**

Concurrent registration in Engr 112. Problem design and data analysis; experimental studies of statistical techniques.

**113. Operations Analysis (3)**

Prerequisite: Math 81, Engr 70, 110. Application of quantitative methods for analysis of complex operational problems.

**114. Facilities Engineering (2)**

Prerequisite: Engr 111. Value analysis, materials handling, plant and office layout, industrial safety, plant location.

**121. Mechanism (3)**

Prerequisite: Engr 26, 130. Analytical and graphical solutions of motion problems involving mechanical elements; synthesis of plane and space linkage systems. (2 3-hour lecture-labs)

**122. Machine Design (3)**

Prerequisite: Engr 70, 130, 131; Math 81. Analytical study of machinery; applications to design of machines; use of computers in design problems.

**123. Advanced Mechanical Design (2)**

Prerequisite: Engr 121, 122. Analytical study of dynamics of machinery; applications to design problems. (2 2-hour lecture-labs)

**124. Mechanical Vibration (3)**

Prerequisite: Engr 130; Math 81. Mathematical and physical basis of vibration theory with applications to engineering; transient and steady state phenomena; distributed and lumped parameters; coupled systems; computer solutions.

**130. Engineering Mechanics: Dynamics (3)**

Prerequisite: Engr 30. Application of principles of kinematics and kinetics to problems in engineering.

**131. Mechanics of Materials (3)**

Prerequisite: Engr 30. Application of principles of mechanics to find stresses and deformations in machine and structural members.

**131L. Mechanics of Materials Laboratory (1)**

Prerequisite: Engr 32; 131 (or concurrently). Application of the principles and methods of testing to verify theory and determine limitations of principles of mechanics of materials. (3 lab hours)

**133. Steel and Timber Structures (3)**

Prerequisite: Engr 135. Steel and timber members for buildings and bridges designed for dead, live, impact, wind, and seismic forces; light gage and plastic steel design. (2 lecture, 3 lab hours)

**134. Reinforced Concrete (3)**

Prerequisite: Engr 135. Design and investigation of concrete structures by elastic and ultimate design procedures; prestressed concrete. (2 lecture, 3 lab hours)

**135. Theory of Structures (3)**

Prerequisite: Engr 131. 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 method.

**136. Physical Metallurgy (2)**

Prerequisite: Engr 131L. Physical properties of metals as manufactured and affected by heat-treatment and forming processes; correlation of properties with microstructure. (1 lecture, 3 lab hours)

**137. Soil Mechanics (2)**

Prerequisite: Engr 131. Physical and mechanical properties of soil as an engineering material; theoretical studies in permeability, compressibility and compression and stress-deformation and strength characteristics.

**137L. Soil Mechanics Laboratory (1)**

Prerequisite: Engr 137 (or concurrent), 131L. Experiments to illustrate and amplify the principles of soil mechanics. (3 lab hours, field trips)

**138. Highway Engineering (3)**

Prerequisite: Engr 2; 137 (or concurrently). Feasibility and economic considerations in location, design, construction, and maintenance of streets and highways.

**139. Advanced Mechanics of Materials (3)**

Prerequisite: Engr 70, 131; Math 81. Advanced topics in mechanics of materials.

**140. Hydrology (3)**

Prerequisite: Engr 164. The hydrologic cycle, atmospheric conditions, precipitation, infiltration, ground water, soil moisture, evaporation, runoff, streamflow, hydrographs, flood routing, hydrologic frequency analyses, and their effects in water resource planning and management.

**141. Water Resources Engineering (2)**

Prerequisite: Engr 164. Planning, design, and operational aspects of water resources projects. (1 lecture, 3 lab hours; field trips)

**142. Water Supply and Sanitation (3)**

Prerequisite: Engr 164. Water treatment plants, distribution systems, waste collection systems and disposal facilities; storm drainage systems. (3 lecture hours; field trips)

**143. Concrete Laboratory (1)**

Prerequisite: Engr. 131L. Proportioning of concrete mixes; admixtures; workability tests; compressive, flexural, and tensile strength tests; reinforced concrete. (3 lab hours; field trip)

**144. Foundation Design (3)**

Prerequisite: Engr 137, 134 (or concurrently). Theory and design of footings, piles, retaining walls, and other structures combining the use of soil mechanics and structural analysis.

**145. Fluid Dynamics (3)**

Prerequisite: Engr 70, 165, Math 81. Stream function, velocity potential function, conformal transformation with applications to engineering problems.

**146. Intermediate Theory of Structures (3)**

Prerequisite: Engr 135. Analysis of statically indeterminate beams, trusses, and frames; energy methods; influence lines; column analogy; advanced topics in slope deflection and moment distribution.

**148. Hydrometeorology (3)**

Prerequisite: Engr 140. Hydrometeorologic principles. Analyses of weather systems, precipitation processes and extreme meteorologic conditions as applied in water resource development.

**149. Engineering Hydraulics (3)**

Prerequisite: Engr 164. Theory and analysis of pressure-conduit and open-channel flow systems. Applications to hydraulic structures and control works, hydraulic power conversion, sediment transport, and channel stabilization.

**150. Magnetic and Electric Circuits (3)**

Prerequisite: Physics 4B, Math 81 (or concurrently). Fundamentals of magnetic circuits; basic laws of direct-current and of single and polyphase alternating-current circuits; transient phenomena in simple circuits; principles of electrical instruments.

**150L. Magnetic and Electric Circuits Laboratory (1)**

Use of electrical instruments; experiments and computations on magnetic, direct- and alternating-current circuits, single and polyphase, and on transient phenomena in simple circuits. (3 lab hours)

**151. Electrical Machinery (3)**

Prerequisite: Engr 150, 150L. Principles of direct- and alternating-current machinery and of other energy-conversion devices and associated apparatus.

**151L. Electrical Machinery Laboratory (1)**

Experiments and computations on direct- and alternating-current machinery and on other energy-conversion devices and associated apparatus. (3 lab hours)

**152. Electrical Circuit Analysis (3)**

Prerequisite: Engr 150, 150L. Advanced mathematical and graphical analysis of pulsed, transient, and steady-state conditions in electrical networks; electro-mechanical analogs and models.

**152L. Electrical Circuit Analysis Laboratory (1)**

Experiments and computations on bridge circuits and on electrical networks energized under various types of wave-form conditions; modern data analysis techniques. (3 lab hours; field trips)

**153. Electrical Transmission (3)**

Prerequisite: Engr 152, 152L, 155. Principles of transmission of electrical energy over wires at power and communication frequencies and through wave guides and space at ultra-high frequencies; filter circuits; design of transmission systems.

**153L. Electrical Transmission Laboratory (1)**

Experiments and computations involving electrical transmission of energy, including the use of filter circuits. (3 lab hours; field trips)

**155. Electric and Magnetic Fields (3)**

Prerequisite: Engr 150, 150L, Math 81. Advanced topics in electricity and magnetism; fields and waves; emphasis on applications to engineering.

**156. Electronics (2)**

Prerequisite: Engr 150, 150L. Electron tube, solid-state, and semiconductor electronics; introduction to basic systems; engineering applications and considerations.

**156L. Electronics Laboratory (1)**

Laboratory experiments in electronics; engineering applications. (3 lab hours)

**157. Electronic Devices and Circuits (3)**

Prerequisite: Engr 156, 156L. Physical electronics, characteristics and properties of electronic devices, both thermionic and solid state; theory of electronic circuits; analysis of linear feedback systems.

**157L. Electronic Devices and Circuits Laboratory (1)**

Experimental studies of electronic devices, circuits, and commercial type apparatus. (3 lab hours; field trips)

**158. Electronic Systems and Controls (3)**

Prerequisite: Engr 153, 153L, 157, 157L. Applications of electronic circuits to engineering systems including communication, control, computer, television, telemetry radar, and microwaves systems; high-frequency techniques; special applications, and design considerations.

**158L. Electronic Systems and Controls Laboratory (1)**

Electronic measurements; laboratory studies of electronic systems. (3 lab hours; field trips)

**159. Precision Electrical and Magnetic Techniques (1) (Former Engr 155L)**

Prerequisite: Engr 153, 153L, 157, 157L. Advanced experiments and precision measurement techniques and computations in electricity, magnetism, electronics, and electromagnetic fields and waves; modern error analysis techniques. (3 lab hours; field trips)

**162. Air Conditioning (3)**

Prerequisite: Engr 165. Theory and practice in air conditioning including psychometrics, load estimating, heating and cooling systems, fluid design and controls.

**162L. Air Conditioning Laboratory (1)**

Practical laboratory work with commercial type units; test of components of air conditioning systems. (3 lab hours; field trips)

**164. Thermodynamics-Fluid Mechanics A (3)**

Prerequisite: Engr 130 (or concurrently). Fundamentals of thermodynamics, fluid mechanics, and heat transfer as applied to engineering problems.

**164L. Thermodynamics-Fluid Mechanics Laboratory A (1)**

Prerequisite: Engr 164 (or concurrently). Application to thermo-fluid systems of experimental methods used in engineering practice. (3 lab hours)

**165. Thermodynamics-Fluid Mechanics B (3)**

Prerequisite: Engr 164. Continuation of Engr 164. Fundamentals of thermodynamics, fluid mechanics, and heat transfer as applied to engineering problems.

**165L. Thermodynamics-Fluid Mechanics Laboratory B (1)**

Prerequisite: Engr 164L, 165 (or concurrently). Application to thermo-fluid systems of experimental methods used in engineering practice. (3 lab hours)

**166. Advanced Thermodynamics-Fluid Mechanics (3)**

Prerequisite: Engr 165. Advanced topics in thermodynamics, fluid mechanics, and heat transfer as applied to engineering problems.

**166L. Advanced Thermodynamics-Fluid Mechanics Laboratory (1)**

Prerequisite: Engr 165L, 166 (or concurrently). Application to thermo-fluid systems of advanced experimental methods used in engineering practice. (3 lab hours)

**170. Engineering Economy (2)**

Prerequisite: senior 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.

**171. 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.

**172. Senior Project (2)**

Prerequisite: senior standing in engineering. Study of a problem by student under supervision of a staff member; final written report to the engineering staff. The project subject must be approved during the semester prior to enrollment. (Individual project except by special permission)

**173. Analog Computation (2)**

Prerequisite: Phys 4B, Math 77 (or concurrently). Introduction to electronic analog computer programming. (1 lecture, 3 lab hours)

**180. Electrical Power Systems (3)**

Prerequisite: Engr 151, 151L, 153, 153L, 156, 156L. Electrical power equipment and systems, operation and design, commercial practice and regulations; high voltage, lightning and surge phenomena; control and protection schemes; fault and stability calculations; introduction to nuclear power engineering.

**180L. Electrical Power Systems Laboratory (1)**

Experiments and computations on high-voltage and electrical power equipment and systems and associated apparatus; electrical design of power systems, commercial practice. (3 lab hours; field trips)

**181. Automatic Control (2)**

Prerequisite: Engr 151, 151L. Theory and application of automatic control techniques; including hydraulic, pneumatic, electrical and electronic, inertial guidance, and nonlinear devices and systems; design, response, and stability of control systems.

**181L. Automatic Control Laboratory (1)**

Experiments and computations on automatic control devices and systems. (3 lab hours)

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

See *Regulations and Procedures—Independent Study*.

**GRADUATE COURSES**

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

**231. Structural Dynamics (3)**

Prerequisite: Engr 146. Response of framed structures to dynamic loading. Design methods, earthquake and blast loading.

**232. Boundary Value Problems in Engineering (3)**

Prerequisite: graduate standing or consent of instructor. Analysis of boundary value problems in engineering. Solution of equations of elasticity, diffusion, fluids, heat transfer and vibrations by eigenvalue theory.

**236. Matrix Analysis of Structures (3)**

Prerequisite: Engr 70, 135. Use of matrix methods in the analysis of statically and kinematically indeterminate structures; flexibility and stiffness methods.

**260. Energy and Momentum Transfer (3)**

Prerequisite: Engr 166, Math 81. Fluid mechanics and heat transfer; development of equations and applications.

**IN-SERVICE COURSES**

*Note: In-service courses (300 series) are not intended for use on degrees except by special, prior approval. See Extension and Summer Session Bulletins for course descriptions.*

**311. Professional Examination Review (2; may be repeated in different fields)****321. Professional Engineering Seminar (1-3; may be repeated in different fields)**



SCHOOL OF PROFESSIONAL STUDIES

# SCHOOL OF PROFESSIONAL STUDIES

Horace O. Schorling, Dean

Assistant Dean.....Lawrence E. Smardan  
Director of Allied Health Professions.....Edward Berg

<i>Department</i>	<i>Chairman</i>
Aerospace Studies.....	Alastair W. Thompson
<b>Criminology</b> .....	Frank M. Boolsen
Health Science.....	Henry F. Fricker
Home Economics (Acting).....	M. Gene Shelden
Industrial Arts and Technology.....	Frank E. Schroeter
Journalism.....	John H. Duke
Nursing.....	Fannie L. Gardner

The School of Professional Studies consists of departments which prepare students for professional careers in teaching, business, industry, government, military service, and public service.

The Aerospace Studies Department provides precommissioning education and military training which, in conjunction with the bachelor's degree, qualifies a student for appointment as a second lieutenant in the United States Air Force. Expansion within the area of allied health professions will provide new programs in physical therapy and, at the graduate level, rehabilitation counseling. The Criminology Department offers both the bachelor of science degree and the master of science degree in the areas of law enforcement and correction. The Health Science Department offers a bachelor of arts degree and a master of science degree in health science. The department is authorized to offer a program in public safety and accident prevention, including driver education and driver training. The Home Economics Department offers the bachelor of arts and master of science degrees. The Industrial Arts and Technology Department offers the bachelor of arts degree and the master of arts degree in industrial arts and the bachelor of science degree in industrial technology. The Journalism Department offers the bachelor of arts degree in journalism with concentrations in news-editorial, public relations and advertising, radio and television news communications, and technical journalism. An interdisciplinary master of arts degree is offered jointly by journalism and radio-television. The department is accredited by the American Council on Education for Journalism. The Nursing Department offers the bachelor of science degree in nursing and is accredited by the National League for Nursing and the California State Board of Nursing Education and Nurse Registration.

In addition, the School of Professional Studies offers the bachelor of vocational education degree in those occupational fields which qualify under the State of California Swan Act.

## AEROSPACE STUDIES DEPARTMENT

Professor: A. Thompson (Chairman)

Assistant Professor: Marsters

**MINOR**

A minor in aerospace studies consists of satisfactory completion of the AFROTC program (15 units).

**AIR FORCE RESERVE OFFICER TRAINING CORPS PROGRAM**

As a result of the Reserve Officer Training Corps Vitalization Act of 1964, all previous information concerning Air Force ROTC was superseded by a two-year program which became effective at Fresno State College in the summer of 1965. This new four-semester program is designed to provide prospective Air Force officers with the education, skills, and attitudes vital to the Air Force professional career officer. It is designed to qualify for officer's commissions those college men who desire to serve in the United States Air Force. Successful completion of the program leads to a reserve commission as a second lieutenant in the United States Air Force upon graduation.

To be eligible for admission to AFROTC, a student 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 and have a minimum of four semesters, either undergraduate or graduate, remaining to be completed at Fresno State College.
- (3) Successfully complete the Air Force Officer Qualifying Test.
- (4) Successfully complete the Air Force physical examination.
- (5) Be selected for and satisfactorily complete AS 25.
- (6) Be not more than 26½ years of age, if programmed for flying training; or 30 years of age, if programmed for other than flying training, at date of graduation and commissioning.
- (7) Be approved for AFROTC training by the Professor of Aerospace Studies and the President of the College.
- (8) Execute a written agreement with the United States Government and the President of the College to complete the program contingent upon completion of baccalaureate requirements at the institution where he is enrolled or at another institution where such a program is given in the case of a transfer from one institution to another, and to accept an appointment as a commissioned officer in the Air Force upon graduation.
- (9) Enlist in the Air Force Reserve (Obligated Reserve Section) for a period of six years.

Students with prior military service should consult the Professor of Aerospace Studies for applicable entrance requirements.

Cadets enrolled in AS 103A-B, 104A-B will receive a subsistence allowance of \$50 a month. During attendance at AS 25, a prospective cadet receives subsistence, quarters, and a monetary allowance of \$90 a month for the six-week period, plus travel pay to and from the place of training. Reference books, officer-type uniforms, and textbooks are provided by the Air Force. All AFROTC payments or other benefits are in addition to those a veteran is entitled to under the GI Bill or other laws.

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

A 35-hour flight instruction program and an opportunity to qualify for a private pilot's license is offered to eligible seniors at government expense plus travel pay to and from the Flight Facility.

Applications should be submitted to the Professor of Aerospace Studies during the sophomore year or the fall semester preceding anticipated enrollment in AFROTC.

### *Courses*

#### **AEROSPACE STUDIES**

##### **25. Officer Basic Military Training Course (OBMT) (3)**

Taken during summer preceding junior year before entry into AFROTC. Six-week military field training to acquaint student with Air Force life; basic military skills; Air Force weapons and support systems; uniformity, compliance, and discipline essential to military environment. Subsistence, quarters, \$90 monthly allowance, and travel pay to and from designated Air Force base.

##### **103A-B. Growth and Development of Aerospace Power (3-3)**

Prerequisite: satisfactory completion of AS 25, or equivalent military training. Development of United States airpower; mission and organization of Defense Department; Air Force concepts, doctrine, employment; astronautics and space operations; future development of aerospace power; space programs, vehicles, systems, problems in space exploration. (3 class, 1 hour Corps training)

##### **103C. Air Force ROTC Field Training (3)**

Prerequisite: AS 103A-B. Required for four-year program cadets only. One month's military training taken during the summer at designated Air Force installations. Physical training, drill, weapon familiarization, familiarization flying, field exercises, orientation in United States Air Force base activities, and equipment. Subsistence, quarters, \$150 monthly allowance, and travel pay to and from designated Air Force Base.

##### **104A-B. The Professional Officer (3-3)**

Prerequisite: AS 103A-B. Leadership and management; military professionalism; officer responsibilities; military justice; leadership theory, functions, practices; management principles, practices, controls, functions; systematic problem solving. (3 class, 1 hour Corps training)

## CRIMINOLOGY DEPARTMENT

Professors: Boolsen (Chairman), Dienststein, Ray, Tocchio

Associate Professors: Kallam, Quinn

Assistant Professors: Fitzgerald, Saake

Part-time: Aldredge, Clegg, Cowan, Cunningham, Elkins, Futrell, Hill, Kokx, E. Margosian, McDaniel, McKinney, Mortland, Nitz, Quaschnick

The Criminology Department provides educational opportunities in the areas of law enforcement and corrections. The law enforcement program is designed for students interested in careers in law enforcement and related areas at the federal, state, and local levels of government, or in allied occupations in government, business, and industry. The corrections program is designed for students interested in careers in probation, parole, penal and correctional institutions, and other affiliated forms of work.

The department offers the bachelor of science and master of science degrees in criminology.

### BACHELOR OF SCIENCE DEGREE IN CRIMINOLOGY

The bachelor of science degree in criminology with options in law enforcement or corrections is granted upon completion of a four-year curriculum consisting of 128 semester units. The general degree requirements must be completed, see *Degrees and Credentials*. Each student desiring to major in criminology must select and complete one of the options listed below.

#### Law Enforcement Option

	<i>Units</i>
Crim 4, 5, 7, 10, 73, 102, 105A-B, 113, 114, 128, 140 .....	35
Crim 108 (or satisfactory experience) .....	8
Elect from: Crim 120, 132, 153, 170 .....	9
Electives in psychology or sociology or criminology (ud) excluding Crim 180, 181, 183, 190, 281, 290, 302 .....	12
	64
<i>Additional Requirements:</i> H Sc 48 (or first aid certificate); Jour 17, Soc 1.	

#### Corrections Option

Crim 74, 105A, 120, 125, 132, 133, 135, 138, 140, 153 .....	30
Crim 181 (or satisfactory experience) .....	3
S Wel 122T, 124, 127 .....	6
Electives in psychology or sociology or criminology (ud) excluding Crim 180, 181, 183, 190, 281, 290, 302 .....	12
	51
<i>Additional Requirements:</i> Soc 1.	

### CREDENTIAL PROGRAM

For information on current credential programs, consult departmental advisers and the School of Education; see *Public School Credentials*.

### MASTER OF SCIENCE DEGREE

The graduate program for the master of science degree in criminology is based on the equivalent of the undergraduate major in criminology at Fresno State College. An area of occupational specialization, such as corrections or law enforcement, is required. For specific requirements consult the chairman of the department; for general requirements, see *School of Graduate Studies*. For detailed information about the graduate program at Fresno State College, see the *Graduate Bulletin*, available in the Office of the Dean, School of Graduate Studies.

**GENERAL EDUCATION REQUIREMENTS**

The following courses will satisfy general education requirements. *Area II: Crim* 1, 120, 132, 153. (See *General Education—Courses.*)

**Courses****CRIMINOLOGY****1. Crime in America (3)**

Prerequisite: Soc 1 or permission of instructor. Social justice and criminal law; state vs accused; crime and criminals; police function; prosecution; correctional process; prevention.

**4. Patrol Procedures (3)**

Open only to criminology majors. Not open to students with credit in Crim 4A-B. Basic theories, objectives, and activities of the police patrol force.

**5. Traffic (3)**

Open only to criminology majors. Primary traffic functions of the police; traffic law enforcement; traffic direction; accident investigation; contemporary problems; California Vehicle Code.

**7. Firearms (2)**

Open only to criminology majors. Prerequisite: permission of instructor. Use and care of firearms; explanation of situations warranting use of firearms; legal provisions and restrictions; policy covering use in performance of duty; safety precautions; nomenclature; dry firing and familiarization firing. (1 lecture, 3 range field hours)

**10. Police Records (2)**

Open only to criminology majors. Organization and installation of a police record system; types and functions of records; recording procedures.

**73. Police Report Writing (3) (Former Crim, Engl 72)**

Not open to students with credit in Crim 72 or 74; open only to law enforcement students. Prerequisite: Engl 1 or equivalent. Principles of effective preparation of technical and narrative law enforcement reports.

**74. Correctional Report Writing (3) (Former Crim, Engl 72)**

Not open to students with credit in Crim 72 or 73; open only to corrections students. Prerequisite: Engl 1 or equivalent. Principles of effective preparation of technical and narrative reports in correctional institutions, community service, or probation and parole agencies.

**102. Police Organization and Administration (3)**

Not open to students with credit in Crim 2. Fundamentals of police organization and administration applied to field operations; records and reports, patrol; traffic; investigation; vice, crime prevention; public relations; police ethics; allied problems.

**105A-B. Criminal Law (3-3)**

(A) Advanced study of theory, concepts, and philosophy of criminal law through case study method. (B) Laws of arrest, search and seizure; criminal procedure; criminal evidence; juvenile law, through case study method.

**108. Directed Policing (2; max total 8) (Former Crim 8)**

Open only to criminology majors who are members of the College Student Police Unit. Prerequisite or concurrently: Crim 4, permission of instructor and sponsoring agency; not required of women students. Supervised field experience

in police work for interpreting theories developed in parallel criminology courses. Weekly conference with supervisor. (Minimum of 6 field hours per unit.)

**113. Criminalistics I (4) (Former Crim 115A)**

Open only to criminology majors. Prerequisite: Crim 4. Advanced study of scientific crime investigation and detection methods. Field trip may be required. (3 lecture, 3 lab hours)

**114. Criminalistics II (3) (Former Crim 115B)**

Open only to criminology majors. Prerequisite: Crim 4. Criminal identification systems; identification of persons and property; physical evidence; scientific resources and techniques. Field trip may be required.

**115. Criminalistics III (3)**

Open only to criminology majors. Detection and scientific analysis of narcotics and dangerous drugs. (2 lecture, 3 lab hours)

**120. Juvenile Delinquency (3)**

Prerequisite: Soc 1 or permission of instructor. The problem of juvenile delinquency; portrait of delinquency; causal factors; agencies of justice; treatment process; programs for control and prevention.

**121. Delinquency Prevention (3)**

Not open to students with credit in Crim 136.3. Prerequisite: Crim 120 or 132. An analysis of the role of the police, correctional agencies, the courts, group and community oriented programs of the prevention and control of juvenile delinquency.

**125. Correctional Law (3)**

Not open to students with credit in Crim 136.2. Prerequisite: Crim 105A. Basic legal theories, concepts, and laws affecting juveniles and adults in the correctional process; case studies.

**128. Interviewing and Interrogation (3)**

Not open to students with credit in Crim 136.6. The elements of police interviews and interrogations.

**129. Detection of Deception (3)**

Open only to criminology majors. Prerequisite: Crim 128 or permission of instructor. Historical, physiological, psychological and legal aspects of the analysis of detection of deception techniques; theory and practice of instrumental detection of deception and other interrogation aids; laboratory experiments in the use of the polygraph. (2 lecture, 3 lab hours)

**132. Criminology (3)**

Prerequisite: Soc 1 or permission of instructor. Theories of criminal behavior; sociological factors; organized crime; professional criminals; selected types of social deviants and criminal offenders.

**133. Institutional Treatment of Offenders (3)**

Prerequisite: Crim 132 or permission of instructor. Modern philosophy and methods in the treatment of adult offenders and juvenile delinquents in correctional institutions.

**135. Probation and Parole (3)**

Prerequisite: Crim 120, or 132, or permission of instructor. Principles and practices in probation and parole.

**136T. Topics in Criminology (3; max total 12 if no topic repeated)**

Prerequisite: Soc 1 or permission of instructor. Analysis of selected areas of criminology, corrections, law enforcement, and criminalistics.

**137. Small Groups (3)**

Prerequisite: Soc 1 or permission of instructor. An examination of theories and research on behavior in small groups.

**138. Correctional Counseling (3)**

Prerequisite: Soc 1 or permission of instructor. Methods of orientation, guidance, and treatment by which a leader may counsel a group of individuals, direct and facilitate constructive interpersonal relationships; group approach to social reintegration in the correctional setting.

**140. Human Relations (3)**

Prerequisite: Soc 1 or permission of instructor. Nature and causes of complex problems in people-to-people relations; related role of agencies of criminal justice in a democratic society.

**153. Psychology of the Criminal (3)**

Psychological bases of crime; motivation, alcoholism, economic and cultural pressures; forms of crime; criminal careers.

**169. Statistics (3)**

A study of elementary statistical techniques with special reference to criminological problems.

**170. Research in Criminology (3)**

Not open to students with credit in Crim 200. Prerequisite: Crim 169. Research methodology; use of library resources; preparation and handling of materials in criminology; written report required.

**180. Internship in Law Enforcement (1-6; max total 6)**

Open only to criminology majors without law enforcement experience. Prerequisite: permission of instructor and sponsoring agency. Relates student's classroom studies with occupational and professional experiences. Weekly conference with field supervisor. (Minimum of 3 field hours per unit)

**181. Internship in Corrections (1-6; max total 6)**

Open only to criminology majors without correctional work experience. Prerequisite: permission of instructor and sponsoring agency. Relates the student's classroom studies with occupational and professional experiences. Weekly conference with field supervisor. (Minimum of 3 field hours per unit)

**183. Counseling Practicum (3; max total 6)**

Prerequisite: Crim 138 or permission of instructor. Professional experience in individual and group counseling in a correctional or related agency. (Minimum of 6 supervised field hours)

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

See *Regulations and Procedures—Independent Study*.

**GRADUATE COURSES**

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

**201. Seminar in Criminology (3)**

Prerequisite: Crim 132 or permission of instructor. Theories and research in the etiology of juvenile delinquency and criminal behavior.

**210. Seminar in the Administration of Justice (3; max total 9 if no topic repeated)**  
(Former Crim 204, 208)

Prerequisite: permission of instructor. Developments and trends in the administration of justice; constitutional, statutory, and procedural problems; the police function; criminalistics; prosecution of criminal offenses; correctional administration and management.

**227. Seminar in Crime and Delinquency Prevention Programs (3)**

Prerequisite: permission of instructor. Policies and programs for prevention and control of delinquency and crime; evaluation of specific programs; principles of prevention and control.

**233. Seminar in the Treatment of Offenders (3; max total 9 if no topic repeated)**  
(Former Crim 225A-B, 229)

Prerequisite: Crim 133 or permission of instructor. Detention; community-centered correctional programs; probation; institutional treatment of deviants and offenders; group approach to social reintegration; parole and postinstitutional guidance of released persons.

**270. Problems in Criminology (1-6; max total 6 if no topic repeated)**

Prerequisite: permission of instructor. Special problems in law enforcement or corrections; individual research in laboratory, library, or field work; formal written reports. Weekly conference with instructor.

**281. Supervised Professional Experience (1-6; max total 6)**

Open only to criminology majors. Prerequisite: permission of instructor. Supervised professional experience in law enforcement or correctional work.

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

*See Regulations and Procedures—Independent Study.*

**298. Directed Research (3-6; max total 6)**

Prerequisite: Crim 169, 170. Directed research in criminological problems; preparation, completion, and submission of an acceptable individual project leading to the master's degree. Individual conferences, oral defense of study.

**299. Thesis or Project (2-4; max total 4)**

Prerequisite: see *Master's Degrees—Thesis Requirement*. Preparation, completion, and submission of an acceptable thesis or project for the master's degree.

**IN-SERVICE COURSES**

*Note: In-service courses (300 series) are not intended for use on degrees except by special, prior approval. See Extension and Summer Session Bulletins for course descriptions.*

**302. Topics in Criminology (1-3)**

## HEALTH SCIENCE DEPARTMENT

Professors: Fricker, (Chairman), Fikes, Kimberly, Lindly

Assistant Professor: Liskey

Part-time: Auernheimer, P. Baker, W. Baker, Bergstrom, Caffee, Dawson, DeFries, Eickhorn, Hardgrave, Herter, Humphrey, Landers, McCole, Reich, Schultz, Thompson

The Department of Health Science offers curricula leading to a bachelor of arts degree, including a major and minor in health science with options in health and safety, public health, and sanitation. A concentration in health science is also available for use on the master of arts degree in education.

These programs are designed to provide basic training for public health, safety, or voluntary health agencies; allied health professions; the Peace Corps; and elementary, secondary, and college teaching.

**MAJOR**

A major in health science for the bachelor of arts degree consists of 30 units composed of a health science core and one of the options listed below. Consult the department adviser for recommended sequence of major and general education courses.

	<i>Units</i>
<i>Health Science Core</i> .....	15
H Sc 101, 105, 123, 140, 157	
Elect one option below.....	15
<i>Health and Safety Option</i>	
H Sc 110, 156, 170	
Elect from: H Sc 131, H Ec 131, 137, Psych 111	
<i>Public Health Option</i>	
H Sc 115, 116, Soc 147	
Elect from H Sc 155, 163, Soc 111	
<i>Sanitation Option</i>	
H Sc 155, 158, 159, 163, 165	

**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.

**MASTER OF SCIENCE DEGREE**

The graduate program leading to the master of science degree in health science is based on undergraduate preparation in health science and/or related fields. For specific requirements consult the department graduate adviser; for general requirements see *School of Graduate Studies*. For detailed information about the graduate program at Fresno State College, see the *Graduate Bulletin*, available in the Office of the Dean, School of Graduate Studies.

**CREDENTIAL PROGRAMS**

For information on the current credential programs consult departmental advisers and the School of Education; see the section on *Public School Credentials*.

**THE STANDARD DESIGNATED SUBJECTS TEACHING CREDENTIAL  
WITH SPECIALIZATION IN PUBLIC SAFETY AND ACCIDENT PREVENTION  
INCLUDING DRIVER EDUCATION AND DRIVER TRAINING**

This credential authorizes the holder to teach public safety and accident prevention, including driver education and driver training, at all grade levels and in classes for adults. Candidates for this credential, on the basis of college recommendation, must have a bachelor's degree; a valid California driver's license and satisfactory driving record; admission to the credential program and 12 semester units composed of the following courses: H Sc 48, 105, 148, 170, 205, 285F. For further information, consult the department adviser.

**GENERAL EDUCATION REQUIREMENTS**

The following course will satisfy general education requirements. *Area V*: H Sc 90. (See *General Education—Courses*)

*Courses*

**HEALTH SCIENCE**

**48. First Aid (2)**

Standard and advanced Red Cross first aid courses; safety factors in daily living; civil defense programs. Certificates issued when requirements are met.

**90. Health Science (3)**

Meets general education requirements. Significance of basic health problems applicable to the young adult and to society.

**101. Principles of Public Health (3)**

Introduction to the field, philosophy of public health; the community as patient of the public health agency.

**105. Environmental Safety (3)**

The physical environment as it relates to accidents and safety; investigation and analysis of factors involved in the areas of home, school, industry, recreation, and traffic; human factors; accidents by type, age groups, and occupations.

**110. Habit Forming Substances (3)**

Problems of tobacco, depressants, and stimulants including hallucinogens; use and effects on adolescents and adults.

**115. Public Health Education (3)**

Prerequisite: completion of core program. The education process in public health and health education activities including community health profile studies; application of group processes to health education.

**116. Public Health Education (3)**

Prerequisite: completion of core program. Psychological and educational criteria in the selection of public health education media and materials, technical aspects of their use, evaluation procedures; working with citizen groups.

**123. Advanced Health Science (3)**

Health science in the public school curriculum, with emphasis on current health problems; the determining factors in teaching content; school health programs.

**131. Principles of Audiology (3) (See CD 131)**

**140. International Health (3)**

History and evaluation of programs of international health organizations; health problems on a world scale.

**148. Teaching First Aid (1)**

Prerequisite: current standard and advanced Red Cross first aid certificates. Preparation for Red Cross standard and advanced first aid instructor's certificates. Certificates issued when requirements are met.

**155. 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.

**156. Source Materials (2)**

Prerequisite: H Sc 123. Exploration, evaluation, and teaching materials in health.

**157. Community Health (3)**

Public health services as they affect the community; investigation and analysis of community health problems.

**158. Public Health Statistics (3)**

Prerequisite: H Sc 155 or permission of instructor. Public Health statistics and principles of epidemiology; methods of investigating epidemics, collecting of data, analysis and reports.

**159. Environmental Health (3)**

Prerequisite: H Sc 158 or permission of instructor. Fundamentals of housing, heating, ventilation, lighting, water supply, waste disposal; insect and rodent control; control of milk and other food supplies.

**163. Public Health Administration (3)**

Principles of public health administration; fundamentals of organization and administration in public health.

**165. Directed Group Study in Environmental Health (3)**

Prerequisite: H Sc 159, permission of instructor. Problems of sanitation and sanitary inspections studied through field trips, observations, demonstrations, and seminars.

**170. Driver Education and Training (3)**

Prerequisite: H Sc 105, senior standing, valid California driver's license. Materials, equipment, and procedures for driver education and training including training with simulators. (2 lecture, 2 lab hours)

**180. Sex Education (3)**

Human sexuality as it pertains to the individual, school, family, and community. (2 lecture, 3 field hours)

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

*See Regulations and Procedures—Independent Study.*

**GRADUATE COURSES**

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

*Note: Graduate courses in health science are in the process of revision. See the Graduate Bulletin for revisions.*

**205. Seminar in Safety Problems and Programs (2)**

Prerequisite: H Sc 105, 285F concurrently. Development, organization, and administration of safety programs; individual research, analysis, and evaluation of pertinent problems.

**210. Seminar in Administration of the Health Science Program (2)**

Prerequisite: H Sc 123, 285F concurrently. Individual research, analysis, and evaluation of the organization, administration, and legal aspects of the health science program.

**220. Seminar in Physical Handicaps (2)**

Prerequisite: H Sc 123, 285F concurrently. Individual research, analysis, and evaluation of the cause, treatment, and educational implication of crippling conditions, including cerebral palsy of preschool and school-age children; rehabilitation and adjustment problems.

**223. Seminar in Health Science Education (2)**

Prerequisite: H Sc 123, 285F concurrently; teaching experience or permission of instructor. Individual research, critical analysis and evaluation of the health science program; curriculum materials, and special techniques relating to instruction, services, and environment.

**230T. Seminar in Environmental Health (3-15; max total 15)**

Individual research, analysis, and evaluation of a topic: air pollution, solid wastes, housing, water supply, insect and rodent control, food sanitation, environmental and occupational disease.

**231T. Seminar in Population Analysis (3-9; max total 9)**

Individual research, analysis, and evaluation of a topic: epidemiology, demography, vital statistics.

**232T. Seminar in Preventive Medicine (3-9; max total 9)**

Individual research, analysis, and evaluation of a topic: chronic disease, gerontology, and medical care programs.

**233T. Seminar in Health Organizations (3-9; max total 9)**

Individual research, analysis and evaluation of a topic: local, state and national organizations; voluntary health agencies; and international health.

**234T. Seminar in Community Health (3-9; max total 9)**

Individual research, analysis, and evaluation of a topic: sex education, drugs, and consumer health.

**240. Seminar in International Health (3)**

Prerequisite: permission of instructor. Review and critical analysis of programs of multilateral agencies functioning in international health; major health problems and their sociological, political, and economic relationship to a specific geographic region.

**257. Seminar in Community Health Organization (2)**

Prerequisite: H Sc 123, 157, 285F concurrently. Individual research, analysis, and evaluation in relation to educational aspects of community health programs; group procedures; community organizations; selection, development, and use of media.

**280. Seminar in Techniques of Health Research (3)**

Research methodology, identification of health research problems, use of library resources, data gathering and processing, writing a research report.

**285F. Field Work in Health (1; max total 10)**

To be taken concurrently with appropriate course. Topics repeatable to 2 units in any one area, maximum 10. Planning, implementation, participation, evaluation in selected areas: safety, school health, community health, physical handicaps, problems.

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

See *Regulations and Procedures—Independent Study*.

**298. Directed Research (4)**

Prerequisite: advancement to candidacy for MS degree in health science. Individual research projects in health science; weekly independent and group conferences.

**299. Thesis or project (2-4; max total 4)**

Prerequisite: see *Master's Degrees—Thesis Requirement*. Preparation, completion, and submission of an acceptable thesis or project for the master's degree.

**IN-SERVICE COURSES**

*Note: In-service courses (300 series) are not intended for use on degrees except by special, prior approval. See Extension and Summer Session Bulletins for course descriptions.*

**302. Selected Topics in Health (1-3)**

**HOME ECONOMICS DEPARTMENT**

Professors: Newsome, Rose, Smardan

Associate Professors: Hendrickson, M. Rohrer, Sollie, V. Taylor

Assistant Professors: Berett, Bowden, Caid, Goldbloom, Harkins, Hornbacher, N. Johnson, Karikka, Kissick

Lecturers: Sheldon (Acting Chairman), Bauer

Instructors: Cummins, Jaschke, Kunimitsu

Part-time: Blanton, E. Cehrs\*, Yeary

The Home Economics Department offers a major and a minor in home economics for the bachelor of arts degree and a master of science degree. Programs may be planned to provide preparation for teaching careers in preschool, elementary, and secondary schools. Professional careers include all areas of home economics. In addition to preparing students for a career, all curricula are planned to develop understandings applicable to family life.

**HOME ECONOMICS MAJOR**

The bachelor of arts degree major in home economics consists of the following 48 units. With departmental approval students may make adaptations in the core for specific career objectives.

	<i>Units</i>
H Ec 1, 10, 11, 12, 14 or 24, 38, 39, 40, 50, 51 .....	24
Home economics electives (ud), at least 3 units in each of the areas listed below .....	15
Additional home economics electives (ud) .....	9
<i>Child Development and Family Relations: H Ec 131, 139</i>	
<i>Clothing and Textiles: H Ec 100, 102, 103, 104</i>	
<i>Food and Nutrition: H Ec 105, 137</i>	
<i>Home Management, Equipment, and Family Economics: H Ec 101, 111, 132</i>	
<i>Housing and Home Furnishings: H Ec 133, 172T</i>	

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*Additional Requirements:* Chem 2A-B, Biol 10. Recommended courses: Soc 1, Anthro 2, Psych 10, Hist 1, Art 20.6.

**HOME ECONOMICS MINOR**

The minor in home economics consists of a minimum of 20 units, 9 of which must be upper division, including at least one course in each of the five areas listed in the major. For information concerning a credential minor, consult the department adviser.

**CREDENTIAL PROGRAM**

For information on the current credential program consult departmental advisers and the School of Education; see the section on *Public School Credentials*.

**GENERAL EDUCATION REQUIREMENTS**

The following courses will satisfy general education requirements. *Area II:* H Ec 39, 131. *Area V:* H Ec 40, 42, 132. (See *General Education—Courses*.)

\*Deceased

## *Courses*

### HOME ECONOMICS

#### **1. Dynamics of Family Relations (2)**

Personal and social development of the individual through stages of the family cycle, as interpreted through the philosophy of home economics.

#### **2. Home and Family Life (3)**

Modern homemaking in theory and practice; house plans, furnishings and equipment; family finance; meal planning, preparation and service; selection of china, glass and silver. Activities in practice apartment. (1 lecture, 4 lab hours)

#### **10. Basic Food Study (3)**

Introduction to food preparation and standards determining quality of food. (1 lecture-discussion, 4 lab-demonstration hours)

#### **11. Beginning Textiles (3)**

Fiber classification; methods of production; fabric construction; mechanical finishes. Selection, use, and care of fabrics in relation to consumer needs.

#### **12. Fashion Analysis (1)**

Selection of color, line, and design for individual needs; factors influencing trends in dress.

#### **14. Beginning Clothing (2)**

Not open to students with credit in H Ec 12A-B. Prerequisite: H Ec 12 (or concurrently). Pattern and fabric selection; basic construction techniques, use of commercial patterns; application of these factors to consumer buying. (4 lab hours)

#### **24. Intermediate Clothing (2)**

Not open to students with credit in H Ec 12A-B. Prerequisite: H Ec 12 or concurrently; H Ec 14 or experience in clothing construction. Individualization of basic and designer patterns: alteration principles; techniques of handling new fabrics. (4 lab hours)

#### **31. Dietetics (3)**

Elements of nutrition and diet in disease.

#### **32. Preparation for Marriage (2)**

Competencies needed to create home environment conducive to achieving marriage and family goals; socialization for marriage and courtship as preparation for marriage.

#### **38. Housing and Home Furnishings (3)**

Selecting and furnishing a home; design and functional considerations in selection of floor coverings, wall finishes, draperies, lighting, furniture, and accessories.

#### **39. Child Development (3)**

Study, with an interdisciplinary perspective, of the psycho-social development of the child from birth through adolescence in the cultural context of the family. ment.

#### **40. Elementary Nutrition (3)**

Principles of nutrition; requirements at different stages of growth and development.

#### **42. Management for Effective Living (2)**

Separate sections for men and women; not open to home economics major and minors. Human relationships, child care and development, foods and nutrition, care and selection of clothing, family finance and consumer problems.

**43. Social Procedure (1)**

Social procedures; introductions and social correspondence; table service and etiquette.

**50. Household Equipment (2)**

Selection, methods of operation, and care of household appliances; testing electrical equipment for efficiency and cost of operation; kitchen planning, arrangement of work, preparation and serving units. (1 lecture, 2 lab hours)

**51. Home Management (2) (Former H Ec 110)**

Management principles related to individual and family living; analysis of values, goals, and standards; relationship of human and other resources to the management process.

**100. Tailoring (3)**

Prerequisite: H Ec 12, 14, or 24. Tailoring a woman's suit or coat using various tailoring techniques (6 lab hours)

**101. Consumers and the Market (3)**

Consumer spending related to the family cycle; social and psychological factors influencing consumer behavior. Legislation that protects and relates to the consumer on local, state, and federal level.

**102. Advanced Clothing (3)**

Not open to students with credit in H Ec 12A-B. Prerequisite: H Ec 12, 14, and/or 24. Development of originality in design through the use of a basic pattern and flat pattern methods. Tailoring techniques useful to the secondary school teacher. (6 lab hours)

**103. Advanced Textiles (3)**

Prerequisite: H Ec 11, Chem 2A-B. Production and variations in man-made fibers; chemical finishes; dyes and dyeing; physical testing of fabrics. (2 lecture, 2 lab hours)

**104. Design Through Draping (3)**

Prerequisite: H Ec 12, 14, and/or 24. Construction and use of individual dress form; designing garment through draping. (6 lab hours)

**105. Food Science (4)**

Prerequisite: H Ec 10, Chem 2A-B, Biol 10. Application of chemistry, physics, and bacteriology to the study of foods. (2 lecture, 6 lab hours)

**111. Home Management Laboratory (3)**

Required for credential candidates. Prerequisite: H Ec 40, 50, 51, 105 (or concurrently). Integrated experience in various phases of home economics provided by residence in home management house. (6 lab hours)

**122T. Topics in Clothing and Textiles (3; max total 12 if no topic repeated)**

Prerequisite: H Ec 11, 12, permission of instructor.

**130. Experimental Food Study (2)**

Prerequisite: H Ec 105. Structure and composition of foods, their behavior during processing; food research; food demonstration techniques. (4 lab hours)

**131. Family Relationships (3)**

Interpersonal relationships within the family; needs, values, and goals of the family at various stages of its life cycle.

**132. Family Finance (3)**

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

**133. History of Housing and Home Furnishings (3)**

Sociological, economic, geographic, and religious influences affecting design; coordination of period styles in the home.

**137. Advanced Nutrition (3)**

Prerequisite: H Ec 40, Chem 2A-B, Biol 10. Metabolism of carbohydrates, fats, and proteins; vitamins and minerals. (2 lecture, 2 lecture-lab hours)

**138. Nutrition in Disease (3)**

Prerequisite: H Ec 137 or permission of instructor. Nutritional aspects and dietetic treatment of disease. (2 lecture, 2 lab hours)

**139. Child Development Practicum (3)**

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

**140. Methods of Teaching Home Economics (3)**

Prerequisite: admission to credential program, S Ed 163 concurrently. Methods, processes, evaluation, philosophy, goals, and principles appropriate to the teaching of vocational consumer home economics. (2 lecture, 2 lab hours)

**141. Institution Organization and Management (3)**

Prerequisite: Bus 110 and 151, or permission of instructor. Organization and operation of institution food services; management principles; control, selection, and training of personnel; food cost control and records.

**142. Quantity Cookery (3)**

Prerequisite: H Ec 144, 145. Estimation of needed quantities; quantity food preparation and service; use and care of institution food service equipment. (6 lab hours)

**143. Institution Experience (3)**

Open only to dietetics majors. Prerequisite: H Ec 138, 141, 142. Supervised work experience in hospital dietary departments. (6 lab hours)

**144. Institutional Food Purchasing (2)**

Prerequisite: H Ec 105, Econ 1A (Bus 100 recommended). Wholesale market functions and purchase of food for institutional use, factors determining quality, yield, and cost of food.

**145. Institution Layout and Equipment (2)**

Prerequisite: H Ec 141. Philosophy of work simplification and its application to plant layout and equipment; materials, construction, specification, maintenance of equipment, furnishings for institutional food service units.

**146. Personnel Management in Dietetics (3)**

Prerequisite: H Ec 141. Management of human relations in dietetics; employee-employer relationships; methods of recruitment, selection, training, and supervision of food service personnel.

**152T. Topics in Home Management, Equipment, and Family Economics (3; max total 12 if no topic repeated)**

Effective home management and contemporary family economics.

**154. Field Experience in Home Management (3) (Former H Ec 152.2)**

Prerequisite: permission of instructor. Supervised field experience in teaching home management to various socioeconomic and ethnic groups.

**162T. Topics in Child Development and Family Relationships (3; max total 12 if no topic repeated)**

Prerequisite: H Ec 39 and/or H Ec 131, Psych 10, Soc 1 or Anthro 2, permission of instructor.

**172T. Topics in Housing and Home Furnishings (3; max total 12 if no topic repeated)**

Prerequisite: H Ec 38 and permission of instructor.

**182T. Topics in Food, Nutrition, and Dietetics (3; max total 12 if no topic repeated)**

Prerequisite: H Ec 10, 40, and permission of instructor.

**185. Cultural Foods (3) (Former H Ec 182.1)**

Prerequisite: H Ec 10, 40, Anthro 2 recommended, permission of instructor. Dietary and nutritional practices in different cultures, as influenced by cultural and economic conditions. (2 lecture, 2 lab demonstration hours)

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

See *Regulations and Procedures—Independent Study*.

**192. Readings and Conference (1-3)**

Individually directed readings: reports and evaluation. (hours arranged)

**195. Demonstration Techniques (3)**

Skills and practical experience in planning, organizing, preparing, and presenting demonstrations for home economics majors in teaching, extension, business and dietetics.

**GRADUATE COURSES**

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

**200. Research Methods in Home Economics (3)**

Prerequisite: graduate standing. Methods, techniques of research; locating and formulating problems; collection and interpretation of data; preparation of research reports; analysis of professional literature.

**260T. Seminar: Family Economics (3; max total 6 if not topic repeated)  
(Former H Ec 281.1)**

Analytical study in an area of family economics: personal use of credit, intercultural approach to consumer education, economic aspects of family living. Preparation, presentation, and defense of individual project.

**280T. Seminar in Food, Nutrition, and Dietetics (3; max total 12 if no area repeated)**

Prerequisite: H Ec 200, professional requirements in the field, permission of instructor.

**281T. Seminar in Home Economics (3; max total 12 if no topic repeated)**

Prerequisite: H Ec 200, permission of instructor.

**285. Investigation in Food and Nutrition (4)**

Prerequisite: Chem 150, 151, H Ec 130, 137, permission of instructor. Chem 101 recommended. Food and human nutrition studies through instrumental analysis of biological materials. Chemical and biological techniques used in food and nutrition research. Planning, conducting, and reporting food and nutrition research. (2 lecture, 6 lab hours)

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

See *Regulations and Procedures—Independent Study*.

**292. Readings in Home Economics (2-3; max total 6 if no topic repeated)**

Prerequisite: H Ec 200, 280T or 281 and permission of instructor. Individually directed readings in a field of special concern to students in the graduate program; appropriate reports and evaluations required; individual conferences, no formal class meetings.

**299. Thesis (2-6; max total 6)**

Prerequisite: see *Master's Degrees—Thesis Requirement*. Preparation, completion, and submission of an acceptable thesis for the master's degree.

**IN-SERVICE COURSES**

*Note: In-service courses (300 series) are not intended for use on degrees except by special, prior approval. See Extension and Summer Session Bulletins for course descriptions.*

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

## INDUSTRIAL ARTS AND TECHNOLOGY DEPARTMENT

Professors: Schroeter (Chairman), Aldrich, Bliss, Dettinger, Dunning, Feuches, Groneman, Musselman, Newcomb

Associate Professors: Blanton, Blomgren, Foston, Gonser, Little, Livingston, McComas, Rockwell

Assistant Professors: Bockman, Gaiser, Garcia, Grannis, Gysler, Jenne, L. Smith, Turkot, Winegar

Part-time: Ariaz, Guaglianone, Holladay, Johnson, Kady, Moshier, Renz

The Industrial Arts and Technology Department offers a major and minor in industrial arts for the bachelor of arts degree, a major in industrial technology for the bachelor of science degree, and a program for the master of arts degree. The department also offers a major for the bachelor of vocational education degree. Individual programs are planned to provide for professional careers in teaching and in business and industry. The industrial technology major emphasizes physical science and industrial management as well as the subject fields within the industrial arts for students seeking technical and managerial positions in industry.

### BACHELOR OF ARTS DEGREE IN INDUSTRIAL ARTS

The bachelor of arts degree in industrial arts consists of 124 units. The general requirements for the bachelor of arts degree must be completed (see *Degrees and Credentials*). Students majoring in industrial arts must complete a minimum of 40 units of industrial arts courses, 16 of which must be upper division, excluding IA 192, 194, 196, 199. Students may elect to do the major part of their work in certain specific areas of concentration: automotive, drafting-design, electricity-electronics, general metal, graphic arts, industrial crafts, machine tool metal, and woodworking.

#### Industrial Arts Major

	<i>Units</i>
IA 12, 41, 52, 60, 70, 80.....	18
IA electives (incl at least 16 u.d.) .....	22
	40

#### Industrial Arts Minor

One of the eight groups listed below should be selected for a minor in Industrial Arts.

##### Automotive

IA 12, 71, 120, 122, 124, 129 .....	17
Industrial arts electives.....	3
	20

##### Drafting/Design

IA 41, 42, 140, 143, 146, 148.....	18
Industrial arts electives.....	2
	20

##### Electricity/Electronics

IA 52, 70, 152, 153, 156, 158.....	18
Industrial arts electives.....	2
	20

##### General Metal

IA 41, 70, 71, 74, 170, 177.....	16
Industrial arts electives (incl at least 2 u.d.).....	4
	20

	<i>Units</i>
<b>Graphic Arts</b>	
IA 60, 161, 162, 163, 164, 166 .....	16
Industrial arts electives .....	4
	<hr/> 20
<b>Industrial Crafts</b>	
IA 70, 80, 133 (4 un), 146, 162, 177, 179.....	19
Industrial arts electives.....	1
	<hr/> 20
<b>Machine Tool Metal</b>	
IA 41, 70, 71, 74, 170, 174.....	17
Industrial arts electives.....	3
	<hr/> 20
<b>Woodworking</b>	
IA 41, 80, 82, 111, 184.....	15
Industrial arts electives.....	5
	<hr/> 20

#### BACHELOR OF SCIENCE DEGREE IN INDUSTRIAL TECHNOLOGY

The bachelor of science degree with a major in industrial technology is granted upon completion of a curriculum consisting of 128 units. The general requirements for the bachelor of science degree must be completed (see *Degrees and Credentials*). An option consisting of a core program of industrial arts and technology courses, courses in related areas, and the specific requirements in one or more of the emphases is required. Each student majoring in industrial technology must also complete Econ 1A-B, Physics 2A-B.

#### Industrial Technology Major Manufacturing Industries Option

	<i>Units</i>
<b>Required Core Program</b>	
IA 41, 52, 74, 101, 103, 105, 145, 146, 166, 199.....	30
Bus Ad 62A, 110, 124, 151, Chem 2A-B, Math 71, 72.....	24
	<hr/> 54
<b>Technical Emphases</b>	
<i>Electricity/Electronics</i>	
IA 102, 152, 153, 154, 156, 158.....	18
Electives in related areas approved by department.....	9
	<hr/> 27
<i>Graphic Communications</i>	
IA 60, 147, 161, 163, 165, 167.....	16
Electives in related areas approved by department.....	11
	<hr/> 27
<i>Metals</i>	
IA 70, 71, 170, 171, 173, 174, 175, 176.....	22
Electives in related areas approved by department.....	5
	<hr/> 27
<i>Drafting/Design</i>	
IA 44, 71, 140, 144, 170.....	14
Electives in related areas approved by department.....	13
	<hr/> 27

	<i>Units</i>
<i>Transportation</i>	
IA 12, 70, 71, 120, 122, 124, 129.....	20
Electives in related areas approved by department.....	7
	<hr/> 27
<i>Wood Products</i>	
IA 80, 82, 182, 184, 185, 187.....	18
Chem 8 .....	3
Electives in related areas approved by department.....	6
	<hr/> 27
<b>Construction Option</b>	
<b>Required Core Program</b>	
IA 42, 52, 101, 103, 105, 110, 115, 145, 166.....	27
Acct 3, Bus Ad 110, 151, 180, Chem 2A-B, Math 71, 72.....	24
	<hr/> 51
<b>Technical Emphasis</b>	
<i>Light Building Construction</i>	
IA 111, 116.....	6
AgM 91, Mktg 150, Bus Ad 18.....	9
Electives in related areas approved by department.....	15
	<hr/> 30
<i>Heavy Building Construction</i>	
IA 44, 112, 116, 158.....	12
AgM 91 .....	3
Electives in related areas approved by department.....	15
	<hr/> 30
<i>Architectural Drafting</i>	
IA 44, 117, 143, 147.....	12
Geog 115 .....	3
Electives in related areas approved by department.....	15
	<hr/> 30
<i>Building Materials Industries</i>	
Mktg 100, 150, Bus Ad 62A, 65, 124 .....	15
Electives in related areas approved by department.....	15
	<hr/> 30
<i>Real Estate</i>	
Bus Ad 18, 118, 181, 183, 184.....	15
Electives in related areas approved by department.....	15
	<hr/> 30

#### BACHELOR OF VOCATIONAL EDUCATION DEGREE

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

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

	<i>Units</i>
General Education .....	40
Major in Vocational Education (24 lower division; 12 upper division).....	36
(Board of Examiners evaluation plus upper division courses to total 36 units.)	
Minor in Vocational Teacher Training.....	12
Electives (general or professional, including American history, state and local government, Constitution, and physical education requirements).....	36
	124

**CREDENTIAL PROGRAM**

For information on the current credential program, consult departmental advisers and see the sections on *Public School Credentials* and the *School of Education*. Under the revised credential structure effective January 1, 1964, a candidate for a standard teaching credential must complete a subject matter major and a minor, one of which must be classified as academic. A minor used with a nonacademic major must contain 12 upper division or graduate units. Majors and minors must be in subjects normally taught in the public schools.

**MASTER OF ARTS DEGREE**

The graduate program for the master of arts degree in industrial arts is based on the equivalent of the undergraduate major at Fresno State College. Twenty of the 30 units required for the degree must be in industrial arts. For specific requirements, consult department graduate adviser; for general requirements, see *School of Graduate Studies*. For detailed information about the graduate program at Fresno State College, see the *Graduate Bulletin*, available in the Office of the Dean, School of Graduate Studies.

**GENERAL EDUCATION REQUIREMENTS**

The following courses will satisfy general education requirements. *Area V*: IA 133, 162, 177, 179. (See *General Education—Courses*.)

*Courses*

**INDUSTRIAL ARTS AND TECHNOLOGY**

**101. Energy Conversion and Utilization (3) (Former IA 197)**

Fundamental sources of energy including the following energy converters: direct mechanical, external combustion, internal combustion, conventional and direct electrical, and atomic. (field trips)

**102. Industrial Process Control and Instrumentation (3)**

Prerequisite: IA 52. Industrial process control system principles and components; computers, controllers, transducers, and actuators; mechanical and electrical instrumentation. (field trips)

**103. Industrial Processes and Materials (3)**

Chemical and physical properties of ferrous and nonferrous metals, abrasives, ceramics, finishes, plastics, wood, and other industrial materials. Structural properties, wear, corrosion strength, destructive and nondestructive testing. Fabrication applications and potentials, cutting, fusion, casting, forming, and other industrial processes.

**105. General Building Construction (3)**

Principles of general building construction including classes and requirements of occupancy; fire zone; type of construction; properties and uses of masonry, wood, concrete and steel; contracts and specification. (field trips)

**CONSTRUCTION AREA****110. Estimating and Bidding (3)**

Basic methods used to evaluate, fix cost, calculate worth, make accurate quantity take-offs and labor time estimates; preparing bids for prospective buyers.

**111. Light Building Construction (3) (Former IA 181)**

Principles of light frame construction including foundations, framing, exterior finish and related areas of layout; estimating and ordering materials; conventional and modular component systems. (field trips)

**112. Heavy Building Construction (3)**

Problems and methods of solution in the construction of heavy buildings; site, excavations, foundations, framework, heavy timber, reinforced concrete, structural steel, masonry construction, and related elements. (field trips)

**115. Materials of Construction (3)**

Prerequisite: IA 103. Properties and functional applications of basic building materials: wood, steel, concrete, ceramics, plastics, adhesives, sealants. Recent developments in new materials and applications. (field trips)

**116. Scheduling and Control (3)**

Prerequisite: 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.

**117. Construction Detailing (3)**

Prerequisite: IA 143. Standard structural details for buildings constructed of wood, concrete, masonry, and steel. Graphic communication between architects, engineers, contractors. (field trips)

**AUTOMOTIVE AREA****12. Basic Automotive Systems (3)**

Design, construction and mechanical functions of automotive engines, fuel systems, electrical systems, power transmission, brakes, and wheel suspension; proper use and safety of tools and equipment.

**120. Advanced Automotive Systems (3) (Former IA 113)**

Prerequisite: IA 12, 52. Advanced study of automotive engines, electrical systems, automatic transmissions, brakes, and power transmitting mechanisms; sciences involved with internal combustion, electricity, hydraulics, pneumatics, energy conversion. (field trips)

**122. Automotive Technical Problems (3) (Former IA 114)**

Prerequisite: IA 12. Automotive air conditioning, body applications, diesel, fuels and lubricants technology, small horsepower engines and laboratory organization. (field trips)

**124. Automotive Diagnosis and Correction (3)**

Prerequisite: IA 12. Automotive testing, servicing and repair processes applied to engine, power transmission, and chassis components. (technical reports)

**129. Automotive Systems Repair Procedures (3)**

Prerequisite: IA 12. Technology of engine rebuilding, carburetor and electrical service, power transmission, brakes and wheel suspension, body work and tune-up. (technical reports)

**CRAFTS AREA****34. Theatre Craft (3) (See Drama 34)****133. Industrial Crafts (2; max total 4)**

Creative and recreational experiences in craft media including plastics, leather, wood, metal, enamels; historical, cultural, technological information.

**134. Advanced Theatre Craft (3) (See Drama 134)****DRAFTING-DESIGN AREA****41. Applied Drawing (3)**

Grammar and composition of drawing, sketching, lettering, orthographic projection, working drawings, auxiliary views, dimensioning, developments, pictorial drawing, and duplication.

**42. Architectural Drawing (3)**

Architectural drafting techniques and standards; progress from fundamentals to completing light construction working drawings, floor plans, elevations, details; application of city and county codes.

**44. Descriptive Geometry (3)**

Prerequisite: IA 41 or equivalent. Representation of geometrical magnitudes; relations between point, line, and plane; intersection and development of surfaces, architectural and engineering applications.

**140. Machine Drawing (3)**

Prerequisite: IA 41 or permission of instructor. Detail working drawings of machine parts, precision dimensions, limits and tolerances, threads, shop notes, parts lists, fasteners, assembly drawings, exploded views.

**141. Design for Industry (3)**

History and appreciation of design related to industrial design concepts; vocabulary of design terminology. Procedures to facilitate the development, selection, and organization of space, form and color.

**142. Advanced Design for Industry (3)**

Prerequisite: IA 141 or permission of instructor. Design principles; analysis of the design structure of forms, their variations, and derivations; color and three-dimensional projects.

**143. Architectural Drawing (3)**

Prerequisite: IA 41 or permission of instructor. Mechanical perspective, its theory and practical application to architectural and industrial problems.

**144. Tool Design (3)**

Prerequisite: IA 41, 140 or equivalent. Use of standard tool design handbooks, tooling standards, manufacturing process problems, properties of tooling materials, practical design for jigs and fixtures, tooling for automatic machines.

**145. Technical Illustration (3)**

Publication contact services, manufacturing concerns, and advertising art services employment skills; reproduction processes, sketching parts and assemblies, perspective.

**146. Materials of Product Design (3)**

Prerequisite: IA 41 or permission of instructor. Origins, kinds, properties, and uses of materials of product design and development in modern industry; mechanical and nonmechanical functions of materials; experimentation with industrial materials of significance in the design of industrial products.

**147. Rendering (3)**

Prerequisite: IA 145 or permission of instructor. Theory and practice of rendering techniques for all phases of industrial and advertising design; from pencil sketches to composition stressing appeal and quick reading; in black and white, full color chalk, water color, and tempera.

**148. Product Design (3; max total 6)**

Prerequisite: IA 146 or permission of instructor. Fundamentals of product planning. Research analysis, synthesis, construction, and testing of solutions to problems in creative design of industrial products. Presentation and evaluation of research findings, drawings, and models created in relation to industrial and consumer needs.

**149. Perspective for Industrial Design (3)**

Theory of one, two-and three-point perspective, followed by extensive application involving industrial design objects. Laws of perspective and light and shade as applied to increasingly complex subject matter.

**ELECTRICITY-ELECTRONICS AREA****52. Basic Electricity (3)**

Introduction to electricity including fundamentals of electrostatics, alternating and direct current electrical circuits, electrical calculations, magnetics, circuit applications, electrical measuring and test equipment.

**152. Fundamentals of Electronics (3)**

Prerequisite: IA 52. Basic electronic components and circuits including inductors, capacitors, alternating current circuits; resonance and filters; vacuum tubes and transistors; power supplies; measuring devices; oscillators; amplifiers.

**153. Advanced Electronics (3)**

Prerequisite: IA 152. Electronic systems and applications including basic transmitters, amplitude and frequency modulation transmitters and receivers; transistor applications; antennas; television. (field trips)

**154. Industrial Electronics (3)**

Prerequisite: IA 153. Industrial electronics systems analysis; applications of electronic circuits and devices to industrial process and machine control. (field trips)

**156. Fundamentals of Electrical Machines (3)**

Prerequisite: IA 52. Power generation; energy conversion equipment; alternating and direct current motors and generators. (field trips)

**158. Fundamentals of Electrical Power Distribution and Wiring (3)**

Prerequisite: IA 52. Electrical power distribution equipment and systems; industrial and residential wiring circuits, devices and systems; local and national electrical codes. (field trips)

**GRAPHIC ARTS AREA****60. Basic Graphic Arts (3)**

Introduction to the graphic arts; hand composition, paper making, stereotype, rubber-stamp, thermography, marbling; experiences in relief printing methods; overview of entire printing industry. (field trips)

**61. Typography (1)**

For journalism students only. Printing processes, printing equipment, type faces, hand composition, paper, color printing, and format.

**161. Advanced Photo Offset Lithography (3)**

Prerequisite: IA 60. Techniques and processes employed by commercial and industrial photographic and offset lithographic industry: cold type layout and design, industrial photographic methods, offset lithography, photographic screen process printing, and limited production process printing.

**162. Graphic Arts Crafts (2)**

Various processes and media used in the graphic arts industry; creative and recreational aspect for the student; silk screen, linoleum block, flexography, intaglio, stereotype, papermaking, thermography, marbling, student projects. (field trips)

**163. Advanced Letterpress and Gravure Printing (3)**

Prerequisite: IA 60. Techniques and processes employed by the letterpress and gravure industry; hot type layout and design, letterpress printing, gravure printing, duplicate plates, mass production processes, allied areas.

**164. Bookbinding (2)**

Historical development of the book and its influence on our society; preparation for publication, methods of reproduction and materials used; projects in binding and rebinding; yearbook and textbook problems. (field trips)

**165. Typographical Layout (2)**

Theory and practice utilized by the printing industry in designing, producing, and selling printed matter. Typographical principles, properties, elements, techniques, processes, and media, with aesthetic and psychological implications.

**166. Graphic Reproduction Techniques (3)**

Prerequisite: upper division student. For persons interested in the field of buying, selling or producing printed material. Processes of reproduction; types of publications; media, materials and equipment; technical problems in layout; legal problems; yearbook and in-plant publication reproduction. (field trips)

**167. Printing Economics (2)**

Use of reproduction methods in graphic communication; methods of cost analysis, estimating, selecting, and evaluating the materials, media, and equipment of the printing industry. Methods and procedures used in printing management and related areas. (field trips)

**METALS AREA****General Metalworking****70. Basic Metalworking (3)**

Introduction to and exploration in various metal areas including sheet metal, bench metal, art metal, wrought iron, foundry and forging.

**170. Advanced Principles of Metalworking (3)**

Prerequisite: IA 70 or equivalent. Study and experience in the technological, scientific, and historical aspects of nonferrous metal casting, core-making; forging; principles of metal spinning.

**Welding****71. Metallurgical Processes (2)**

Fundamentals of metallurgy; properties and characteristics of metals; survey of metal welding processes, equipment, and procedures; introduction to destructive and nondestructive testing methods.

**171. Advanced Metallurgical Processes (2)**

Prerequisite: IA 71. Design of weldments; welding drafting and symbols; production processes and techniques; production economy.

**Sheet Metalworking****173. Metal Fabrication Processes (3)**

Sheet metal pattern drafting and layout applicable to parallel, radial, and triangulation methods using light gauge metals; individual problems in planning, using, and maintaining hand and machine tools.

**Machine Tool Metalworking****74. Basic Machine Tool Metalworking (3)**

Basic methods of machining metals, including drilling, turning and boring, milling, grinding, and shaping; measuring tools, precision measuring instruments, and layout; steel and its heat treatment.

**174. Advanced Machine Tool Metalworking (3)**

Prerequisite: IA 74. Advanced machining and tooling, special machine tools, and precision measuring instruments; laboratory experiences in use of ferrous and nonferrous metals, cast iron and semisteel castings.

**175. Machine Tool Technical Problems (3)**

Prerequisite: IA 74. Technical problems in design, layout, fabrication, machineability of materials, tooling, gearing principles, speeds and feeds, coolants related to modern manufacturing processes; installation, preventive maintenance, adjustment, repair of machine tools; specifications of materials and equipment.

**176. Advanced Machine Tool Problems (3)**

Prerequisite: IA 174. Advanced technical work in metals area; introduction to tool and die work; jig and fixture principles and practices; heat treatment; experimental work and technical reports.

**Metal Craft****177. Metal Craft (2)**

Technological, scientific, historical, cultural, and economic aspects of the nonferrous metals and the industries to which they relate; individually designed and hand crafted articles produced through coordinated laboratory experiences.

**179. Jewelry (2; max total 4)**

Designing and executing articles of jewelry using a wide range of traditional and contemporary materials and techniques; historical, cultural, economic, scientific and technological aspects of jewelry and gemology coordinated with laboratory experiences.

**WOODWORKING AREA****80. Basic Woodworking (3)**

Basic woodworking processes and materials; use and care of hand tools and portable electric tools; design, construction, and finishing of simple wood products; wood turning; basic operations on light woodworking machinery; basic information units in wood technology.

**82. Wood Machining (3)**

Prerequisite: IA 80 or permission of instructor. Development of proficiency in the operation and maintenance of modern woodworking machinery and spray finishing equipment; safety education, cutting principles and techniques, machine design and capabilities.

**182. Advanced Wood Machining (3)**

Prerequisite: IA 82. Construction of furniture, cabinet work and millwork; design, construction details, production methods; analysis of cutting processes.

**184. Woodworking Specialties (3)**

Prerequisite: IA 82. Specialized activities related to field of woodworking; wood finishing and paint technology, upholstery, inlaying and veneering, advanced wood turning, furniture restoration.

**185. Wood Technology (3)**

Not open to students with credit in IA 186. Prerequisite: IA 82. Structure, characteristics, and physical properties of wood; strength values, grading, moisture relationships, fire resistance, wood destroying organisms, thermal insulation.

**187. Wood Processing (3)**

Not open to students with credit in IA 186. Prerequisite: IA 82. Lumber and wood products manufacturing; seasoning and preserving glue and glued products, laminated wood, plywood, fiber and particle boards. (field trips)

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

See *Regulations and Procedures—Independent Study*.

**192. Industrial Arts Education in Secondary Schools (3)**

Departmental prerequisite for student teaching. Prerequisite: SEd 151. Principles, objectives, and recent trends in modern industrial arts instructional practices, including group observation.

**194. Course Materials in Industrial Arts Education (2)**

Prerequisite: IA 192. Development and use of written instructional materials; analysis and organization of course content for various industrial arts areas.

**196. Graphic Communications (2)**

Preparation and use of instructional aids, including models, mockups, cutaways, charts, instructional films, slides, overlays; photographic processes; planning, construction, classroom demonstration and evaluation.

**199. Senior Problem in Industrial Technology (3)**

Prerequisite: senior standing in industrial technology. Approved problem or research project in the area of the student's option.

**GRADUATE COURSES**

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

**224T. Professional Topics in Industrial Education (2-3; max total 6 on master's degree with no area repeated)**

Advanced study in professional industrial education; administration, supervision, vocational guidance, economic, and sociological implications.

**225. Seminar on Philosophy of Industrial Arts Education (2) (Former IA 224.1)**

Philosophy of industrial arts education within a democratic, industrial society; objectives of industrial arts education, and relationships to other subject areas.

**226. Seminar on Innovative Programs in Industrial Arts (2) (Former IA 224.3)**

Study of selected innovative and experimental programs in industrial arts; philosophic and curricular implications, recent developments and trends.

**227. Seminar on History of Industrial Education (2) (Former IA 224.4)**

Development of industrial education in the United States; European influences, philosophical concepts, issues, leaders, movements, and trends.

**226. Evaluation in Industrial Education (3) (Former IA 224.5)**

Techniques and philosophy of evaluation in industrial education; types of test items, item analysis, and interpretation of test results; evaluation of research, facilities, textbooks, and evaluative criteria.

**270. Technical Problems (2-3; max total 6 if no area repeated)**

Technical work in selected areas; research under supervision of instructor.

**280. Problems in Industrial Arts Research (2)**

Seminar in research procedures in the industrial arts; basic bibliography, research form and method.

**281. Research Design in Industrial Education (3) (Former IA 224.6)**

Research formats and applied experimentation techniques; critical path analysis and program evaluation review techniques.

**284T. Topics in Industrial Technology (2-3; max total 9 on master's degree if no area repeated)**

Advanced study in technical areas; current industrial practices, developments, and trends related to design, materials, and processes.

**284.1. Thermodynamics****284.2. Industrial Processes and Materials****284.3. Energy Sources and Applications in Modern Industry****285. Planning Industrial Arts Facilities (2)**

Planning and organizing various types of school shops; architectural considerations, selection and specifications of equipment. (field trips)

**286. Safety and Related Problems (2)**

Research and study of safety problems in industrial education; planning and evaluation of specific safety programs.

**287. Planning and Organizing Industrial Arts Curriculum (2)**

Modern industrial arts curriculum; organization and management; recent trends concerned with equipment, supplies, content, safety, and methods.

**288. Seminar in Industrial Arts and Technology (2-3; max total 6 on master's degree)**

Advanced individual and group study of selected problems: organizational relationships, effective communication of ideas, technological trends and developments, economic and social considerations.

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

See *Regulations and Procedures—Independent Study*.

**299. Thesis or Project (2-4; max total 4)**

Prerequisite: see *Master's Degrees—Thesis Requirement*. Preparation, completion, and submission of an acceptable thesis or project for the master's degree.

**IN-SERVICE COURSES**

*Note: In-service courses (300 series) are not intended for use on degrees except by special, prior approval. See Extension and Summer Session Bulletins for course descriptions.*

**341. Problems in Industrial Arts (2; max 6 if no area repeated)**

## JOURNALISM DEPARTMENT

Professors: Duke (Chairman), A. Margosian, Shepard

Associate Professors: Molen, Ingenthron

Assistant Professors: Dill, Ingenthron, Rehart, Tucker, D. Williams

Part-time: Daddino, Leman, P. Smith

The program leading to a bachelor of arts degree in journalism prepares students for communications and editorial employment with newspapers, magazines, radio and television stations, and for related types of work in public relations, industrial journalism, technical journalism, general publishing, advertising, and teaching. A broad general education is required in addition to special study in journalism. Majors are advised to take electives in various areas and keep journalism units near the minimum required for a major. An interdisciplinary graduate program for the master of arts degree in Mass Communications is jointly offered by the journalism and radio-television faculties. See *School of Graduate Studies* and the *Graduate Bulletin*.

The Journalism Department is accredited by the American Council on Education for Journalism. The news-editorial sequence is specifically accredited by the Council. The department is a member of the American Association of Schools and Departments of Journalism and the American Society of Journalism School Administrators.

### MAJOR

A bachelor of arts degree in journalism requires proficiency in communication. Students must pass English 1 with the equivalent of a minimum grade of C and pass a typing test. Sequences of courses are offered permitting students to specialize in the areas of news-editorial, public relations, advertising, radio and television news communication, and technical journalism.

#### News-Editorial

	<i>Units</i>
Jour 8A-B, 109, 110A-B, 114, 115, 126, 181, 184, 188.....	32
Elect at least 4 units from: Jour 1, 2, 17, 117, 124, 182, 185, 186.....	4

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36

*Additional Requirements* (beyond general education requirements): IA 61; 9 units (incl 3 ud) from criminology, economics, history, political science, sociology; 9 units (incl 3 ud) from English, linguistics, philosophy, psychology, and the arts.

#### Journalism with Emphasis on Advertising

Jour 8A-B, 110A, 113, 145, 146A-B, 147, 155, 160, 175.....	31
Elect from: Jour 1, 2, 17 or 117, 124, 126, 173, 185.....	5

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36

*Additional Requirements* (beyond general education requirements): IA 61 (1 unit); marketing (6 units); sociology and psychology (6 units); approved subject field (6 units), includes Mkt 100, 104, 140, 142, 176, IA 161, 163, 165; R-TV 40, 44, 141, 144, 181.

#### Journalism with Emphasis on Public Relations

Jour 8A-B, 110A or B, 113, 114, 145, 173, 193.....	24
Elect from: Jour 1, 2, 17, 106, 124, 155 (6 units); Jour 112, 147, 160, 185 (6 units) .....	12

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36

*Additional Requirements* (beyond general education requirements): IA 61; approved School of Business courses (6 units), sociology and psychology (6 units), approved subject field (6 units).

<b>Journalism with Emphasis on Radio and Television News Communication</b>	<i>Units</i>
Jour 8A-B, 17, 109, 110A-B, 114, 115, 128, 181, 188.....	32
Elect at least 4 units from: Jour 1, 2, 117, 118, 126, 185, 186.....	4
	36

*Additional Requirements* (beyond general education requirements): R-TV 40, 41 or 44, 142, 147; 6 units from criminology, economics, history, political science, sociology; 4 units from English, linguistics, philosophy, psychology, the arts.

<b>Journalism with Emphasis on Technical Writing and Editing</b>	
Jour 8A-B, 106, 109, 110A-B, 114, 115, 124, 126.....	28
IA 61.....	1
Journalism electives (ud).....	4
Electives in related areas approved by department.....	15
	48

**MINOR**

<b>News-Editorial</b>	
Jour 8A-B, 109, 110A, 114, 115.....	16
Journalism elective (2 ud).....	4
	20

<b>Journalism with Emphasis on Advertising</b>	
Jour 8A-B, 145, 147, 155.....	15
Electives in advertising, Jour 146A-B, 160, 175.....	5
	20

<b>Journalism with Emphasis on Public Relations</b>	
Jour 8A-B, 113, 145.....	12
Journalism electives: 3 units from Jour 112, 160, 185; at least 5 units from Jour 17, 106, 124, 173, 185.....	8
	20

<b>Journalism with Emphasis on Radio and Television News Communication</b>	
Jour 8A-B, 128, 188.....	12
Journalism electives (6 ud).....	8
	20

*Additional Requirements:* R-TV 40, 41 or 44, 142.

**MASTER OF ARTS DEGREE**

The graduate program leading to the master of arts degree in Mass Communications with emphasis in the print media is based upon undergraduate work in journalism. For requirements, consult the department chairman; for courses see *School of Graduate Studies-Interdisciplinary Courses*. Detailed information about the graduate program at Fresno State College may be obtained from the office of the Dean, School of Graduate Studies.

**CREDENTIAL PROGRAM**

For information on the current credential program consult departmental advisers and the School of Education; see the section on *Public School Credentials*.

**GENERAL EDUCATION REQUIREMENTS**

The following courses will satisfy general education requirements. *Area II:* Jour 182, 184. *Area V:* Jour 1, 2, 17, 113, 185, 186. (See *General Education—Courses*)

*Courses***JOURNALISM****1. Mass Communications (2)**

Survey of the mass media of communication, including newspapers, magazines, radio and television; related agencies and fields of communicative enterprise, such as press associations, feature syndicates, advertising, and public relations.

**2. Interpreting Current Events (2)**

Analysis, from the reader's point of view, of current information in news media; what constitutes news, breadth and depth of news coverage of various media. reliability of sources, influence of policy, methods of emphasis, objectivity and coloration.

**8A-B. Reporting (3-3)**

Prerequisite: Engl 1, sophomore standing. Preparation of varied stories used by newspapers; analysis of news sources; techniques of interviewing; problems encountered by reporters; ethical and legal considerations; coverage of some campus and community functions. (2 lecture, 2 lab hours)

**17. Introductory and Publications Photography (3) (Former Jour 17A)**

Not open to students with credit in Art 101. Still-photography; use of a variety of camera equipment for black-and-white pictures; pictures taken and films and prints processed in laboratory sessions. (2 lecture, 3 lab hours)

**106. Industrial Journalism (2)**

Survey and analysis of internal and external publications produced by business and industry.

**109. Contemporary Problems of the American Press (3)**

Prerequisite: Jour 8B or permission of instructor. Advanced reporting problems; news policies and ethics; specialized reporting.

**110A-B. Advanced Reporting (3-3)**

Prerequisite: Jour 8A-B. Practice in handling advanced news writing and reporting assignments in the environment of a newsroom. College newspaper and Journalism Department newspaper used for laboratory purposes. (12 hours arranged)

**112. School Public Relations (3) (Same as A Ed 112)**

Organization and analysis of a public relations program for elementary and secondary schools.

**113. Public Relations (3)**

Role of public relations in business and industry, education, and other fields; public relations programs and problems.

**114. Editing of Publications (3)**

Prerequisite: Jour 8B. Editing copy; writing headlines; using type effectively; handling telegraph copy; making up newspapers, trade and industrial publications, house organs and magazines, lab use of college newspaper. (2 lecture, 2 lab, 3 hours arranged)

**115. Copyreading (1; max total 2)**

Prerequisite: Jour 114. Individually supervised editing of copy and writing headlines. College newspaper used as a laboratory. (hours arranged)

**116. Photo Editing (2)**

Study of the use and potential use of photographs in various types of publications. Instruction in how to identify and to obtain quality photographs for publication.

**117. Advanced Press Photography (3)**

Prerequisite: Jour 17 or permission of instructor. Use of news cameras for photographic reporting; evaluation and preparation of pictures for publication; field and laboratory experience in use of flash and extension lighting, filters, high speed black and white and color films, efficient processing methods. (2 lecture, 3 lab hours)

**118. Advanced Photojournalism (2)**

Prerequisite: Jour 17 or permission of instructor. Field and laboratory work in the production of the picture story and essay; magazine and advertising illustrations on assignment; press and investigative photography, and advanced uses and processing of special films including infrared and high speed color. (1 lecture, 3 lab hours)

**120. Newspaper Workshop (2; max total 4)**

Prerequisite: Jour 110A-B. Practice in comprehensive, depth reporting and executive news work; use of college newspaper and Journalism Department newspaper for laboratory purposes. (4 lab hours)

**124. Magazine Feature Writing (3)**

Writing and marketing varied kinds of feature material used by magazines, Sunday newspaper supplements, and syndicates.

**126. Interpretative Writing (3)**

Critical analysis of structure and content of newspaper editorials; practice in writing editorials and interpretative articles; make-up of editorial pages; study of columns, cartoons, and special editorial features.

**128. Radio and Television News Writing (3)**

Prerequisite: Jour 8A or permission of instructor. Gathering and preparing news for broadcasting and telecasting; work with local stations.

**131. Principles of High School Journalism (2)**

Instruction in methods of advising and preparing high school newspapers and yearbooks.

**132A-B. Yearbook Production (1-1)**

Layout practice, writing of copy, and organization of yearbook. College annual used as a laboratory. (4 hours arranged)

**142. Radio and Television News Broadcasting (3) (See R-TV 142)****145. Advertising Procedures (3) (Former Jour 145A)**

Newspaper advertising; management of advertising department, production of copy, layouts, and servicing accounts.

**146A-B. Newspaper Account Representation (2-2)**

Practice in selling and servicing advertising accounts for newspapers with the college newspaper used as a laboratory.

**147. Radio and Television Advertising (3)**

Writing and production of commercial advertising for the broadcast media.

**155. Print Advertising Copy Writing (3)**

Prerequisite: Jour 145. Not open to students with credit in Jour 145B. Print media advertising copy writing and design; mastery of creative concepts related to visual and verbal compatibility in printed media.

**160. Advertising Media (3)**

Prerequisite: Jour 145. Study of concepts involved in planning and buying of advertising space in newspapers, consumer magazines and industrial publications and in purchase of radio/television commercial times. Market research related to media problems.

**173. Public Relations Campaigns (3)**

Prerequisite: Jour 113. Development, assessment, and evaluation of public relations campaigns and programs in business, education, philanthropy, and other fields; media and methods; publicity practices.

**175. Advertising Management (3)**

Prerequisite: Jour 145, 155, 160. Organization and management of advertising responsibilities. Analysis of theory and practice methods involved in mass communication, imagery, creativity and effectiveness of advertising programs. Psychological, sociological, ethical and aesthetic implications studies in relation to advertising objectives.

**181. Laws of Communication (3)**

Libel, right of privacy, right of confidence, contempt by publications, property rights in manuscripts, infringement, copyright, postal laws.

**182. The Press and World Affairs (3)**

Not open to students with credit in Jour 102. The role of the international press in collecting and disseminating national and foreign news.

**184. Journalism in American Society (3)**

Not open to students with credit in Jour 104. Historical backgrounds of American press; development from colonial to modern times; newspapers and allied media as political and social forces.

**185. Public Opinion and Propaganda (3)**

Not open to students with credit in Jour 149. Use of propaganda to motivate public opinion on national and international levels in such areas as business, politics, and communities.

**186. Media of Communication (3)**

Not open to students with credit in Jour 150. Motivation of large numbers of people through the control of such mass media as newspapers, magazines, motion pictures, radio and television.

**188. Reporting of Public Affairs (3)**

Not open to students with credit in Jour 108. Prerequisite: Jour 8A-B or permission of instructor. Methods of reporting the courts and municipal, county, state, and federal governments.

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

See *Regulations and Procedures—Independent Study*.

**193. Field Work in Public Relations (3)**

Prerequisites: Jour 8A-B, 113. Open only to journalism majors with permission of instructor. Supervised work experience in public relations; analyses in periodic meetings and reports.

**198. Newspaper Practice (2-4; max total 4)**

Prerequisite: permission of instructor. Internship on San Joaquin Valley newspapers and radio and television stations. Reports made regularly to instructor.

**199. Advertising Practice (2-4; max total 4)**

Prerequisite: Jour 145, 146A-B, 155, permission of instructor. Internship in advertising departments of San Joaquin Valley mass media and with advertising and public relations agencies. Reports made regularly to instructor.

**GRADUATE COURSES**

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

See *Mass Communications, School of Graduate Studies—Interdisciplinary Courses*.

## NURSING DEPARTMENT

Professors: Gardner (Chairman), Patterson, Peal

Associate Professors: Bailey, Baumgartner, J. Bergey, M. Davis, E. Greene, Haddad, Hansen, Jenkin, Krell, M. Nelson, Nishio, Sia, E. M. Stittich, Welch

Assistant Professors: Avent, Bergstrom, Chan, Chang, Hogan, Husson, Karian, Kay, Knight, McClintic, Schmitz, Sommer, Steffes, Viau

Lecturer: Goldberg

Part-time: Callahan, Early, Jameson, Kearns, Thornburn

The Nursing Department offers a bachelor of science degree with a major in nursing. Upon completion of the program the graduate will be eligible to take the examination required by the California State Board of Nursing Education and Nurse Registration for licensure to practice as a registered professional nurse. It also qualifies the graduate for the California certificate in public health nursing and provides a foundation for graduate study and advancement in the nursing profession. This program also provides an opportunity for the registered nurse to fulfill the requirements for the bachelor of science degree major in nursing.

The Nursing Department is accredited by the National League for Nursing and the California State Board of Nursing Education and Nurse Registration.

### COOPERATING HOSPITALS AND AGENCIES

The Nursing Department utilizes the resources of Fresno Community Hospital, St. Agnes Hospital, Fresno General Hospital, Valley Children's Hospital (Fresno), Veteran's Administration Hospital (Fresno), Kings View Hospital (Reedley), Fresno County Health Department, and Kern County Health Department (Bakersfield) Tulare County Health Department (Visalia), and Kings County Health Department (Hanford). These facilities are used for clinical nursing laboratory experience which is correlated with course content.

### BACHELOR OF SCIENCE DEGREE WITH MAJOR IN NURSING

The bachelor of science degree curriculum consists of 130 units, 60 of which are in the nursing major. The general requirements for the bachelor of science degree must be completed (see *Degrees and Credentials*).

MAJOR	<i>Units</i>
Nurs 16, 26, 35 .....	18
Nurs 111, 112, 114, 116, 120, 126, 130, 145 .....	42
	60

*Additional Requirements:* Mcrb 20, H Ec 31, 40, or 138; Psych 119 or H Ec 39; Chem 2A-B; Physio 22, 23. Recommended courses: Nurs 125; Psych 25; Speech 3, 7, 8, or Drama 22; Eng 1 or 20; Psych 10 or 60T; Soc 1, 2, or Anthro 2.

### Provision for Students Who Are Registered Nurses

Registered nurses who are applicants for the bachelor of science degree must have met admission standards of the college, must have graduated from an accredited school of nursing, must be legally entitled to practice nursing as an RN in the State of California, must have taken the NLN graduate examination either prior to admission or within the first year after enrollment, and must complete all requirements of the major in nursing. Credit by examination may be obtained for nursing and other courses up to the maximum of 30 units credit. Consult nursing advisers for further information on course requirements.

**STANDARD DESIGNATED SERVICES CREDENTIAL  
WITH SPECIALIZATION IN HEALTH**

The Nursing Department offers a program preparing the registered nurse to meet the state requirements for the Standard Designated Services Credential with Specialization in Health, School Nurse. For further information consult the department adviser.

**MASTER OF SCIENCE DEGREE**

The master of science degree in nursing is designed to prepare teachers, supervisor-administrators, and clinical nursing specialists. Applicants must have completed an undergraduate program substantially the equivalent of the undergraduate program in nursing at Fresno State College. A minimum of thirty units is required, of which at least 8 must be in core courses and 12 in the field of concentration. The remaining units are selected in related fields. For specific requirements consult the departmental adviser; for general requirements see *School of Graduate Studies*.

**Courses**

**NURSING**

**16. Fundamentals of Nursing (8)**

Prerequisite: Chem 2A-B, Physio 22, 23. Instruction and application of basic nursing principles to meet the needs of the adult patient. (4 lecture, 12 lab hours)

**26. Medical-Surgical Nursing I (8)**

Prerequisite: Nurs 16, H Ec 31 or 40 or 138, Mcrb 20 or concurrently. Basic concepts essential to medical-surgical nursing; care of patient and family; laboratory experience emphasizing patient-centered approach. (4 lecture, 12 lab hours)

**35. Legal Problems in Nursing (2)**

Not open to students with credit in Nurs 135. Prerequisite: Nursing 26. The conduct, rights, and responsibilities of a professional nurse; analysis of the legal status, obligations, and liabilities of the nurse.

**111. Maternal-Child Nursing I (7)**

Prerequisite: Nurs 26, Psych 119 or H Ec 39 or permission of instructor. Principles; teaching health, nursing care during maternity cycle, including neonatal, family unit and healthful family relationships. (2 lecture, 15 lab hours)

**112. Maternal-Child Nursing II (7)**

Prerequisite: Nurs 26, Psych 119 or H Ec 39 or permission of instructor. Nursing care of the developing child; family unit; relationship of illness to growth and development. (2 lecture, 15 lab hours)

**114. Public Health Science (2)**

Prerequisite: Nurs 111, 112, 120, 130 (concurrently). Trends in public health administration, organization, functions; national, state, local, public, voluntary agencies; interpretation and use of vital statistics; environmental health and epidemiology.

**116. Trends in Nursing Education (2)**

Prerequisite: Nurs 26. Influence of historical, social, political, religious, health, and scientific movements on the progress of nursing; trends, problems and responsibilities of the professional nurse.

**120. Psychiatric Nursing (7)**

Prerequisite: Nurs 26, Psych 119 or H Ec 39 (or concurrently), or permission of instructor. Mental disorders, the psychoses and psychoneuroses; causes, prevention, treatment, and total nursing care; social problems involved in modern concepts of mental illness. (2 lecture, 15 lab hours)

**125. Seminar in Nursing (2)**

Prerequisite: Nurs 111, 112, 120. Basic concepts of research as it relates to reading nursing studies; understanding problem-solving techniques.

**126. Medical-Surgical Nursing II (7)**

Prerequisite: Nurs 111, 112, 120, 145 (or concurrently). Total patient care utilizing a problem-solving approach; laboratory experience in planning and directing nursing care for individuals and groups of patients. (2 lecture, 15 lab hours)

**127. Principles of Teaching Nursing (2)**

Prerequisite: Nurs 111, 112. The teaching-learning process; organization of instruction for the individual patient, auxiliary workers, community groups.

**130. Community Health Nursing (8)**

Prerequisite: Nurs 111, 112, 120, 114 (concurrently). Basic principles and practices of public health; responsibility of the public health nurse in community programs for health and social welfare. (3 lecture, 15 lab hours)

**140. Disaster Nursing (2)**

Responsibilities and functions of a professional nurse in common emergencies and mass disaster.

**145. Principles of Administration in Nursing (2)**

Prerequisite: Nurs 111, 112, 120. Principles of nursing service administration; interpersonal relationships employing the team concept.

**150. School Nursing (8)**

Prerequisite: Nurs 130. Role of the nurse in the school health program. (3 lecture, 15 lab hours)

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

*See Regulations and Procedures—Independent Study.*

**GRADUATE COURSES**

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

**210. Seminar in Nursing (2)**

Review and critical analysis of current developments in nursing.

**221. Seminar in Nursing Research (3)**

Application of general techniques of research methodology to specific problems in nursing.

**245T. Seminar in Clinical Nursing (3; max total 6)**

Case study analysis of problems in nursing leading to clinical specialization.

**245.1. Community Mental Health****247. Seminar in Administration (3)**

Case study analysis of problems in nursing service administration, including such concerns as organizational structures, staffing, employee assessment.

**249. Seminar in Nursing Education (3)**

Philosophical and conceptual foundation for teaching in schools of nursing and nursing service organizations.

**250. Practicum in Clinical Nursing (3; max total 6)**

Assignment for field experience to local health agencies.

**290. Independent Study (1-3; max total 3)**

See *Regulations and Procedures—Independent Study*.

**299. Project or Thesis (2-4; max total 4)**

Prerequisite: see *Master's Degree—Thesis Requirement*. Preparation, completion, and submission of an acceptable project or thesis for the master's degree.



SCHOOL OF SOCIAL WORK

# SCHOOL OF SOCIAL WORK

Thomas M. Brigham, Dean

Associate Dean.....	Barbara K. Varley
<i>Department</i>	<i>Chairman</i>
Graduate Department of Social Work.....	Barbara K. Varley
Social Welfare.....	Patricia R. Pickford
Coordinator, Continuing Education.....	Patricia Drew

The School of Social Work provides an undergraduate major in social welfare leading to the bachelor of arts degree, designed to provide preparation for graduate work, to prepare for beginning positions in social work, and to provide a broad education in liberal arts. The school offers a two-year graduate program of preparation leading to the professional master of social work degree.

Social welfare courses at the undergraduate level include integration of theoretical and applied materials with contributions from sociology, political science, cultural anthropology, economics, and psychology. Graduate social work courses are similarly integrated and include materials from medicine, psychiatry, and law, as well. Additionally, graduate social work courses include content unique to social work, especially in methods, field instruction, and social welfare policy and services. The School of Social Work holds both undergraduate and graduate membership in the Council of Social Work Education, and its two-year professional master of social work program is accredited by the Council.

The continuing education program seeks to serve professionally trained social workers and baccalaureate degree holders employed in social welfare agencies in the seven-county service area of the college by supplementing professional education and in-service training in order to improve the level of effectiveness of social workers and allied disciplines in practice and to provide learning opportunities for those persons desirous of career progress.

## COOPERATING AGENCIES

Social agencies throughout California participate in the social welfare and social work training program by providing field experience and instruction at the undergraduate and graduate level. These include the North Avenue Community Center, Valley Children's Hospital Child Guidance Clinic, State Department of Corrections, California Youth Authority, International Institute, American Red Cross, Veterans Administration Regional Office, Mental Health Association of Fresno; County Departments of Public Welfare in Fresno, San Bernardino, and Santa Barbara; Social Service Divisions of Agnews State Hospital, Atascadero State Hospital, Patton State Hospital, Stockton State Hospital, and Santa Barbara General Hospital, Kings County Community Action, Kings County Schools, Community Services Division of the State Department of Social Welfare, La Colonia Center, Mental Health Recovery, Letterman General Hospital, Fresno County Department of Mental Health Services, Paso Robles School for Boys, Social Service Division of the United States Veterans' Administration Hospital, and Ventura School for Girls. In addition, other agencies cooperate in the program.

## GRADUATE DEPARTMENT OF SOCIAL WORK

Professors: Varley (Chairman), Costigan, Merrifield, Rich

Associate Professors: Bonham, Drew, Dutton, Emmal, Haire, Jenkins, Kapoor, Kershaw, Klass, Lindberg, Lyle, Moore, Mori, Moss, O'Neill, Ruhl, Woodcock

Assistant Professors: S. Bennett, Hatmaker, Heus, Van Veldhuizen

Field Instructors: Aguirre (LCC), M. F. Anderson (SBaCWD), Bardizian (FCDMH), Bates (KCCAC), Baumann (FCWD), E. Bird (ArSH), Elder (PSH), Fibel (FCPD), Maye (StSH), McKell (CYA), Sundsten (AgSH)

Part-time: Anderson, Carlson, Clegg, Dillon (LCH), Farris, Halverson (PACHC), Kalina (MHR), Levy, H. Nelson (SBCH), Nunez, Payne (VCH), Plewka (VA), Saunders, Stone (CSD, Washington (StCDS)), Wright (LGH), Ziering.

### MASTER OF SOCIAL WORK DEGREE

The master of social work degree prepares social workers for such areas as public assistance, child welfare, hospital social service, family service, child guidance, mental health, overseas social work, rehabilitative social work, social work in correctional programs. Emphasis at Fresno State College is on generic training of social workers rather than on specialization.

The graduate program requires two years of full-time enrollment. Eligibility for admission to the program is based on completion of a bachelor's degree, preferably in a social welfare major or with substantial preparation in the social sciences and psychology (although other patterns may be permitted); an acceptable score on the Graduate Record Examination Aptitude Test; specified grade point average at the undergraduate level; and academic and personal suitability for the field as determined by social work faculty.

The program includes alternate periods of full-time classroom study and intensive field instruction. Emphasis is upon direct services to individuals and groups with some orientation to work on behalf of individuals and groups. All degree students will be required to complete an individual or group thesis, or research project.

For further information, consult the Dean, School of Social Work. For general requirements see *School of Graduate Studies*. For detailed information about the graduate program at Fresno State College, see the *Graduate Bulletin*, available in the Office of the Dean, School of Graduate Studies.

#### SEQUENCE OF GRADUATE COURSES FOR MASTER OF SOCIAL WORK DEGREE

1st Semester (16 un): SW 200, 220, 230, 250 (3 un), 291 (2 un), required elective (2 un).

2nd Semester (15 un): SW 201, 221, 230, 250 (5 un), 292 (1 un).

3rd Semester (15 un): SW 250 (10 un), 290, 297 or 299 (3 un).

4th Semester (15 un): SW 202, 222, 230 (3 un), 290 (1 un), 297 or 299 (3 un); required elective (2 un).

### SOCIAL WORK GRADUATE COURSES

*Note: Admission to the MSW program is prerequisite to all graduate courses unless otherwise stated. Exceptions may be authorized by the Dean.*

#### 200. Seminar in Social Welfare Policy and Services I (3)

Social work philosophy, values and ethics; the evolving, changing relationship of social work and social welfare to changing socio-economic and political climate; social welfare as a social institution, evolving from aspects of social change and social responsibility.

#### 201. Seminar in Social Welfare Policy and Services II (3)

Prerequisite: SW 200. Further development and expansion of social welfare as a social institution concerned with the social functioning of a changing society; law in relation to social policy, services and administration; current policy and services.

**202. Seminar in Social Welfare Policy and Services III (3)**

Prerequisite: SW 201. Current social welfare policy and services; a comparative evaluation of United States and other world programs, policy and expectations with emphasis on philosophy, values and ethics; current social issues in relation to social function and social responsibility.

**220. Human Behavior and Social Environment I (3)**

Growth processes and personality development within the family, group, and community; relationship of behavior and social functioning to native endowment and to environmental and cultural patterns.

**221. Seminar in Human Behavior and Social Environment II (3)**

Adaptive and maladaptive behavior under environmental stress; health and disease, role and cultural factors, and group processes as determinants of social functioning.

**222. Seminar in Human Behavior and Social Environment III (3)**

Social pathology; epidemiology and prevention of deviant behavior.

**230. Seminar in Methods of Social Work Practice (2-3; max total 9)**

Three semesters in sequence: (1) introductory social casework and group work; (2) social casework and group work; (3) advanced social casework and introductory community organization.

**250. Field Instruction (2-10; max total 18)**

Supervised practice in social work methods; one placement each year of the graduate program.

**273T. Seminar in Areas of Social Work Practices (2)**

May be repeated with different topics. Prerequisite: permission of instructor. Theories and developments in the areas of child welfare, family welfare, income maintenance, community planning, community development, public health, mental health, international social welfare, corrections, schools, geriatrics, and rehabilitation.

**280T. Seminar in Social Work Processes (2)**

May be repeated with different topics. Prerequisite: permission of instructor. Knowledge and trends in casework, group work, community organization, administration, supervision, consultation, staff development, and research.

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

See *Regulations and Procedures—Independent Study*.

**291. Seminar in Social Work Research (2)**

Relation of research, theory, and practice in social work.

**292. Seminar in Methods in Social Work Research (1)**

Research design in social work; sampling; instruments for data collection; analysis and interpretation of data; nonparametric techniques.

**297. Group Research Project (3-6; max total 6)**

Prerequisite: SW 292. Utilization of social work research principles and techniques to select study design, determine data collection techniques, collect and process data, interpret findings and prepare final written report. Work on group basis, standards same as thesis.

**299. Thesis or Project (3-6; max total 6)**

Prerequisite: SW 292. See *Master's Degrees—Thesis Requirement*. Preparation, completion, and submission of an acceptable thesis or project for the master's degree.

## SOCIAL WELFARE DEPARTMENT

Professor: Pickford

Associate Professors: Ellis (Acting Chairman), Visweswaren

Assistant Professor: DeBellis

The Social Welfare Department offers a bachelor of arts degree with a major in social welfare designed to prepare students for employment in the helping fields, especially public welfare, voluntary community and group services, poverty programs, mental hygiene, services for children, the handicapped, the aged, and other special population groups, Peace Corps, VISTA, social rehabilitation, and human resources development.

## BACHELOR OF ARTS DEGREE MAJOR IN SOCIAL WELFARE

	<i>Units</i>
Econ 1A-B, Anthro 2, Soc 1 .....	12
S Wel 20, 121, 124, 127, 181 (2 un) .....	14
Psych 66, 152, Psych 145 or Soc 162 .....	9
Elect from: Anthro 104, Econ 150, Soc 145, 152, 155, 157, 165, S Wel 122T .....	6
Elect from: Crim 120, 132, Econ 180, Bus Ad 105, Soc 111, 153, 163 .....	3
Elect from: Econ 131, Pol Sc 160, 163, 181, 182 .....	3
Elect from: A Ed 153, Math 40, Psych 25, Soc 175 .....	3
Elect from: Psych 110T, 111, 119, 120, 123, 155T, 170T .....	3
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	53

*Courses*

## SOCIAL WELFARE

**20. Social Welfare (3)**

Social, economic, political, historical, and philosophic components in development of social welfare and social work in western society.

**121. Social Welfare Programs (3)**

Prerequisite: Soc 1 or permission of instructor. Major contemporary social welfare programs in the United States; basic principles of social security programs; roles of federal, state, and local governments.

**122T. Topics in Social Welfare (3)**

**Prerequisite: Soc 1.**

**122.1. Fields of Social Work Practice****122.2. Basic Social Work Theories****122.3. Social Work Methods****124. Proseminar in Interviewing (3)**

Seminar emphasizing integration of behavioral and personality theories with principles of interviewing. Conduct, analysis and presentation of interviews, and case studies.

**127. Proseminar in Group and Community Services (3)**

Seminar in group and individual analyses and presentations of community problems and services.

**180. Training in Public Service (1-2; max total 5)**

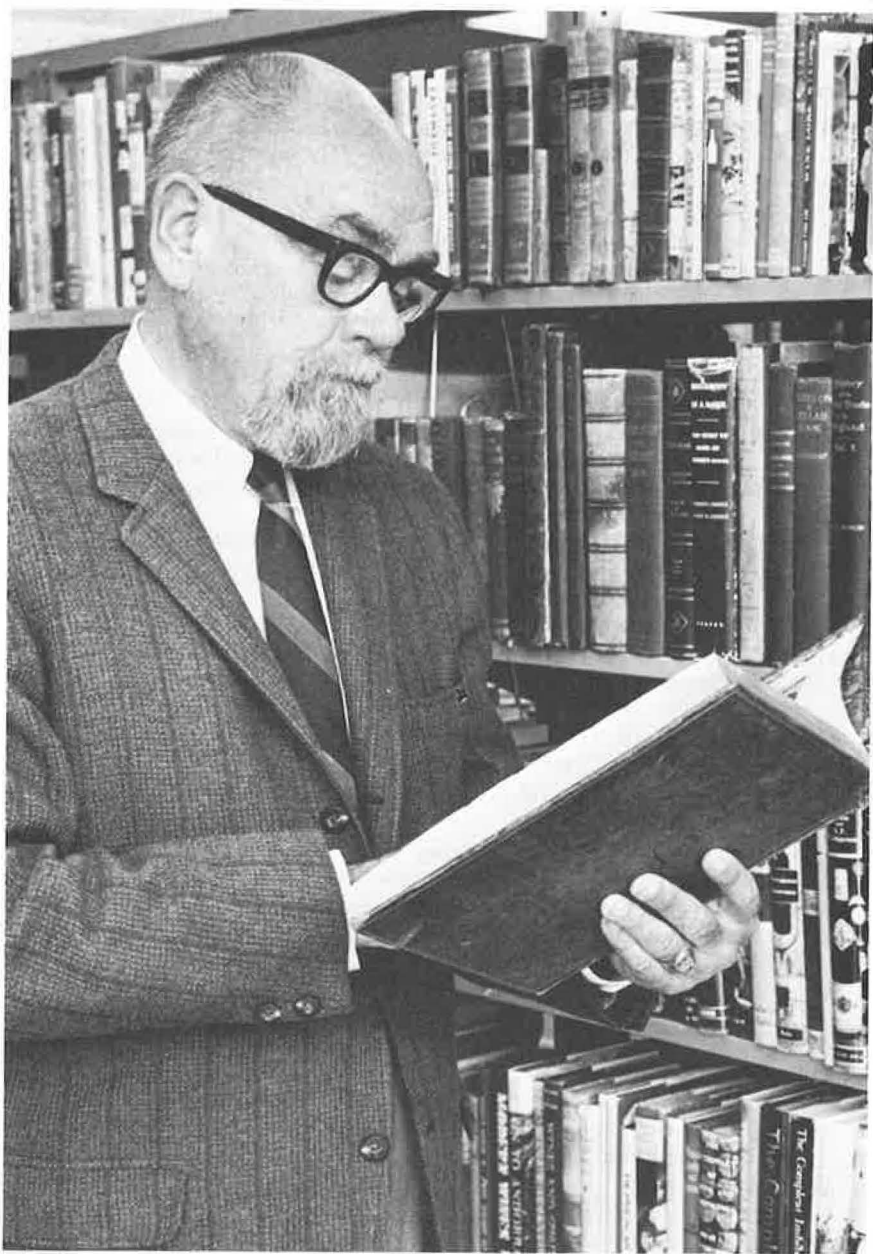
Prerequisite: Soc 1 and permission of instructor. Planned and supervised experience or study in a field of occupational specialization.

**181. Supervised Social Welfare Field Experience (1-6; max total 12)**

Prerequisite: second semester junior standing; Soc 1 and permission of instructor. Observation, orientation and limited participation in operations of private or public social welfare agencies. (Minimum of 3 field hours per unit.)

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

See *Regulations and Procedures—Independent Study*.



FACULTY 1969-70

## FACULTY AND ADMINISTRATION, 1969-70

*Note: Numbers in parentheses indicate year of appointment at Fresno State College.*

- NESS, FREDERIC W. (1964-November, 1969), President; Professor of English  
BA, Dickinson College; MA, University of Cincinnati; PhD, Yale University.
- FALK, KARL L. (1938-1968; November 1969), Acting President; Professor Emeritus of Economics  
BA, Stanford University; PhD, University of Berlin.
- ABOU-GHORRA, IBRAHIM (1956), Professor of Psychology  
BA, Cairo University; Diploma, Ain Shams University (Egypt); Diploma, Cairo Institute of Higher Studies; MA, Ohio State University; PhD, University of Southern California; Licensed Psychologist.
- ADAMS, ROBERT C. (1965), Assistant Professor of Speech  
BA, Idaho State College; MA, University of Oregon.
- AGNEW, ALLEN M. (1965), Associate Professor of Office Administration  
BA, MA, San Jose State College; EdD, University of California at Los Angeles.
- AGUIRRE, MANUEL E. (Spring 1969), Field Instructor in Social Work (LCC)  
BA, Fresno State College; MSW, University of California.
- AIKEN, JOYCE B. (1956; Spring 1962), Associate Professor of Art (on sabbatical leave, spring)  
BA, MA, Fresno State College.
- ALBRIGHT, W. DONALD (1958), Dean of Students  
BS, Northeast Missouri State Teachers College; MEd, University of Missouri; EdD, Teachers College, Columbia University.
- ALDEN, H. LEE, JR. (1960), Assistant Professor of Speech (on sabbatical leave)  
BA, University of Virginia.
- ALDRICH, BEVERLY J. (1957), Psychometrist  
BA, University of Nebraska.
- ALDRICH, LESLIE L. (1955), Professor of Industrial Arts and Technology  
BA, Willamette University; MA, Oregon State College.
- ALI, MIR K. (1968), Assistant Professor of Mathematics  
BS, MA, Osmania University; MS, Montana State University; PhD, Washington State University.
- ALLEN, DERYLE K. (1961), Associate Dean of Students  
BA, Southwestern State College (Oklahoma); MEd, EdD, University of Oklahoma.
- ALLISON, ROBERT J. (1967), Associate Professor of Economics  
BA, MS, PhD, University of Colorado.
- ALTMULLER, RUDOLF P. (1969), Librarian II  
PhD, University of Vienna.
- AMES, RICHARD S. (1969), Lecturer in Music  
BA, Brandeis University; MFA, Princeton University.
- ANDERSON, DAVID C. (1966), Assistant Professor of Management and Accounting  
BS, MS, West Virginia University.
- ANDERSON, MICHAEL F. (1967), Field Instructor in Social Work (SBCWD)  
BA, San Diego State College; MSSW, University of Missouri.

- ANDERSON, MYRON M. (1937), Professor of Physical Education  
BA, Fresno State College; MA, University of Southern California.
- ANTHONY, CLOYD (1969), Lecturer in Sociology at Bakersfield Center  
AB, Indiana State University; MA, PhD, University of Indiana.
- ARCE, GINA (1957), Professor of Botany  
BA, MA, George Peabody College; PhD., Vanderbilt University.
- ARELLANO, ANSELMO F. (1969), Lecturer in Ethnic Studies  
BA, Highlands University.
- ARMSTRONG, LOIS V. (1969), Librarian I  
BA, University of New South Wales.
- ARNOLD, ROBERT F. (1968), Assistant Professor of Mathematics  
BS, MA, Fresno State College; PhD, University of California at Berkeley.
- ASHOUR, AHMED A. (1969), Assistant Professor of Management  
BComm, Ain Shams University (Egypt), MAPA, University of Minnesota.
- AUSTIN, ELLIS T. (1958), Professor of Finance  
BA, University of Washington; PhD, Michigan State University.
- AVENT, JON C. (1965), Assistant Professor of Geology (on research—creative  
leave, spring)  
BA, University of Colorado; MS, PhD, University of Washington.
- AVERY, GEORGE E. (1959), Associate Professor of Education (on sabbatical  
leave, spring)  
BS, Colorado State University; EdD, University of Maryland.
- BAILEY, EVA G. (November 1962), Associate Professor of Nursing (on sabbatical  
leave, spring)  
BS, University of Arizona; MS, University of California at Los Angeles; Reg-  
istered Nurse.
- BAKKEGARD, BENJAMIN M. (1958), Professor of Music and Education; Labo-  
ratory School Teacher  
BS, University of North Dakota; MEd, University of Minnesota; EdD,  
Teachers College, Columbia University.
- BALL, WILBUR P. (1958), Professor of Agriculture and Education  
BS, MEd, Colorado State University; PhD, Iowa State University.
- BALLARD, O. DUANE, JR. (1968), Assistant Professor of Physical Education  
BS, MS, Brigham Young University.
- BALLOU, STEPHEN V. (1953), Professor of Education  
Bed, Duluth State Teachers College; MA, EdD, University of Colorado.
- BARDIZIAN, GEORGIA T. (1964), Field Instructor in Social Work (FCDMH)  
BA, Lake Erie College (Ohio); BS, MSW, Simmons College (Boston).
- BARNHART, KENNETH E., JR. (1958), Professor of Engineering  
BS, MS, PhD, University of California.
- BARNOUTI, SOUAD N. (1969), Assistant Professor of Management  
BA, University of Baghdad; MBA, University of California at Los Angeles;  
ACIL, Chartered Institute of London.
- BARRON, MILTON L. (1969), Lecturer in Sociology.  
BA, MA, PhD, Yale University.
- BARTA, JOHN M. (1968), Assistant Professor of Foreign Language  
BA, MA, University of California at Los Angeles.
- BASDEN, DAVID R. (Spring 1969), Assistant Professor of Psychology (on leave)  
BA, College of Idaho.
- BATES, JAMES E. (1967), Field Instructor in Social Work (KCCAC)  
BA, Gonzaga University; MSW, University of Washington.

- BATHURST, LEONARD H., JR. (1954), Director of Instructional Media Center; Professor of Education (on sabbatical leave, fall)  
BA, MEd, EdD, Pennsylvania State University.
- BAUER, ANN S. (1968), Lecturer in Home Economics (on leave, spring)  
BA, Whittier College.
- BAUMANN, PATRICIA M. (1967), Field Instructor in Social Work (FCWD)  
BA, Fresno State College; MSW, Boston College.
- BAUMGARTNER, MARGARET M. (1963), Associate Professor of Nursing  
BS, San Francisco College for Women; MS, University of California at San Francisco.
- BAXTER, NORMAN A. (1969), Academic Vice President; Professor of History  
AB, Taylor University; BD, New York Theological Seminary; PhD, Harvard University.
- BEACH, PHILIP F. (1964), Associate Professor of Political Science  
BA, University of Washington; MA, PhD, Northwestern University.
- BEARD, C. NOBLE (1937-Spring 1970), Professor of Geology  
BA, MA, Indiana University; PhD, University of Illinois.
- BEATTY, WILLIAM C., JR. (1947), Professor of Social Science; Chairman, Sociology Department  
BA, University of Denver; MA, University of Colorado; PhD, University of Southern California.
- BEDROSIAN, SARAH G. (1957; 1962), Professor of Finance and Quantitative Studies  
BA, MA, Fresno State College; DBA, University of Southern California.
- BEESEY, KENNETH H. (1967), Executive Dean  
BA, University of Utah; MA, EdD, Teachers College, Columbia University.
- BELL, JESSE T. (Spring 1948), Professor of Animal Science; Chairman, Animal Science Department.  
BS, Texas College of Arts and Industries; MA, Sul Ross State College
- BENKO, STEPHEN (1969), Assistant Professor of History  
BD, Theological Academy, Budapest; PhD, University, Basel.
- BENNETT, BOB G. (1969), Assistant Professor of Physical Education and Recreation  
AB, MA, Fresno State College.
- BENNETT, BOB L. (1955), Professor of Music  
BA, Fresno State College; MS, Juilliard School of Music; DMA, Stanford University.
- BENNETT, SUSAN F. (1967), Assistant Professor of Social Work  
BEEd, University of Hawaii; MSW, New York School of Social Work.
- BENSON, RAY (1964), Associate Professor of Business Law  
BA, Long Island University; JD, Fordham University; MBA, University of California at Los Angeles.
- BERESKIN, S. ROBERT (1969), Assistant Professor of Geology  
BS, MA, PhD, University of California at Santa Barbara.
- BERG, EDWARD (1969), Director of Allied Health Professions  
BA, Brooklyn College; PhD, Cornell University.
- BERGEY, JOHN (1961), Associate Professor of Nursing  
BS, Yankton College; MA, University of Pittsburgh; Registered Nurse.
- BERGSTROM, NANCY I. (1969), Assistant Professor of Nursing  
BS, Columbia Union College; MS, Loma Linda University.

- BERRETT, RICHARD D. (1969), Assistant Professor of Home Economics  
BS, Brigham Young University.
- BERRY, SARA C. (1957), Librarian III, Laboratory School  
BA, Occidental College.
- BERTOLDI, ALLEN E. (1968), Assistant Professor of Art  
BA, Fresno State College.
- BESSARD, CHRISTINE (1969), Lecturer in Ethnic Studies  
BA, Fresno State College.
- BEVILL, VINCENT D. (1957), Associate Professor of Engineering  
BS, Fresno State College; MS, University of California at Davis; Registered  
Mechanical Engineer.
- BICHERON, MICHEL G. (1969), Lecturer in Foreign Languages  
AB, Lycee Thiers, Marseille; DVEL, Faculte des Lettres D'Ais, Aid en Pro-  
vence.
- BIEHLER, WAYNE E. (1951), Professor of Agronomy  
BS, Fort Hays Kansas State College; MS, University of California at Davis.
- BIGGE, MORRIS L. (1950), Professor of Educational Foundations  
BA, Washburn Municipal University; MS, University of Michigan; PhD,  
University of Kansas.
- BIGGERSTAFF, WARREN R. (1948), Associate Vice President for Academic  
Planning (fall), Professor of Chemistry (on research—creative leave, spring)  
BA, Willamette University; MS, Oregon State College; PhD, University of  
Wisconsin.
- BILDERBACK, D. LOY (1962), Associate Professor of History  
BA, MA, University of Kansas; PhD, University of Washington.
- BILLINGS, ROBERT S. (1957), Professor of English  
BA, University of New Hampshire; MA, Boston University; PhD, State Uni-  
versity of Iowa.
- BIRD, EDWIN E. (1967), Field Instructor in Social Work (AtSH)  
BS, University of Louisville; MSW, University of California.
- BIXLER, MARK F. (1969), Lecturer in Chemistry  
BS, Massachusetts Institute of Technology.
- BJERK, ROGER C. (1969), Assistant Professor of History  
BA, Pacific Lutheran University; MA, Washington State University.
- BLACKERBY, BRUCE A. (1963), Associate Professor of Geology; Chairman,  
Geology Department  
BA, University of California at Riverside; PhD, University of California at  
Los Angeles.
- BLANKENSHIP, GERALD, JR. (1967), Assistant Professor of Business Law  
BA, JD, University of Southern California; Member, California State Bar.
- BLANTON, RONALD L. (1965), Associate Professor of Industrial Arts and  
Technology  
BA, MA, Fresno State College.
- BLISS, WILLIAM H. (1950), Professor of Industrial Arts and Technology  
BS, Central Missouri State College; MA, Colorado State College; EdD, Bradley  
University.
- BLOESSER, CAROL E. (1969), Laboratory School Teacher  
BA, Fresno State College.
- BLOMGREN, GLEN H. (1962), Associate Professor of Industrial Arts and Tech-  
nology  
BA, MA, Fresno State College.

- BLOOD, KENNETH H. (1966), Director of Counseling and Testing and Coordinator of Faculty Advising  
BA, Hamline University; MS, PhD, Washington State University.
- BLUESTEIN, GENE (1963), Associate Professor of English  
BA, Brooklyn College; MA, PhD, University of Minnesota.
- BLUESTONE, SYDNEY (1963), Associate Professor of Chemistry; Assistant Academic Vice President  
BS, Brooklyn College; PhD, Rutgers University.
- BOARD, ROBERT R. (1964), Registrar  
BS, University of Santa Clara.
- BOCHIN, HAROLD W. (1969), Assistant Professor of Speech  
BS, John Carroll University; MA, University of Wisconsin.
- BOCKMAN, DAVID C. (1966), Assistant Professor of Industrial Arts and Technology  
BA, MA, Fresno State College.
- BODGER, W. KENNETH (1968), Associate Professor of Engineering  
BS, MS, Massachusetts Institute of Technology.
- BOHNSTEDT, JOHN W. (1956), Professor of History  
BA, Michigan State University; MA, PhD, University of Minnesota.
- BONHAM, CLIFFORD V. (1964), Associate Professor of Social Work  
BA, MSW, University of California.
- BOOLSEN, FRANK M. (1948), Professor of Criminology; Chairman, Criminology Department  
BA, MA, University of California.
- BOWDEN, SHIRLEY J. (1968), Assistant Professor of Home Economics  
BS, University of California at Los Angeles; MS, Fresno State College.
- BOWEN, THOMAS G. (1969), Assistant Professor of Anthropology  
BA, Grinnell College; MA, PhD, University of Colorado.
- BOWEN, WAYNE S. (1964), Associate Professor of Foreign Languages  
BA, Ohio State University; MA, Emory University (Georgia); PhD, Ohio State University.
- BOWERS, BILLIE I. (1959), Laboratory School Teacher  
BA, Fresno State College.
- BRADLEY, BEATRICE E. (1969), Assistant Professor of Education  
BS, MS, EdD, University of Pennsylvania.
- BREEN, THOMAS E. (1966), Assistant Professor of Psychology  
BS, University of Illinois; MA, PhD, Louisiana State University.
- BREMNER, RAYMOND W. (1947), Professor of Chemistry  
BS, MS, PhD, University of Washington.
- BRENGELMAN, FREDERICK H. (1957), Professor of Linguistics (on sabbatical leave)  
BA, Dana College; MA, University of Nebraska; PhD, University of Washington.
- BRENNER, ROBERT D. (1968), Assistant Professor of Education  
BA, Ottawa University; MA, EdD, Colorado State College.
- BRENNINGER, RALPH A. (1946), Professor of Foreign Languages  
BS, Lafayette College; MA, Columbia University; PhD, University of California.
- BREWER, DONALD J. (1968), Assistant Professor of Art  
BA, University of California at Santa Barbara.

- BREWER, RAY E. (1965), Associate Professor of Education  
BS, Kansas State University; MA, New Mexico State University; EdD, University of Arizona.
- BRIGGS, DOUGLAS M. (1969), Assistant Professor of Speech Arts  
BA, MA, San Francisco State College.
- BRIGGS, PAUL E. (1967), Assistant Professor of Animal Science  
BS, Chico State College.
- BRIGHAM, THOMAS M. (1953), Dean, School of Social Work; Professor of Social Work  
BA, San Francisco State College; MSW, University of California; Registered Social Worker.
- BROCK, RICHARD K. (1966), Assistant Professor of Marketing (on leave)  
BA, MBA, University of Washington.
- BRODERICK, LEO J. (1967), Counselor, Psychiatrist  
BS, St. Joseph's College; MD, Hahnemann Medical College.
- BROOKS, ROBERT S. (1967), Director of Housing  
BA, University of Colorado; MEd, Ohio University.
- BROOKS, WAYNE A. (1956), Professor of Business Law  
BA, St. Ambrose College; JD, University of Iowa; LLM, Stanford University; Member, Iowa Bar, California Bar.
- BROUWER, JAMES M. (1964), Assistant Professor of History  
BA, MA, Yale University.
- BROWN, FORREST D. (1947), Professor of Educational Psychology  
BS, MS, Fort Hays Kansas State College; PhD, University of Cincinnati; Diplomate in Counseling.
- BROWN, SHELDON J. (1956), Professor of Physics  
BA, PhD, University of California at Los Angeles.
- BROWNELL, JAMES R. (1969), Associate Professor of Soils  
BS, Pennsylvania State University; MS, University of Minnesota; PhD, University of California at Davis.
- BROYLES, DON R. (1968), Assistant Professor of Political Science  
BA, Sacramento State College; MA, Claremont Graduate School.
- BRYON, ARTHUR J. (1939; 1947), Professor of Music  
Normal Degree, San Francisco Conservatory of Music; BA, Fresno State College; MA, University of California; DMA, University of Southern California.
- BRYON, JEANETTE P. (1956), Associate Professor of Speech  
BA, University of Maine; MA, University of North Carolina.
- BUCKLEY, PATRICIA M. (1968), Assistant Professor of Biology  
BS, Ohio University; MS, PhD, Oregon State University.
- BUCKMAN, KARL E. (1942), Professor of Political Science (on sabbatical leave, fall)  
BA, Fresno State College; MA, Claremont College.
- BURDICK, DONALD J. (1960), Associate Professor of Biology  
BA, San Jose State College; PhD, University of California.
- BURGER, OTHMAR J. (1969), Dean, School of Agricultural Sciences; Professor of Agronomy  
BS, MS, PhD, Purdue University.
- BURGESS, ROBERT C. (1947), Associate Professor of Physical Education  
BA, Fresno State College; MS, University of Southern California.
- BURRISS, MERLYN D. (1947; 1953), Professor of Speech  
BA, Fresno State College; MA, University of California at Los Angeles.

- BURTNER, DALE C. (1958), Professor of Chemistry  
BA, Reed College; MS, PhD, University of Washington.
- BURTON, BENJAMIN B. (1958), Professor of Psychology  
BA, MA, PhD, University of Missouri; Licensed Psychologist.
- BUSH, P. DALE (1961), Associate Professor of Economics  
BA, MA, University of Denver; PhD, Claremont Graduate School.
- BUTTON, ALAN D. (1961), Professor of Psychology (on sabbatical leave, spring)  
BS, MA, University of Oregon; PhD, Stanford University.
- BUTTRICK, DON F. (1964), Associate Professor of History at Bakersfield Center  
BA, MA, PhD, University of California.
- CADY, DOROTHY A. (1954), Laboratory School Teacher  
BS, University of Minnesota; BA, MA, Fresno State College; Registered Nurse.
- CAID, JOANNE N. (1967), Assistant Professor of Home Economics  
BS, Rochester Institute of Technology; MS, Michigan State University.
- CAMPBELL, HOWARD J. (1946), Professor of Speech  
BS, North Texas State Teachers College; MA, Stanford University; EdD, University of California.
- CANALES, JOSE C. (1946), Professor of History  
BA, Manhattan College; MA, PhD, University of California.
- CARBAJAL, FRANK J. (1969), Assistant Professor of Physical Education and Recreation  
BA, Colorado State College; MS, Utah State University.
- CARNERO, JUAN J. (1963), Associate Professor of Foreign Languages (on research-creative leave, spring)  
BA, Mexico City College; MA, Middlebury College; PhD, University of Madrid.
- CARR, JOHN H. (1953), Professor of Microbiology  
BS, Kansas State Teachers College; MS, PhD, Kansas State College.
- CARR, ROBERT A. (1952; 1957), Professor of Finance and Industry; Chairman, Finance and Industry Department  
BA, MA, San Francisco State College; PhD, University of Southern California.
- CEHRS, CHARLES H.\* (1948; 1953), Professor of Engineering.  
BME, University of Akron; MS, Oregon State College; ME, University of California; Registered Mechanical Engineer.
- CHA, MARN J. (1969), Assistant Professor of Political Science  
BA, MPA, University of Southern California.
- CHAN, DOREEN T. (1968), Assistant Professor of Nursing  
BS, Nazareth College; MS, University of California at San Francisco.
- CHANEY, HOMER C., JR. (1959), Professor of Social Science at Bakersfield Center  
BA, Dartmouth College; MA, PhD, Stanford University.
- CHANG, SIDNEY H. H. (1966), Associate Professor of History (on leave, fall)  
BA, National Taiwan University; MA, University of Missouri; MS, Florida State University; PhD, University of Wisconsin.
- CHANG, TSAI YU LILLIAN (1966), Assistant Professor of Nursing  
BS, University of Soochow (China); MPH, University of Michigan; MS, University of California Medical Center; RN; SCM, England.
- CHAWNER, LOWELL J. (1967-1968, spring 1970), Professor of International Business  
BA, Occidental College; CE, Cornell University; MA, PhD, Harvard University.

\* Deceased.

- CHITTICK, ROGER D. (1956), Professor of English  
BA, Butler University; MA, Washington State College; PhD, Stanford University.
- CHRISTENSEN, ELWYN L. (1968), Associate Professor of Accounting  
BA, Andrews University; MAcct, DBA, University of Southern California; CPA.
- CHRISTENSEN, JACK D. (1968), Assistant Professor of History  
BA, University of California; MA, Fresno State College.
- CIULA, RICHARD P. (Spring 1961), Professor of Chemistry; Chairman, Chemistry Department  
BA, Bowling Green State University; MS, University of California; PhD, University of Washington.
- CLAASSEN, ALFRED J. (1969), Assistant Professor of Sociology  
AB, University of California; BA, University of Southern California; JD, University of San Francisco.
- CLARK, ARLO Z. (1968), Librarian III  
BS, Utah State University; MA, University of Denver.
- CLARK, DAVID E. (1950; 1953), Associate Vice President for Academic Planning (spring); Professor of Chemistry  
BA, University of Redlands; MS, PhD, Stanford University.
- CLOUGH, CARMEN P. (1963), Associate Professor of Foreign Languages  
MA, University of Michigan; DrPed, University de la Habana.
- COBB, GWENDOLIN B. (1953), Professor of History  
BA, MA, PhD, University of California.
- COCHRAN, NORMA L. (1969), Assistant Professor of Education  
BA, MS, EdD, University of Nebraska.
- CODE, DONALD E. (1968), Laboratory School Teacher  
BS, University of Illinois; M.A., Fresno State College.
- COE, WILLIAM C. (1966), Associate Professor of Psychology  
BS, University of California at Davis; PhD, University of California; Licensed Psychologist.
- COFFEY, JACK (1968), Assistant Professor of Office Administration  
BA, Nebraska State College; MA, Colorado State College.
- COHEE, PADRAIC J. (1966), Assistant Professor of Foreign Languages  
BA, MA, University of California at Los Angeles.
- COHEN, MOSES E. (1969), Assistant Professor of Mathematics  
BS, Sir John Cass College, London University; PhD, University College of South Wales.
- COKER, WILSON W. (1968), Professor of Music; Chairman, Music Department  
BM, MM, Yale University; BM, St. Louis Institute of Music; DMA, University of Illinois.
- COLBERT, JAMES D. (1969), Assistant Professor of Physical Education and Recreation  
BA, MA, Adams State College.
- COLE, CHESTER F. (1947), Professor of Geography; Chairman, Geography Department  
BA, Eastern Washington College of Education; MA, University of Washington; PhD, University of Nebraska.
- COLEMAN, CECIL N. (April, 1959), Professor of Physical Education; Chairman, Physical Education Department; Athletic Director  
BA, MA, Arizona State University.
- COLVER, A. WAYNE (1957), Professor of Philosophy  
BA, University of California at Los Angeles; MA, PhD, Harvard University.

- COMEGYS, ROBERT G. (1955), Professor of History  
BA, MA, University of Washington; PhD, Stanford University.
- CONTRERAS, CARLOS A. (1968), Lecturer in History  
BA, Brigham Young University; MA, University of California at Los Angeles.
- COOPER, ARNOLD M. (1957), Professor of Psychology  
BA, San Francisco State College; MA, PhD, Claremont Graduate School;  
Licensed Psychologist.
- CORDS, DOUGLAS A. (1969), Assistant Professor of Marketing  
BS, MBA, Fresno State College.
- COSTIGAN, BARBARA H. (1969), Professor of Social Work  
BA, University of Southern California; MSW, University of Pennsylvania;  
DSW, University of Southern California.
- COSTIS, HARRY G. (1967), Associate Professor of Statistics and Quantitative  
Methods  
BS, University of Athens; MS, University of Georgia; PhD, University of  
Texas.
- COUGHRAN, WILLIAM M. (1959), Director of Personnel  
BA, MA, Fresno State College.
- COWLING, WILLIAM H. (1967), Assistant Professor of English  
BA, Loyola University; MA, Indiana University; PhD, Indiana University.
- COWLING, SANDRA L. (1967), Librarian III  
BA, MA, Indiana University.
- CROSBY, JOHN A. (1956), Professor of Geography  
BS, University of Chicago; MA, PhD, University of Washington.
- CSERNA, EUGENE G. (Spring, 1959), Professor of Geology  
PhD, University of Sciences (Budapest, Hungary); MA, PhD, Columbia Uni-  
versity.
- CULLEN, CLIFT C., Instructor in Industrial Arts and Technology  
BA, Fresno State College.
- CUMMINS, JAN L. (1968), Instructor in Home Economics  
BS, Fresno State College.
- CUTLER, Theodore H. (1969), Professor of Management  
BA, Drake University; PhD, University of Colorado.
- CYPHER, JAMES M. (1967), Assistant Professor of Economics (on leave)  
BA, MA, University of California at Santa Barbara.
- DANDOY, MAXIMA A. (Spring, 1956), Professor of Education  
BSE, National Teachers College (Philippines); MA, Arellano University  
(Philippines); EdD, Stanford University.
- DAUBS, EDWIN H. (1963), Associate Professor of Biology  
BS, MS, PhD, University of Illinois.
- DAVIS, IRVING F., JR. (1960), Professor of Agricultural Economics  
BS, University of California; MS, University of Illinois; PhD, University of  
California.
- DAVIS, MARTHA A. (1960), Associate Professor of Nursing  
BS, St. Louis University; MA, Teachers College, Columbia University; Regis-  
tered Nurse.
- DAVIS, M. JOAN (1969), Assistant Professor of Physical Education and Rec-  
reation  
BS, Russell Sage College; MS, Columbia University.
- DAVIS, VIOLA A. (1955), Counselor  
BA, Pasadena College; MA, University of Southern California; PhD, North-  
western University.

- DeBELLIS, EUGENE J. (1969), Assistant Professor of Social Work  
AB, Columbia College; MSS, School of Social Work (Garden City).
- DELANEY, RICHARD W. (1965), Assistant Professor of Art  
BA, MA, San Francisco State College.
- DEMING, DONALD E. (1960), Associate Professor of Engineering  
BS, Worcester Polytechnic Institute; MS, University of Connecticut.
- DEMPSTER, FRED E. (1951), Professor of Music  
BA, University of Omaha; MMus, Northwestern University.
- DeTAR, WILLIAM R. (1956), Associate Professor of Agricultural Mechanics (on leave)  
BS, MS, University of California at Davis; PhD, Purdue University.
- DETTINGER, DONALD J. (1947), Professor of Industrial Arts and Technology  
BA, Chico State College; MS, Oregon State College.
- DEWS, JON R. (1965), Associate Professor of Physics  
BS, Fresno State College; PhD, University of California.
- DIBLIN, JOAN E. (1968), Counselor  
BA, MA, University of Denver; PhD, Arizona State University.
- DICK, CHARLES H. (1969), Director of Community Relations  
AB, University of Kansas; MA, Canisius College.
- DIENSTEIN, WILLIAM (1946), Professor of Sociology and Criminology (on sabbatical leave, fall)  
BA, Stanford University; MA, University of California; PhD, Stanford University.
- DIESTEL, GEORGE E. (1969), Assistant Professor of Speech Arts  
BA, St. Mary's College; MA, Fresno State College.
- DILL, DOUGLAS L. (1969), Assistant Professor of Journalism  
BS, Brigham Young University; MAJ, Marshall University.
- DINKIN, JOAN C. (1968), Librarian II  
BA, Brooklyn College; MA, Columbia University.
- DINKIN, ROBERT J. (1968), Assistant Professor of History  
BA, Brooklyn College; MA, PhD, Columbia University.
- DINTRONE, CHARLES V. (1968), Librarian II  
BA, MA, University of California at Los Angeles; MLS, University of California.
- DIRKS, DALE W. (1968), Assistant Professor of Speech  
BFA, University of Wisconsin; MA, San Jose State College.
- DMITRIEW, HELEN L. (1967), Assistant Professor of Foreign Languages  
MA, University of Iowa.
- DODDS, J. PARRY (1964), Professor of Agricultural Economics  
BS, MS, PhD, Iowa State University.
- DOLARIAN, ARA H. (1968), Assistant Professor of Art  
BA, MA, San Francisco State College.
- DOMINICK, WAYNE P. (1964), Associate Professor of Engineering  
BSE, Ohio Northern University; MSCE, ScD, New Mexico State University; Registered Professional Engineer.
- DONALDSON, JOHN R. (1956), Professor of Physics  
BS, MA, Rice University; MS, PhD, Yale University.
- DONNELLY, KEVIN J. (1966), Assistant Professor of Physical Education and Recreation (on leave)  
BS, California State College at Los Angeles; MS, San Francisco State College.
- DONOHUE, DONALD J. (1965), Associate Professor of Mathematics  
BS, Fresno State College; MS, PhD, University of Oregon.

- DOSWALD, HERMAN K. (1967), Associate Professor of Foreign Languages  
BA, University of California; MA, PhD, University of Washington.
- DOW, VIRGINIA M. (1961), Laboratory School Teacher (on leave)  
BA, MA, Fresno State College.
- DOWLER, LLOYD (1948), Professor of Agricultural Education  
BS, MS, University of Wyoming.
- DOYLE, KATHERINE E. (1937; 1965), Professor of Physical Education  
BA, Stanford University; MS, Wellesley College.
- DREW, PATRICIA M. (1969), Associate Professor of Social Work  
AB, University of California at Los Angeles; MSW, University of Southern California.
- DRUMMOND, HAROLD G. (1966), Assistant Professor of Accounting and Quantitative Studies  
BS, University of Colorado; MSBA, University of Denver.
- DUKE, JOHN H. (1946), Professor of Journalism; Chairman, Journalism Department.  
BJ, University of Texas; MA, PhD, University of Southern California.
- DUNNING, WILLIAM J. (1947), Professor of Industrial Arts and Technology  
BS, Iowa State Teachers College; MS, Iowa State College; EdD, University of North Dakota.
- DUTTON, EDWARD P. (1967), Associate Professor of Social Work  
BS, University of California; MSW, Columbia University.
- ECHOLS, JAMES P. (1964), Assistant Professor of History  
BA, College of Idaho; MA, University of California.
- EDWARDS, NATHAN A. (1956), Professor of Education at Bakersfield Center  
BS, Iowa State College; MS, Drake University; PhD, State University of Iowa; Licensed Psychologist.
- ELDER, MARGUERITE E. (Spring 1970), Field Instructor in Social Work (PSH)  
MA, University of Chicago.
- ELGORRIAGA, JOSE A. (1962), Professor of Foreign Languages  
BA, Fresno State College; MA, PhD, University of California at Los Angeles.
- ELIAS, CLAUDE E., JR. (1969), Dean, School of Business; Professor of Urban Land Economics  
BA, MA, University of Wyoming; PhD, University of California at Los Angeles.
- ELIASON, AFTON Y. (1935), Professor of Physics  
BS, Utah State Agricultural College; MA, PhD, University of California.
- ELLIS, DAVID L. (1966), Associate Professor of Social Work; Acting Chairman, Social Welfare Department  
BA, University of Oklahoma; MSW, University of California at Los Angeles.
- EMANUEL, EDWARD F. (1969), Assistant Professor of Speech Arts  
BA, MA, San Jose State College.
- EMERSON, JOHN T. (1959), Professor of Quantitative Studies (on sabbatical leave, spring)  
BA, JD, University of Chicago.
- EMMAL, MARIE A. (1964), Associate Professor of Social Work  
BA, University of California at Los Angeles; Certificate of Mental Health, University of London.
- ENSSLIN, WALTER (Spring, 1959), Professor of Foreign Languages  
PhD, University of Berlin.

- ERICKSON, I. LOUISE (Spring 1965), Assistant Professor of Nursing  
BA, Fresno State College; MA, Teachers College, Columbia University.
- ERVIN, ROGER E. (1957), Professor of Geography  
BA, MA, University of Washington; PhD, University of Florida.
- ESTES, GENE L. (1964), Assistant Professor of Physical Education  
BS, MS, University of Oregon; DEd, Colorado State College.
- EVANS, RALPH F. (1947), Professor of Education  
BED, Eastern Illinois State Teachers College; MA, PhD, State University of Iowa.
- EVANS, RONALD L. (1963), Associate Professor of Biology  
BA, MA, University of Toronto; PhD, Stanford University.
- EVANS, THOMAS H. (1963), Dean, School of Engineering; Professor of Engineering  
BS, MSCE, California Institute of Technology; Registered Professional Engineer.
- EVERWINE, PETER P. (1962), Associate Professor of English  
BS, Northwestern University; PhD, State University of Iowa.
- EWY, DANIEL J. (1951; 1955), Associate Professor of Mathematics  
BA, University of California; MS, Stanford University.
- FADERMAN, LILLIAN (1967), Assistant Professor of English  
BA, University of California; MA, PhD, University of California at Los Angeles.
- FALK, DORIS F. (1946), Professor of Biology  
BA, MA, PhD, University of California.
- FARNESS, DONALD H. (1969), Assistant Professor of Economics  
BA, Reed College; PhD, University of Washington.
- FAST, PETER G. (1957), Professor of Education  
BA, Goshen College; MA, Ball State Teachers College; EdD, Indiana University.
- FEIGO, JOSEPH A. (1969), Assistant Professor of Quantitative Studies  
BS, Wilkes College; MBA, University of Scranton.
- FEUCHES, CONRAD (1946), Professor of Industrial Arts and Technology  
BA, Fresno State College; MS, Oregon State College.
- FEY, RUSSELL C. (1969), Professor of Urban and Regional Planning  
AB, Hiram College; MCP, University of California at Berkeley.
- FIBEL, BARRY (1966), Field Instructor in Social Work (FCPD)  
BA, MSW, University of Washington.
- FIGUERAS, JUAN A. (1969), Assistant Professor of Finance  
DL, University of Havana; BA, University of Miami; MA, Vanderbilt University.
- FIKES, JAMES A. (1955), Acting Executive Vice President; Professor of Health Science  
BS, Central State College (Oklahoma); MPH, MEd, PhD, Oklahoma University.
- FIRMERY, JUANA K. (1968), Laboratory School Teacher  
BA, Fresno State College.
- FISHER, M. BRUCE (1941), Professor of Psychology  
BA, University of California; PhD, Yale University; Licensed Psychologist.
- FITCH, JON M. (Spring 1970), Assistant Professor of Speech Arts  
BS, Connecticut Teachers College; BLI, Emerson College; MS, Purdue University.

- FITZGERALD, EDWARD T. (1969), Assistant Professor of Criminology  
BS, MPA, University of Southern California.
- FLAKE, RHITA (1967), Associate Professor of Physical Education  
BS, Brigham Young University; MA, San Jose State College; PhD, University  
of Southern California.
- FLAM, ROBERT A. (1969), Assistant Professor of Office Administration  
BS, Valley City State College; ME, University of North Dakota.
- FOIN, OWEN F., JR. (1942), Professor of Engineering  
BA, Fresno State College; Registered Electrical Engineer.
- FOSTER, E. MERLE (1959), Professor of Education at Bakersfield Center  
BA, MA, Colorado State College; PhD, State University of Iowa.
- FOSTER, HAGUE D. (1966), Associate Professor of Philosophy  
BA, PhD, University of Chicago.
- FOSTON, ARTHUR L. (1968), Associate Professor of Industrial Arts and Tech-  
nology  
BS, MS, Prairie View A and M College; MAT, Colorado State University.
- FOX, HERBERT S. (1969), Librarian II  
BA, Concordia Seminary; BLS, University of British Columbia.
- FOX, MARY ANN (1969), Librarian II  
BA, University of the Americas; BFT, American Institute for Foreign Trade;  
MLS, Indiana University.
- FRANC, MAX B. (1969), Assistant Professor of Political Science  
BA, St. Norbert College; MA, University of Wisconsin; MPA, PhD, New  
York University.
- FRANCIS, RICHARD W. (1965), Assistant Professor of Physical Education  
BA, San Jose State College; MA, Fresno State College.
- FRANKLIN, SAMUEL S. (1969), Assistant Professor of Psychology  
BA, University of California at Los Angeles; MA, University of California at  
Santa Barbara; PhD, University of Kansas.
- FREEMAN, G. RONALD (1969), Assistant Professor of Foreign Languages  
BA, University of Utah; MA, University of Washington.
- FREIJ, ROSALIE L. (Spring 1969), Field Instructor in Social Work (AgSH)  
MSW, University of Minnesota.
- FREY, JAMES E. (1969), Assistant Professor of English  
BA, Jamestown College; MA, Columbia University.
- FRICKER, HENRY F. (1952), Professor of Health Science and Education; Chair-  
man, Health Science Department  
BA, Marshall College; MA, EdD, Stanford University.
- FROM, BENDT A. (Spring 1968), Lecturer in Agricultural Mechanics  
BA, MEd, University of California at Davis.
- FROST, EVERETT C. (1969), Assistant Professor of English  
BA, MA, University of Connecticut.
- FULKERSON, WILLIAM M., JR. (1966), Assistant Professor of Speech  
BA, William Jewell College; MA, Temple University; PhD, Michigan State  
University.
- GADE, WARREN E. (1966), Assistant Professor of History  
BS, University of San Francisco; MA, Stanford University.
- GAINES, CHARLES F. (1968), Assistant Professor of Art  
BA, Jersey City State College; MFA, Rochester Institute of Technology.
- GAISER, EDWARD A. (1969), Assistant Professor of Industrial Arts and Tech-  
nology  
BS, MS, State University College at Buffalo.

- GAMMON, EDWARD R. (1966), Associate Professor of Linguistics; Chairman, Linguistics Department  
BA, Reed College; MA, University of Oregon; PhD, Stanford University.
- GARCIA, GEORGE (1969), Lecturer in Ethnic Studies  
BA, Fresno State College.
- GARCIA, MANUEL R., (1969) Assistant Professor of Industrial Arts and Technology  
BA, Fresno State College.
- GARDNER, FANNIE L. (1959), Professor of Nursing; Chairman, Nursing Department  
BS, Med, University of Houston; Registered Nurse.
- GAUSS, NORMAN M. (1968), Assistant Professor of Geography  
BA, MA, University of California at Los Angeles.
- GAYLORD, EDWARD H. (1957), Associate Professor of Engineering  
BS in EE, Colorado State University; MS in EE, University of Colorado; Registered Electrical Engineer.
- GENDRON, MAURICE C. (1969), Assistant Professor of Foreign Languages  
BA, MA, University of California at Los Angeles.
- GEROWITZ, JUDY (Spring 1970), Assistant Professor of Art  
BA, MA, University of California at Los Angeles.
- GIBSON, EDWARD M. (1969), Visiting Lecturer in Geography  
BA, MA, University of West Ontario.
- GIBSON, GEOFFREY J. (1969), Assistant Professor of Philosophy  
BA, City College of New York; MA, Princeton University
- GIGLIOTTI, HELEN J. (1966), Associate Professor of Chemistry  
BA, Vassar College; PhD, University of Michigan.
- GILBERT, WILLIAM R. (1955), Professor of Education  
BS, BS, MS, University of Illinois; PhD, University of Washington.
- GILLIS, ALBERT (1969), Professor of Music  
BA, MA, Yale University.
- GLEASON, KENNETH C. (1946), Professor of Physical Education  
BA, Fresno State College; MS, University of Southern California.
- GLIM, ROBERT J. (1948), Professor of Animal Sciences and Farm Management (on sabbatical leave, fall)  
BS, MED, University of California at Davis.
- GOLDBERG, MARY L. (1969), Lecturer in Nursing  
MA, Teachers College, Columbia University School of Nursing.
- GOLDBLOOM, DAVID E. (1968), Assistant Professor of Home Economics  
BA, Trinity College; MA, Cambridge University (England); PhD, University of California.
- GONSER, MARTIN E. (1958), Associate Professor of Industrial Arts and Technology  
BS, MS, Kansas State Teachers College.
- GOODWIN, H. MARSHALL, JR. (1964), Assistant Professor of History  
BA, MA, San Diego State College; PhD, University of California.
- GOSLINGA, MARIAN (1969), Librarian II  
BA, University of the Americas; MA, MLS, University of California at Berkeley.
- GOTHE, ARTHUR G. (Spring 1965), Librarian II  
BA, University of California at Santa Barbara; MLS, University of California.

- GRAHAM, GAYLORD O. (1957), Associate Professor of Speech; Acting Chairman, Speech Arts Department  
BA, MA, State University of Iowa.
- GRAHAM, HUGH F. (1969-1970), Professor of History, Bakersfield Center  
BA, MA, University of Toronto; AM, Princeton University; PhD, University of Southern California.
- GRANNIS, GARY E. (1968), Assistant Professor of Industrial Arts and Technology  
BSE, MA, Northeast Missouri State Teachers College.
- GREEN, MARGARET (1969), Field Instructor in Social Work (SBCWD)  
MSW, University of California at Los Angeles.
- GREENE, ELEANORE R. (1960), Associate Professor of Nursing  
BA, Cornell University; MA, Columbia University; Registered Nurse.
- GREENWALD, MAX S. (1967), Field Instructor in Social Work (CDC)  
BS, Wilkes College; MSW, Yeshiva University.
- GREGG, CHARLES E. (1969), Assistant Professor of Sociology  
AB, University of California at Berkeley; BA, University of Southern California; JD University of San Francisco.
- GREGORY, EDDIE J. (1965), Associate Professor of Physical Education  
BS, Pepperdine College; MS, University of Southern California.
- GRIFFITHS, I. ACE (1959), Professor of Education (on sabbatical leave, fall)  
BS, University of Idaho; MS, University of Arizona; EdD, Colorado State College; Licensed Psychologist.
- GRONEMAN, CHRIS H. (1968), Professor of Industrial Arts and Technology  
BS, MS, Kansas State College of Pittsburg; EdD, Pennsylvania State University.
- GROSSMAN, JOEL S. (1965), Associate Professor of Psychology  
BA, University of Michigan; MS, PhD, Western Reserve University.
- GUMP, BARRY H. (1967), Assistant Professor of Chemistry  
BS, Ohio University; PhD, University of California at Los Angeles.
- GUNN, THOMAS I. (1967), Research Coordinator, Professor of Agricultural Economics  
BS, Brigham Young University; MS, Utah State University; PhD, Cornell University.
- GYSLER, RANDOLPH L. (1966), Assistant Professor of Industrial Arts and Technology (on leave)  
BS, MA, Kent State University.
- HAAS, RICHARD (1969), Assistant Professor of Biology  
BA, MA, PhD, University of California at Los Angeles.
- HADDAD, MARIE N. (1964), Associate Professor of Nursing  
BS, St. Louis University; MN, University of Washington.
- HADSALL, LEO F. (1932), Professor of Biology  
BA, MA, Bucknell University; PhD, Cornell University.
- HAFFNER, SUSANNE A. (1965), Librarian II  
BA, University of Oregon; ML, University of Washington.
- HAGEN, JOHN W. (Spring 1969), Assistant Professor of Agricultural Economics  
BS, MS, North Dakota State College; PhD, Washington State College.
- HAGGBLADE, BERLE (1963), Associate Professor of Office Administration; Chairman, Office Administration Department  
BA, State College of Iowa; MA, Colorado State College; EdD, University of California at Los Angeles.

- HAIMBACH, DAVID (1959), Professor of Education; Principal, Laboratory School  
BSEd, EdM, Temple University; EdD, University of Florida.
- HAIKABEDIAN, ARA (1953), Professor of Physical Education  
BS, University of Southern California; MEd, Pennsylvania State College; EdD, Stanford University.
- HAIRE, PAUL L. (1969), Associate Professor of Social Work  
AB, Boston College; MSW, Simmons College.
- HALL, ELTON A. (1969), Assistant Professor of Philosophy  
BA, Occidental College; MA, University of California at Santa Barbara.
- HAM, CECELIA (1969), Assistant Professor of Elementary Education  
BA, Fresno State College.
- HAMPTON, ROBERT E. (1956), Professor of Marketing; Assistant Dean, School of Business)  
BBA, Golden Gate College; MA, Chico State College; EdD, Stanford University.
- HANSEN, JULIA A. (1962), Associate Professor of Nursing  
BA, University of Redlands; BA, Stanford University; MN, University of Washington; Registered Nurse.
- HANZLICEK, CHARLES G. (1966), Assistant Professor of English  
BA, University of Minnesota; MFA, University of Iowa.
- HARKINS, FRANCES H. (Spring 1967), Assistant Professor of Home Economics  
BS, Indiana University (Pennsylvania); MS, Oklahoma State University.
- HARLAN, RONALD J. (1956), Librarian III  
BA, Fresno State College; MLS, University of California.
- HARMON, WALLACE M. (1965), Associate Professor of Biology  
BS, The Colorado College; MS, Syracuse University; PhD, University of California at Los Angeles.
- HARRISON, LEONARD A. (1969), Lecturer in Foreign Languages  
BA, Brown University; MA, University of California at Berkeley.
- HARRISON, RAYMOND H. (1955), Professor of School Administration  
BS, Central State College; MS, Oklahoma State University; EdD, University of Denver.
- HARRISON, ROBERT D. (1954), Associate Professor of Agricultural Inspection and Services  
BS, University of Michigan; MS, Michigan State College.
- HART, FRANCIS A. (1965), Assistant Professor of English  
BA, Harvard University; MA, PhD, University of Utah.
- HASSON, ALLEN (1966), Assistant Professor of Education (on special assignment, spring)  
BS, Brigham Young University; MA, EdD, Arizona State University.
- HATMAKER, ROBERT L. (1969), Assistant Professor of Social Work  
BA, Wheaton College; MSW, University of Michigan.
- HAWBECKER, ALBERT C. (1946), Professor of Biology  
BA, Fresno State College; MA, University of California; PhD, Oregon State College.
- HEARD, NATHAN C. (1969), Lecturer in English
- HECKMAN, RICHARD A. (Spring 1970), Lecturer in Biology  
BS, MS, Wisconsin State University; MS, Idaho State University.
- HEINE, LYMAN H., Jr. (1968), Assistant Professor of Political Science  
BA, Johns Hopkins University; MA, PhD, University of Nebraska.

- HELM, JAMES A. (Spring 1968), Field Instructor in Social Work (SBCWD)  
BA, Ohio State University; MSW, University of California at Los Angeles.
- HENDERSON, WALLACE D. (1958), Associate Professor of Speech  
BA, Fresno State College.
- HENDRICKSON, MARY R. (1966), Associate Professor of Home Economics  
BS, University of Tennessee; MS, Oregon State University.
- HENFLING, PHYLLIS B. (1940; 1952), Associate Professor of Education  
BA, MA, Fresno State College.
- HENNINGS, L. RALPH (1969), Assistant Professor of Speech Arts  
AB, MA, San Diego State College; PhD, University of Oregon.
- HERSEY, JERRY R. (1968), Assistant Professor of Biology  
BS, Southwest Missouri State College; MS, PhD, University of Missouri.
- HEUS, MICHAEL J. (1968), Assistant Professor of Social Work  
BS, Wisconsin State University; MSSW, University of Wisconsin.
- HEWITT, ALLAN A. (1968), Associate Professor of Pomology  
BS, MS, University of California at Davis; PhD, University of Maryland.
- HICKS, JAMES R., Jr. (1968), Instructor in English  
BA, Fresno State College.
- HIGGINS, FRANCIS V. (1958), Professor of Engineering  
BS, MS, Indiana State Teachers College; MS, University of Michigan; MS,  
Case Institute of Technology.
- HIGHLANDER, JOHN P. (1966), Television Coordinator; Professor of Speech  
BA, MA, University of Iowa; PhD, University of Wisconsin.
- HILDEBRANDT, LEONARD H. (1967), Director of Planning and Development  
BA, Hamline University; BD, Andover Newton Theological School.
- HILLMAN, STEPHANIE (1958), Librarian V  
BA, University of California at Los Angeles; MLS, University of California.
- HIXSON, FLOYD M. (1951), Professor of Poultry Science  
BS, Oklahoma State University; MS, PhD, Kansas State University.
- HOGAN, ANNE B. (1964), Field Instructor in Social Work (FCWD)  
BA, Vassar College; MSW, University of Pennsylvania.
- HOGAN, HILDA M. (1964), Assistant Professor of Nursing  
BS, MS, Boston University.
- HOLDER, WAYNE B. (1955), Professor of Psychology (on sabbatical leave, fall)  
BA, MA, New Mexico State University; PhD, University of Missouri.
- HOPKINS, JERRY D. (1964), Assistant Professor of Linguistics  
BA, Indiana University.
- HOPPING, ANN (1963), Librarian III (on leave, spring)  
BA, Fresno State College; MLS, University of California at Los Angeles.
- HORNBACHER, ROSE M. (1968), Assistant Professor of Home Economics  
BS, North Dakota State University; MS, Iowa State University.
- HOWLAND, RUSSELL S. (1948), Professor of Music  
BM, MMus., University of Illinois.
- HSU, JOSEPH C. (1967), Assistant Professor of Biology  
BS, National Taiwan University; MS, Oklahoma State University; PhD, Uni-  
versity of California.
- HUDSON, DAVID C. (1968), Assistant Professor of History  
BA, University of Notre Dame; MA, PhD, Columbia University.
- HUFF, ARTHUR E. (1964), Assistant Professor of Music  
BA, MA, San Jose State College.

- HUGGINS, JOYCE M. (Spring 1970), Associate Professor of Education  
BA, Colgate Rochester Divinity School; MA, New York University; EdD,  
Arizona State University.
- HUGHES, JOAN D. (1958), Professor of Education at Bakersfield Center  
BA, San Jose State College; MA, Stanford University; EdD, University of  
California.
- HUI, CHUN-LING (STAN) (1968), Assistant Professor of Art  
BA, MFA, University of Idaho.
- HULL, F. LEE (1968), Assistant Professor of Finance and Industry  
BS, MS, University of Illinois.
- HUNT, MAURICE P. (1948), Professor of Educational Foundations  
BS, MA, PhD, Ohio State University.
- HUNTER, BROOKE B. (1969), Lecturer in Physical Education and Recreation  
BA, MA, University of California at Los Angeles.
- HURST, ROLLAND WOOD (1968), Assistant Professor of Music  
BA, Grinnell College; MM, Eastman School of Music.
- HUSSON, EVELYN M. (1968), Assistant Professor of Nursing  
BA, American International College; MA, Teachers College, Columbia Uni-  
versity.
- ILLG, GEORGE F. (1948); Assistant Dean, School of Agricultural Sciences;  
Professor of Dairy Industry  
BS, University of California; MS, Ohio State University.
- INGENTHRON, WILLIAM J. (1969), Associate Professor of Journalism  
AB, BJ, MA, PhD, University of Missouri.
- IRWIN, PHYLLIS A. (1963), Associate Professor of Music  
BS, MEd, University of Houston; EdD, Columbia University.
- ISHIMOTO, T. TOM (1968), Associate Professor of Vegetable Crops  
BA, MA, Fresno State College; PhD, Oregon State College.
- JACOBSEN, ERLAND L. (1959), Librarian III  
BA, Stanford University; MLS, University of California.
- JACOBSON, WALLY D. (1968), Assistant Professor of Speech  
BA, Luther College; MA, Sacramento State College; PhD, University of Wash-  
ington.
- JARRETT, McRAE (1957), Professor of Engineering  
BS in EE, MS, University of Tennessee Registered Professional Industrial En-  
gineer.
- JASCHKE, JANET C. (1968), Instructor in Home Economics  
BS, University of Hawaii.
- JASUTIS, CORDELIA (1959), Associate Professor of Foreign Languages (on sab-  
batical leave, fall)  
Lic-es-Let, University of Paris; MA, PhD, State University of Iowa.
- JENKIN, SHIRLEY A. (1963), Associate Professor of Nursing  
BSN, Washington State University; MN, University of Washington; Regis-  
tered Nurse.
- JENKINS, JACK T. (1961; 1964), Associate Professor of Social Work  
BSSW, University of Arkansas; MSSW, University of Tennessee.
- JENNE, RICHARD S. (1969), Assistant Professor of Industrial Arts and Tech-  
nology  
BPA, Art Center School; MA, Chico State College.
- JENNINGS, CALVIN H. (1968), Assistant Professor of Anthropology  
BA, MA, University of Colorado.

- JENSEN, CLARENCE D. (1947), Professor of Agricultural Mechanics; Chairman, Agricultural Industry and Education Department  
BA, Chico State College; MS, Oregon State College.
- JENSEN, LYNN A. (1968), Assistant Professor of Quantitative Studies  
BSBA, Drake University; MBA, Oregon State University.
- JEPSEN, VICTOR L. (1946), Professor of Management  
BA, MA, University of Oregon; EdD, Stanford University.
- JOHNSON, BIRGER L. (1955), Professor of Physical Education  
BA, North Dakota State Teachers College; MS, University of Oregon; PhD, University of Southern California.
- JOHNSON, GORDON F. (1966), Associate Professor of Education  
BS, MS, Oregon College of Education; EdS, Stanford University; EdD, University of Oregon.
- JOHNSON, HARMON H. (1969), Laboratory School Teacher  
BS, California State College at Hayward.
- JOHNSON, MELVIN W., Jr. (1968), Assistant Professor of Speech  
BA, University of Minnesota; MS, Brooklyn College of City University of New York.
- JOHNSON, NANCY F. (1969), Assistant Professor of Home Economics  
BA, San Francisco State College.
- JOHNSON, RONALD D. (1968), Assistant Professor of Speech  
BA, University of California at Santa Barbara; MA, San Francisco State College.
- JONES, HAROLD D. (1957), Director of Placement  
BS, Northern State Teachers College (South Dakota); MEd, University of Colorado; EdD, University of Denver.
- JONES, HARRY E. (1957), Director of Admissions and Records and Coordinator of Relations with Schools  
BA, San Diego State College; MA, PhD, Claremont Colleges.
- JUDD, FLOYD L. (1967), Assistant Professor of Physics  
BS, Carroll College; MS, PhD, Iowa State University.
- KALLAM, JOHN F. (1962), Associate Professor of Criminology  
BA, San Jose State College; MS, Fresno State College.
- KALLO, ROBERT M. (1950), Professor of Chemistry  
BS, PhD, University of California.
- KAPOOR, SUDARSHAN (1967), Associate Professor of Social Work  
BA, DAV College (India); MA, Delhi School of Social Work; MSW, PhD, Florida State University.
- KARIAN, MARION J. (1967), Assistant Professor of Nursing (on leave)  
BS, Fresno State College; MS, University of California at Los Angeles.
- KARIKKA, KATHERINE J. (1967), Assistant Professor of Home Economics  
BS, Utah State University; MS, Cornell University.
- KARLE, HARRY P. (1962), Professor of Plant Pathology and Viticulture; Chairman, Plant Science Department.  
BS, Fresno State College; MS, PhD, University of California at Davis.
- KARR, HAROLD S. (1966), Associate Professor of English  
BA, United College (Winnipeg); MA, PhD, University of Minnesota.
- KAUFFMAN, GEORGE B. (1956), Professor of Chemistry  
BA, University of Pennsylvania; PhD, University of Florida.
- KAUSCH, DONALD E. (1965), Associate Professor of English  
BA, Wayne State University; MA, University of Michigan; PhD, Wayne State University.

- KAY, JEAN A. (1966), Assistant Professor of Nursing  
Nursing Diploma, Presbyterian Hospital (Philadelphia); SCM, Royal Maternity Hospital (Glasgow); BSPH, MPH, Columbia University.
- KELLER, ANTHONY E. (1969), Assistant Professor of Geology  
BS, BA, Fresno State College.
- KELLY, WILLIAM W. (1969), Lecturer in Animal Husbandry  
BS, MS, Fresno State College.
- KENDALL, JOHN C. (1968), Assistant Professor of History  
BA, MA, Carleton University; PhD, McGill University.
- KENNEDY, CELESTE K. (1965), Assistant Professor of Physical Education  
BS, Washington University; MA, Humboldt State College.
- KENSEL, W. HUDSON (1965), Associate Professor of History  
BA, University of Washington; BA, MEd, Central Washington State College; PhD, Washington State University.
- KERR, KENNETH M. (1967), Director of Activities  
BA, Wagner College; MS, PhD, Indiana University.
- KERSHAW, JOYCE (Spring 1967), Associate Professor of Social Work  
BA, Fresno State College; MSW, University of California at Los Angeles.
- KESSLER, WARREN L. (1968), Assistant Professor of Philosophy  
BA, Rutgers University; MA, University of Wisconsin.
- KEYES, RICHARD D. (1968), Lecturer in Black Studies; Director of Ethnic Studies Program  
BA, MSW, Ohio State University.
- KIMBERLY, MAX E. (1958), Professor of Health Science  
BS, MS, Montana State College; MA, EdD, Stanford University.
- KINZEL, PAUL F. (1963), Associate Professor of Foreign Languages  
BA, Fresno State College; MA, Columbia University; PhD, University of Washington.
- KIPPS, THOMAS C. (1956), Professor of Mathematics (on sabbatical leave, fall)  
BA, MA, PhD, University of California.
- KIRTLEY, DONALD D. (1966), Assistant Professor of Psychology  
BA, MA, PhD, University of Miami.
- KISSICK, ELENA F. (1966), Assistant Professor of Home Economics  
BS, University of California at Davis; MA, San Jose State College.
- KITTREDGE, ROBERT E. (1969), Counselor  
BA, State University of New York; MA, PhD, Michigan State University.
- KLASS, MORRIS D. (1967), Associate Professor of Social Work  
BA, MSW, University of California at Los Angeles; DSW, University of Southern California.
- KLASSEN, PETER J. (1966), Associate Professor of History; Chairman, History Department  
BA, University of British Columbia; MA, PhD, University of Southern California.
- KNIBBS, BILL L. (1969), Assistant Professor of Physical Education and Recreation  
BS, Fresno State College; MS, University of North Carolina.
- KNIGHT, PAULINE E. (1968), Assistant Professor of Nursing  
BS, University of Washington, MA, Teachers College, Columbia University.
- KNUDSEN, ROBERT G. (1964), Director, Foreign Student Program  
BS, MS, Utah State University.

- KOLLER, E. FRANK (1969), Professor of Geography  
BA, University of Utah; MA, Brigham Young University; PhD, Pennsylvania State University.
- KOLSTAD, WILLIAM A. (1964), Associate Professor of Political Science  
BA, Macalester College; LLB, University of Minnesota; MA, University of South Dakota; PhD, University of Texas.
- KRAL, IRVIN H. (1969), Faculty Coordinator of Data Processing  
BSRE, Indiana Institute of Technology; MSEE, PhD, University of New Mexico.
- KRELL, FRED C. (1963), Associate Professor of Nursing  
BSN, State University of Iowa; MS, Boston University; Registered Nurse.
- KREMEN, BENJAMIN G. (1950), Professor of Education  
BS, Johns Hopkins University; MA, University of Maryland; PhD, Michigan State College.
- KRUGER, JOHN H., JR. (1964), Associate Professor of Industrial Relations;  
Chairman, Management and Marketing Department  
BMinE, MA, PhD, University of Minnesota.
- KULHAN, EDWARD F. (1956), Professor of Engineering  
BS, University of Nevada; MS, Pennsylvania State University; Registered Land Surveyor.
- KUNIMITSU, DONALD K. (1967), Assistant Professor of Chemistry  
BA, PhD, University of Hawaii.
- KUNIMITSU, VIVIAN Y. (1968), Instructor in Home Economics  
BS, University of Hawaii.
- KUSEL, ANITA (Spring 1970), Assistant Professor of Foreign Languages  
BA, McGill University; MA, Columbia University.
- KUSEL, HEINZ N. (1965), Associate Professor of Art; Chairman, Art Department  
BS, Skidmore College; MA, Fresno State College.
- LA BAR, GEORGE W. (Spring 1970), Lecturer in Biology  
BS, Wisconsin State University; MA, University of California at Los Angeles; PhD, Montana State University.
- LABARRE, ANTHONY E., JR. (1961), Professor of Mathematics  
BE, MS, Tulane University; PhD, University of Oklahoma.
- LABARRE, GRANT W. (1969), Assistant Professor of Mathematics  
MA, Fresno State College.
- LANDRUM, ELIZABETH A. (1932), Librarian IV  
BA, Fresno State College; MA, University of California.
- LANE, PHILIP J. (1969), Assistant Professor of Speech Arts  
BA, University of Portland; MA, University of Kansas; PhD, Northwestern University.
- LANGE, IAN M. (Spring 1968), Assistant Professor of Geology  
BA, MA, Dartmouth College; PhD, University of Washington.
- LANGE, PAUL M. (1968), Assistant Professor of Business Law  
BSBA, Northwestern University; MA, Mankato State College; JD, University of Minnesota.
- LANGLEY, RONALD J. (1969), Assistant Professor, Computer Center  
BS, Manchester College; BD, Bethany Seminary; MA, Fresno State College.
- LARK, ALEXANDER H. (1968), Assistant Professor of Education  
BA, Goshen College; MA, Roosevelt University.
- LATIMER, HOWARD L. (1958), Professor of Biology  
BS, MS, State College of Washington; PhD, Claremont Colleges.

- LAURY, FRANK B. (1959) Associate Professor of Art  
BA, University of Northern Iowa; MA, Stanford University.
- LEAVENWORTH, RUSSELL E. (1955), Professor of English  
BA, Hanover College; MA, PhD, University of Colorado.
- LEAVITT, GEORGE S. (1955), Professor of Psychology  
BA, Macalester College; MA, PhD, University of California.
- LEAVITT, JEROME E. (1969), Professor of Education; Chairman, Elementary Education Department  
BS, Newark State College; MA, New York University; EdD, Northwestern University.
- LEE, ROBERT E. (1964), Associate Professor of Geography  
BA, MA, San Jose State College; PhD, University of California at Los Angeles.
- LEE, ORIENT (Spring 1969), Lecturer in History  
PhD, University of Paris.
- LEET, DON R. (1969), Lecturer in Economics  
AB, University of Pittsburgh; MA, University of Pennsylvania.
- LESLIE, GLENN F. (1958), Professor of Education (on sabbatical leave, fall)  
BS, Central Missouri State College; MEd, EdD, University of Missouri.
- LEVIN, CARL (1942), Director of Business Affairs  
BA, Fresno State College.
- LEVINE, PHILIP (1958), Professor of English  
BA, MA, Wayne University; MFA, State University of Iowa.
- LEWIS, KENNETH E. (1956), Director of Financial Aids  
BA, MA, Fresno State College.
- LEWIS, LETA J. (1963), Associate Professor of Foreign Languages  
BA, University of Washington; PhD, University of California at Los Angeles.
- LIAO, SAMUEL Y. (1965), Assistant Professor of Engineering  
BS, University of Chicago; MSEE, University of Idaho.
- LINDBERG, JOHN E. (1969), Associate Professor of Social Work  
BS, MSW, University of California at Berkeley.
- LINDLY, EDITH R. (1948), Professor of Health Science  
BS, MS, Oklahoma State University; MPH, University of Michigan; EdD, Oklahoma State University.
- LINDQUIST, STANLEY E. (1953), Professor of Psychology  
BA, Fresno State College; PhD, University of Chicago; Licensed Psychologist.
- LISKEY, NATHAN E. (1965), Assistant Professor of Health Science (on leave)  
BA, LaVerne College; MS, PhD, Indiana University.
- LIST, EDGAR A. (1961), Professor of Foreign Languages; Chairman, Foreign Language Department  
BA, Carroll College; MA, PhD, Yale University.
- LITTLE, RICHARD L. (1968), Associate Professor of Industrial Arts and Technology  
BA, MA, EdD, Arizona State University.
- LIVINGSTON, WILLIAM H. (1966), Associate Professor of Industrial Arts and Technology  
BS, ME, University of California; Registered Electrical Engineer.
- LOCKWOOD, NORMAN H. (1968), Assistant Professor of Art  
BA, University of Washington: MFA, Mills College.
- LOGAN, BARRY L. (1961), Associate Professor of English  
BA, MA, Syracuse University; PhD, Yale University.

- LOMBARD, EDWIN H. (1947), Professor of Speech  
BA, Oberlin College; MA, Columbia University; MA, PhD, Cornell University.
- LORENZ, PHILIP M. (1969), Lecturer in Music
- LORING, JANET (1957), Professor of Speech  
BS, Northwestern University; MA, University of Missouri; PhD, State University of Iowa.
- LOWERY, CHARLOTTE M. (1964), Librarian III  
BSLS, Western Reserve University (Ohio); MA, University of Southern California.
- LUND, EDWARD O., JR. (1966), Associate Professor of Art  
BS, University of Wisconsin; MFA, Indiana University.
- LUNDBERG, JAMES B. (1960), Associate Professor of Education  
BS, North Texas State College; MA, Michigan State University.
- LYLE, ARLINE (1969), Associate Professor of Social Work  
BA, Fisk University; MSS, Smith College.
- LYLES, SAMUEL P. (1969), Assistant Professor of Physics  
BS, Louisiana State University; MS, PhD, University of Oklahoma.
- LYON, EARL D. (1938), Professor of English  
BA, University of California at Los Angeles; MA, PhD, University of California.
- LYWEN, WERNER (1969), Professor of Music  
State Academy of Music, Berlin.
- MABEY, RENDELL N. (1968), Assistant Professor of Philosophy  
BA, University of Utah; MA, Harvard University.
- MACH, LELAND E. (1958), Associate Professor of Education  
BA, Colorado State College of Education; MA, Northwestern University; EdD, College of the Pacific; Licensed Psychologist.
- MACK, SEYMOUR (1957), Professor of Geology  
BS, College of the City of New York; MS, PhD, Syracuse University.
- MACMILLAN, MARGARET W. (Spring 1970), Assistant Professor of Office Administration  
BS, MEd, University of Pittsburgh; EdD, University of California at Los Angeles.
- MADDEN, HARRISON E. (1956), Professor of Psychology  
BS, MA, MA, PhD, University of Kansas, Licensed Psychologist.
- MADDEN, HENRY M. (1949), College Librarian  
BA, Stanford University; BLS, University of California; MA, PhD, Columbia University.
- MAHONEY, RONALD J. (1968), Librarian II  
BA, University of the Americas (Mexico City College); MLS, University of California.
- MAJORS, KERN T. (1969), Librarian I  
BS, MLS, University of California at Berkeley.
- MALLORY, THOMAS E. (1968), Assistant Professor of Biology  
BS, University of Redlands; MS, PhD, University of California at Davis.
- MARGOSIAN, ARTHUR H. (1956; 1961), Professor of Journalism (on sabbatical leave)  
BA, MA, Fresno State College.
- MARKHAM, CHARLES G. (1967), Associate Professor of Geography  
BA, University of California at Los Angeles; MA, Colorado State College; PhD, University of California.

- MARSTERS, CHARLES R. (1969), Assistant Professor of Aerospace Studies  
BS, University of Utah; BA, Willamette University.
- MARTIN, HOWARD J. (1965), Assistant Professor of Agricultural Mechanics  
BSAE, California State Polytechnic College.
- MARTIN, JOHN E. (1959), Professor of Education  
BA, Central State College (Oklahoma); MEd, EdD, University of Oklahoma.
- MARTIN, JOHN H. (1962), Associate Professor of Music  
BS, MA, Ohio State University; EdD, University of Arizona.
- MARTINEZ, GUILLERMO F. (1969), Lecturer in Ethnic Studies  
BA, Fresno State College.
- MASON, R. ELAINE (1956), Professor of Physical Education  
BA, Fresno State College; MA, Stanford University.
- MATTHEW, VIRGIL, L., JR. (1948), Associate Professor of History  
BA, Fresno State College; MA, PhD, University of California at Los Angeles.
- MAUGHELLI, MARY L. (1962), Associate Professor of Art  
BA, MA, University of California.
- MAYE, YUKO (1969), Field Instructor in Social Work (StSH)  
BA, Kobe Women's College; MSW, Worden School of Social Service.
- McCLINTIC, J. ROBERT (1954), Professor of Biology  
BA, San Diego State College; PhD, University of California.
- McCLINTIC, MARGUERITE A. (Spring 1961-1963; 1969) Assistant Professor of  
Nursing  
BSN, MSN, Wayne University.
- McCOMAS, WAYNE L. (1953), Associate Professor of Industrial Arts and Tech-  
nology  
BA, Santa Barbara College; MA, Stanford University.
- McCONNELL, VANCE Y. (1966), Assistant Professor of Foreign Languages  
BA, University of Omaha; MA, PhD, University of Arizona.
- McCORMICK, PAUL E. (1969), Lecturer in Sociology and Anthropology at  
Bakersfield Center  
BSEd, MA, University of Missouri.
- McDERMOTT, JOHN J. (1969), Assistant Professor of English  
BA, University of California at Los Angeles.
- McDOUGALL, THOMAS (1966), Assistant Professor of Art  
BA, San Jose State College; MA, San Fernando Valley State College.
- McFATE, DONALD L. (1969), Assistant Professor of English at Bakersfield Center  
BA, MA, Michigan State University.
- McGOLDRICK, BERNARD E. (1969), Assistant Professor of Political Science  
BA, MA, Fordham University; BD, Woodstock College; MA, Georgetown  
University.
- McGUIRE, PAUL J. (1966), Assistant Academic Vice President; Associate Pro-  
fessor of Speech  
BA, MA, San Fernando Valley State College.
- McKELL, DAVID S. (1967), Field Instructor in Social Work (CYA)  
BS, University of Oregon; MSW, University of Utah.
- McKENZIE, JOSEPHMAC (1969), Lecturer in Political Science at Bakersfield  
Center  
BA, University of California at Riverside.
- McKNIGHT, H. RAY (1965), Associate Professor of English  
BA, Harvard College; MA, PhD, University of North Carolina.

- MCLEOD, ALBERT I. (1968), Assistant Professor of Sociology  
BA, Evangel College; MA, University of Omaha.
- MEAD, RICHARD R. (1968), Professor of Marketing  
BA, PhD, University of Pennsylvania.
- MEEKER, MURIEL (1950), Laboratory School Teacher  
BA, San Francisco State College; MA, Fresno State College.
- MERCHEN, WAYNE V. (1969), Associate Professor of Urban and Regional  
Planning  
BA, Fresno State College; MUP, University of Washington.
- MERRIFIELD, ALEANOR R. (1969), Professor of Social Work  
BS, University of Oregon; MA, University of Chicago.
- MESCHERIN, EUGENE (1967), Librarian II  
MA, University of California at Riverside.
- MEYER, RONALD W. (1966), Assistant Professor of Botany  
BS, MA, University of Missouri; PhD, University of California.
- MICCICHE, PAULINE F. (1966), Librarian III  
BA, University of Buffalo; MS, Canisius College; MSLS, Western Reserve  
University.
- MILLER, CARL E. (1961), Associate Professor of Education at Bakersfield Center  
(on sabbatical leave, fall)  
BS, Anderson College (Indiana); MA, Eastern New Mexico University; EdD,  
Texas Technological College.
- MILLER, HARRY J. (Spring 1970), Assistant Professor of Quantitative Studies  
BA, MBA, Fresno State College.
- MILLER, TERRY C. (1969), Assistant Professor of Speech Arts  
AB, University of California at Berkeley; MA, Northwestern University; MFA,  
Ohio University.
- MILLER, WILLIAM M. (1956), Professor of Chemistry  
BS, University of Illinois; MS, PhD, State University of Iowa.
- MINICH, MARSHALL E. (1966), Associate Professor of Finance and Industry;  
Director, Bureau of Business Research and Service  
BS, Lafayette College; MBA, Harvard Business School.
- MINICK, ROBERT A. (1962), Associate Professor of Economics; Chairman,  
Economics Department  
BS, MS, North Texas State College; PhD, University of Texas.
- MINNICH, MADELYN J. (Spring 1970), Assistant Professor of Art  
BA, Whitman College; MA, San Diego State College.
- MINSCHREW, WILLIAM E., JR. (Spring 1963), Associate Professor of Art (on  
research—creative leave, spring)  
BS, Atlantic Christian College; MFA, University of North Carolina.
- MISTRY, P. J. (1969), Assistant Professor of Linguistics  
BA, MA, Elphinstone College (Bombay); MA, University of Pennsylvania;  
PhD, University of California at Los Angeles.
- MITCHELL, COLLEEN A. (1968), Librarian II  
BA, College of the Holy Names; MA, Washington University; MLS, Univer-  
sity of California.
- MITCHELL, T. RUSSELL (1967), Admissions Officer  
BA, MA, Fresno State College.
- MOERK, ERNST (1967), Assistant Professor of Psychology  
PhD, University of Innsbruck.

- MOHAMED, FARIDA O. (1969), Assistant Professor of Physical Education and Recreation  
MA, Wyoming University; PhD, University of Southern California.
- MOLEN, DAYLE, H. (1965), Associate Professor of Journalism  
BA, University of Idaho; MS, University of Oregon.
- MONKE, ROBERT H. (1969), Assistant Professor of Education  
BS, MS, Illinois State University; PhD, Arizona State University.
- MONSEN, CAROL L. (1966), Assistant Professor of Nursing  
BS, Boston University; MS, University of Colorado.
- MONSON, WILLIAM N. (1968), Assistant Professor of Speech  
BA, Knox College; MA, San Fernando Valley State College.
- MONTGOMERY, RICHARD C. (1966), Professor of Geography  
BS, University of Idaho; MA, PhD, University of Nebraska.
- MOORE, BARBARA M. (1969), Associate Professor of Social Work  
BA, Mount Holyoke College; MSW, University of Pennsylvania.
- MOORE, HEYWARD, JR. (1965), Associate Professor of Political Science  
BA, University of North Carolina; MA, University of Florida; PhD, University of North Carolina.
- MORI, NOBUO (1967), Associate Professor of Social Work  
BS, MSW, University of Utah.
- MORTIMER, DELL L. (1968), Associate Professor of Accounting  
BA, Chico State College; MBA, University of California; DBA, University of Colorado.
- MOSHER, DIANE L. (1968), Librarian II  
BA, Fresno State College; MLS, University of California at Los Angeles.
- MOSS, STANLEY S. (1965), Associate Professor of Social Work  
BSS, College of City of New York; MSW, Rutgers, The State University.
- MOTT, MARY L. (1969), Associate Professor of Physical Education and Recreation  
BA, University of California at Santa Barbara; MA, Stanford University; PhD, Louisiana State University.
- MOYLE, PETER B. (1969), Assistant Professor of Biology  
BA, University of Minnesota; MS, Cornell University; PhD, University of Minnesota.
- MULLEN, WILLIAM P. (1969), Assistant Professor of Music  
BM, MM, University of Illinois.
- MULLENNIX, GRADY L. (1958), Professor of Economics  
BS, MS, North Texas State College; PhD, University of Texas.
- MUNSON, WALKER M. (1969)  
BA, MacPhail College of Music; MA, St. Thomas College.
- MURPHY, JOSEPH B. (1949), Professor of Education  
BS, Brigham Young University; MS, University of Utah; EdD, Stanford University.
- MURRAY, PAUL F. (1969), Ombudsman  
MAgr, University of New Zealand; DTheol, Theological Faculty of Sydney.
- MURRAY, RICHARD (1968), Assistant Professor in Physical Education  
BA, Fresno State College; MS, Arizona State University.
- MUSSELMAN, DARWIN B. (1953), Professor of Industrial Arts and Technology  
BA, Fresno State College; MFA, California College of Arts and Crafts; MA, University of California.

- NAGY, ELEMÉR J. (1960; 1962), Associate Professor of Foreign Languages (on sabbatical leave, fall)  
MA, PhD, P. Pazmany University (Budapest).
- NALBANDIAN, LOUISE (Spring 1964), Associate Professor of History  
BA, San Francisco State College; MA, PhD, Stanford University.
- NASSE, GEORGE N. (1965), Associate Professor of Geography  
BA, Clark University; MA, PhD, University of Michigan.
- NATHARIUS, DAVID T. (1966), Assistant Professor of Speech  
BA, Los Angeles State College; MA, Bradley University.
- NELSEN, CLAIR E. (1950; 1955), Professor of History  
BA, Fresno State College; MA, PhD, Stanford University.
- NELSON, DARREN M. (1968), Associate Professor of Animal Sciences  
BS, University of Nebraska; PhD, University of Illinois.
- NELSON, DONALD D. (Spring 1964), Associate Professor of Animal Sciences  
BS, Fresno State College; MS, University of California at Davis; PhD, Ohio State University.
- NELSON, MYRTHEL S. (1965), Associate Professor of Nursing  
BA, College of Great Halls; MA, Gallaudet College; MA, Columbia University; MN, Yale University.
- NEWCOMB, RICHARD F. (Spring 1956), Professor of Industrial Arts and Technology  
BA, MA, Fresno State College.
- NEWCOMER, LLOYD R. (1967), Assistant Professor of Speech  
BA, University of Wyoming; MA, University of Southern California.
- NEWELL, TERRY G. (1969), Assistant Professor of Psychology  
BA, PhD, University of Minnesota.
- NEWSOME, RATANA (1961), Professor of Home Economics  
BA, Chulalongkorn University (Thailand); MS, PhD, Florida State University.
- NICKLETT, GEORGIA E. (1965), Assistant Professor of Education  
BA, University of California at Los Angeles; MA, EdD, Columbia University.
- NISHIO, KAREN H. (1959; 1963), Associate Professor of Nursing  
BS, University of Dayton; MS, University of California at Los Angeles; Registered Nurse.
- NISWONGER, C. ROLLIN (Spring 1970), Lecturer in Accounting  
BS, Miami University; MS, University of Illinois; PhD, Ohio State University.
- NIXON, ARNE J. (1961), Director of Extension; Professor of Education  
BS, Ellendale State Teachers College (North Dakota); EdM, Western Washington College of Education; EdD, Teachers College, Columbia University.
- NOLF, BRUCE O. (1968), Associate Professor of Geology (on leave)  
BA, University of Iowa; MS, California Institute of Technology; PhD, Princeton University.
- NORSWORTHY, STANLEY F. (1966), Assistant Professor of Geography  
BA, University of California at Los Angeles; MA, Miami University; C Phil, University of California at Los Angeles.
- NORTON, RICHARD (1963), Assistant Professor of Entology  
BA, Fresno State College.
- NUR, HUSSAIN SAYID (1967), Associate Professor of Mathematics  
BS, University of Bagdad; MA, PhD, University of California.

- NURY, FREDOON S. (1969), Professor of Food Science  
BS, University of California at Berkeley; MS, American University; PhD, Utah State University.
- NWOKO, SOMAYINA G. (1968), Assistant Professor of Agricultural Economics  
BS, University of Ibadan (Nigeria); MS, PhD, University of California at Davis.
- O'BRIEN, JOHN C. (1965), Associate Professor of Industrial Economics (on leave, spring)  
BCom, University of London; MA, PhD, University of Notre Dame.
- OGDEN, LOWELL K. (1958), Assistant Professor of Education at Bakersfield Center  
BS, Arkansas State Teachers College; MA, University of Wyoming.
- OLNEY, ARTHUR J. (Spring 1969), Assistant Professor of Ornamental Horticulture  
BS, University of Rhode Island; MS, PhD, Michigan State University.
- O'NEIL, ROBERT M. (1957), Professor of English  
BA, MA, Montana State University; PhD, University of Washington.
- O'NEILL, JOHN F. (1968), Associate Professor of Social Work  
BA, Antioch College; MA, University of Chicago; DSW, University of Southern California.
- OPPER, S. Michael (1965), Assistant Professor of Art (on research-creative leave, spring)  
BS, Southern Connecticut State College; MA, Columbia University; PhD, Institute of Asian Studies.
- ORRO, GENE T. (1969), Lecturer in Ethnic Studies  
BA, San Francisco State College.
- PADILLA, ROBERT, JR. (1969), Assistant Professor of Physical Education and Recreation  
BA, Fresno State College.
- PAPE, LAURENCE A. (1951), Professor of Physical Education  
BA, MA, Ohio State University; EdD, Columbia University.
- PARKER, LILLIE A. (1951), Librarian V  
BA, BLS, University of California.
- PARKER, WILLIAM M. (1950), Professor of Accounting  
BS, MBA, University of California; PhD, University of Southern California; Certified Public Accountant.
- PASSEL, ANNE W. (1969), Associate Professor of English at Bakersfield Center  
BA, Mt. Holyoke College; MA, PhD, University of the Pacific.
- PATTERSON, MARY G. (1969), Professor of Nursing  
BS, PHN, Columbia University; MS, New York University; EdD, University of California at Los Angeles.
- PAUL, MARTIN T. (1967), Assistant Professor of English  
BA, College of the Holy Cross; MA, PhD., University of Wisconsin.
- PEAL, JAMES A., M.D., Professor of Nursing  
BA, Michigan State College; MD, Howard University; Licensed Psychiatrist.
- PETESCH, WILLIAM J. (1968), Librarian II  
BA, MA, University of Montana; MALS, University of California.
- PETRUCCI, VINCENT E. (1948), Professor of Viticulture  
BS, MS, University of California at Davis.
- PFLUEGER, CLAYTON C. (1959), Associate Professor of Dairy Industry  
BS, South Dakota State College; MS, State College of Washington.

- PHILLIPS, STEVE, JR. (1969), Assistant Professor of Engineering  
BSM, University of Illinois; MBA, University of Santa Clara; MSIME, University of Iowa.
- PICKEL, DONNA RAE (1967), Assistant Professor of Physical Education  
BS, Oklahoma Baptist University; MS, Smith College.
- PICKFORD, PATRICIA R. (Spring 1957), Professor of Social Work; Chairman, Social Welfare Department (on sabbatical leave)  
BA, Fresno State College; MSW, University of California at Los Angeles.
- PIERSOL, ROBERT J. (1968), Associate Professor of Marketing  
BSME, University of Illinois; MBA, Stanford University; DBA, Harvard University.
- PIETROWSKI, ROBERT F. (1967), Lecturer in Management; Director, Institute of Industrial Relations  
BA, MBA, Stanford University.
- PIGG, C. JOANNE (1964), Associate Professor of Biology  
BA, Arizona State University; MS, PhD, Oregon State University.
- PISCIOTTOLI, LOUIS F. (1967), Assistant Professor of Economics  
BA, Boston College.
- PITT, JACK A. (1957), Professor of Philosophy (on research—creative leave, fall)  
BS, Sir George Williams College (Canada); BA, MA, McGill University (Canada); PhD, Yale University.
- POOLE, PATRICK H. (1966), Counselor  
BA, University of Tulsa; MS, Kansas State College.
- POSEY, CLYDE L. (1966), Assistant Professor of Accounting and Quantitative Studies  
BBA, Texas Western College; MBA, University of Texas; CPA, California, Texas.
- POSS, STANLEY H. (1956), Professor of English  
BA, University of Redlands; MA, Claremont Graduate School; PhD, University of Washington.
- POSTON, BILLIE L. (1966), Assistant Professor of Physical Education  
BS, MS, University of Tennessee.
- POWELL, FRANK V. (1955), Professor of Psychology  
BA, University of Redlands; MS, PhD, University of Wisconsin; Licensed Psychologist.
- POYTHRESS, RANSOM H. (Spring 1962), Assistant Professor of Foreign Languages  
BA, Stanford University; MA, Fresno State College.
- PREDIKA, RAE A. (1969), Assistant Professor of Physical Education and Recreation  
BS, Bowling Green State University; MS, Akron University.
- PRONIN, ALEXANDER (1965), Associate Professor of Foreign Languages  
BA, University of California; PhD, Georgetown University.
- PROVOST, DAVID H. (1958), Professor of Political Science  
BA, Pomona College; PhD, University of Queensland (Australia).
- QUINN, JOHN R. (1969), Associate Professor of Criminology  
BA, Aquinas College; MA, Michigan State University.
- QUIRK, WILLIAM M. (1969), Assistant Professor of Education  
BS, Kansas State College of Pittsburg; MS, Fort Hays Kansas State College.
- RANDALL, CHARLES H. (1962), Associate Professor of Speech  
BA, Central Washington College of Education; MFA, Yale University.

- RANEY, GEORGE W. (1969), Assistant Professor of Linguistics  
BA, Loyola University; MA, University of Southern California.
- RAY, DEAN N. (Spring 1969), Professor of Criminology  
BA, Yankton College; MA, Washington State University.
- REA, RALPH C. (1954), Professor of Music  
BM, Eastman School of Music; MA, PhD, State University of Iowa.
- REA, THELMA M. (1958), Professor of Education  
BS, MS, University of Idaho; EdD, Stanford University.
- READ, WALTER (1969), Assistant Professor of Mathematics  
BA, Pennsylvania State University.
- REEDER, CHARLOTTE P. (1968), Lecturer in Economics  
BA, MA, University of Illinois.
- REES, BRYANT E. (1947), Professor of Biology  
BA, MA, University of Utah; PhD, Stanford University.
- REHART, B. SCHYLER, JR. (Spring 1963), Assistant Professor of Journalism  
BA, MA, Fresno State College.
- REIGHARD, EDWARD (Spring, 1960), Professor of Management  
BA, Middlebury College; BD, Yale University; MBA, PhD, Stanford University.
- REITMAN, SANDFORD W. (1966), Assistant Professor of Education, Operation Fair Chance  
BA, Ohio University; MA, EdD, Western Reserve University.
- RENZI, DOROTHY (Spring 1968), Assistant Professor of Music  
BA, Mills College.
- REYNOLDS, DANIEL LEE (1968), Assistant Professor of Management  
BS, Millikin University; MS, University of Illinois.
- RICH, WALLACE N. (1963), Professor of Social Work  
BA, Fresno State College; MSW, Florida State University.
- RICHARDS, HERBERT D. (1955), Associate Professor of Engineering  
BS, University of California; MS, Stanford University; Registered Civil and Structural Engineer.
- RICHTER, BERTINA (1967), Librarian II  
BA, Sacramento State College; MLS, University of California.
- RIES, JOACHIM S. (1964), Associate Professor of English  
BA, Syracuse University; MA, PhD, University of Washington.
- RIPPEY, ANDREW D. (1946), Professor of Education  
BS, MA, University of Florida; PhD, Ohio State University.
- RISCO-LOZADA, ELIEZER (1969), Lecturer in Ethnic Studies  
BA, Sacramento State College.
- RITENOUR, GARY L. (1969), Associate Professor of Agronomy  
BS, Purdue University; MS, PhD, University of California at Davis.
- ROBERTS, HENRY L. (1952), College Fiscal Officer  
BA, Occidental College.
- ROBINSON, ETHEL A. (1946; 1950), Associate Professor of Mathematics  
BA, MA, Stanford University.
- ROCKWELL, JAMES H. (1957), Associate Professor of Industrial Arts and Technology  
BS, Stout Institute; MS, Bradley University.
- RODEMAYER, STEPHEN A. (1967), Assistant Professor of Chemistry  
BS, St. Thomas College; PhD, University of California.

- ROGERS, DARRYL D. (Spring 1966), Lecturer in Physical Education  
BA, University of Denver; MA, Fresno State College.
- ROHRER, MARTHA D. (1958), Associate Professor of Home Economics (on leave)  
BA, San Jose State College; MS, Oregon State College.
- ROMERO, RUTH M. (1969), Assistant Professor of Linguistics  
BA, Smith College; MA, Radcliffe College.
- ROSE, CARLENE (1951), Professor of Home Economics  
BS, University of Minnesota; MS, Oregon State College.
- ROSS, DAVID A. (1968), Assistant Professor of Foreign Language  
BA, MA, University of California at Los Angeles.
- ROTH, HOWARD C. (1967), Assistant Professor of Foreign Languages  
BA, Fresno State College; MA, University of California; PhD, University of Washington.
- ROTH, LESTER J. (1956), Director, Operation Fair Chance; Professor of Social Science and Education  
BS, Kent State University; MA, Western Reserve University; EdD, Stanford University.
- ROTSTAN, JOHN A. (1967), Associate Professor of Political Science; Chairman, Political Science Department  
BA, MEd, Whittier College; MA, PhD, Claremont Graduate School.
- ROUSEK, EDWIN J. (1948), Professor of Animal Sciences  
BS, University of Nebraska; MS, Cornell University.
- ROWE, IVAN H. (1969), Assistant Professor of Education  
BA, MA, University of Auckland; MA, Fresno State College; EdD, University of Auckland.
- ROWLAND, WALTER F. (1967), Associate Professor of Engineering  
BS, MS, University of Illinois; PhD, Stanford University.
- RUHL, ERVING C. (1967), Associate Professor of Social Work  
BA, Monmouth College; MA, University of Chicago.
- RUSSELL, KENNETH H. (1963), Associate Professor of Chemistry  
BS, Portland State College; PhD, Washington State University.
- RUSSELL, THOMAS C. (1968), Instructor in History  
BA, Harvard College; MA, University of Colorado.
- SAAKE, ROBERT D. (1969), Assistant Professor of Criminology  
BA, San Francisco State College.
- SAGEN, MURIEL J. (1969), Assistant Professor of Speech Arts  
BA, Washington State University; MA, Fresno State College.
- SALGADO, RALPH H., JR. (1965), Assistant Professor of Speech (on leave)  
BA, MA, University of Arizona.
- SALISBURY, INGRID W. (1968), Assistant Professor of English  
BA, Cornell College; MFA, University of Oregon.
- SALISBURY, RALPH J. (1969), Lecturer in English  
BA, MFA, University of Iowa.
- SANTIGIAN, M. MARTY (Spring 1970), Associate Professor of Education  
BA, Occidental College; MA, Fresno State College; EdD, University of California at Berkeley.
- SAWYER, DANIEL B. (1968), Assistant Professor of Physical Education and Recreation  
BA, San Jose State College; MS, Los Angeles State College; PhD, University of Southern California.

- SCHMITZ, CAROLYN A. (1969), Assistant Professor of Nursing  
BSN, University of Indiana; MS, Boston University.
- SCHORLING, HORACE O. (1941), Dean, School of Professional Studies; Professor of Industrial Arts and Technology  
BA, San Jose State College; MS, EdD, Oregon State College.
- SCHRAMM, DWAYNE G. (1967), Assistant Professor of Office Administration  
BA, State College of Iowa; MA, Colorado State College; PhD, University of California at Los Angeles.
- SCHROETER, FRANK E. (1949), Professor of Industrial Arts and Technology; Chairman, Industrial Arts and Technology Department  
BS, MS, Stout Institute.
- SCHROLL, JOANNE W. (1963), Assistant Professor of Physical Education  
BA, MA, Fresno State College.
- SCHWARTZ, MARVYN S. (1958), Director of Health Services  
BA, Fresno State College; MD, University of California.
- SCHWITTERS, JAN D. (Spring 1967), Associate Professor of Mathematics  
BS, Iowa State University; MS, PhD, University of Arizona.
- SCOTT, FREDERIC A. (1957), Professor of Physics; Chairman, Physics Department  
BS, New York State College; MS, Lehigh University; PhD, Rice University.
- SEIB, KENNETH A. (1968), Assistant Professor of English  
BA, Ashland College; MA, Columbia University; PhD, University of Pittsburgh.
- SELKIRK, ROBERT J., JR. (1948), Professor of Dairy Science  
BS, MEd, University of California at Davis.
- SHACKLETT, ROBERT L. (1949; 1955), Assistant Dean, School of Graduate Studies; Professor of Physics  
BA, Fresno State College; PhD, California Institute of Technology.
- SHAEFFER, HELEN J. (1969), Assistant Professor of Education  
BA, Colorado State College; MEd, University of Colorado.
- SHANAB, MITRI E. (1968), Assistant Professor of Psychology  
BA, San Francisco State College; PhD, University of California at Santa Barbara.
- SHAW, JOHN A., JR. (1965), Assistant Professor of Economics  
BA, San Diego State College; MS, PhD, Purdue University.
- SHELDEN, M. GENE (1969), Lecturer in Home Economics; Acting Chairman, Home Economics Department  
AB, Wichita State University; MS, Kansas State University; PhD, Texas Woman's University.
- SHEPARD, BERNARD A. (1948), Professor of Journalism  
BA, Union College; BS, Columbia University; MS, PhD, Syracuse University.
- SHOCKLEY, JAMES T. (1951; 1956), Professor of Physics  
BA, MA, Fresno State College; PhD, University of Southern California.
- SHORE, ROBERT E. (1969), Assistant Professor of Education  
AB, Westmont College; MA, San Francisco State College; EdD, University of California at Berkeley.
- SIA, MING BE (1964), Associate Professor of Nursing  
BA, Hwa Nan College (China); MA, Teachers College, Columbia University.
- SIGALA, RALPH (1969), Counselor  
BA, MA, Eastern New Mexico University.
- SILVANI, HAROLD (1962), Laboratory School Teacher (on leave)  
BA, Fresno State College.

- SIMPSON, ELIZABETH P. (1965), Assistant Professor of Elementary Education; Operation Fair Chance  
BA, MA, Fresno State College.
- SINGH, MOHINDER (1966), Assistant Professor of Management and Marketing  
BS, Gordon College (India); MS, LLB, Banaras Hindu University; MBA, University of California at Los Angeles.
- SLANICEANU, ADRIANA N. (1969), Assistant Professor of Foreign Languages  
BA, University of Alberta; MA, University of Washington.
- SLINGER, JAMES W. (1969), Assistant Professor of Philosophy  
BA, University of Wisconsin.
- SLOAN, FORREST E. (1954), Professor of Elementary Education  
BS, Illinois State Normal University; MA, EdD, Colorado State College.
- SLUSARSKI, PETER M. (1969), Assistant Professor of Art  
BA, Kent State University; MA, University of California at Los Angeles.
- SMALLEY, R. GAYLE (1963), Assistant Professor of Art  
BFA, Rochester Institute of Technology; MFA, Indiana University.
- SMARDAN, LAWRENCE E. (1966), Professor of Home Economics; Assistant Dean, School of Professional Studies  
BA, MS, University of Southern California; PhD, Cornell University.
- SMETHERMAN, ROBERT M. (1967), Associate Professor of History  
BA, Claremont Men's College; MA, Los Angeles State College; PhD, Claremont Graduate School.
- SMITH, CHARLENE K. (1960), Professor of Education  
BA, Western College (Ohio); MS, Butler University; EdD, Colorado State College.
- SMITH, EPHRAIM K., JR. (1966), Assistant Professor of History  
BA, Hillsdale College; MA, University of Nebraska.
- SMITH, JAMES H. (1955), Professor of Engineering  
EE, MS, University of Cincinnati; BA, BS, PhD, University of Illinois; Registered Electrical Engineer.
- SMITH, JAMES MARVIN (1959; 1969), Professor of Philosophy; Chairman, Philosophy Department  
BA, University of Southern California; MA, PhD, Brown University.
- SMITH, JAMES MITCHELL (1965), Associate Professor of Psychology; Chairman, Psychology Department  
BA, PhD, University of California at Los Angeles.
- SMITH, LAWRENCE E. (1967), Assistant Professor of Industrial Arts and Technology  
BS, MS, Stout State University.
- SMITH, PHILIP N. (1958), Professor of Biology  
BA, PhD, University of California.
- SOBOLIK, GAYLE A. (1969), Assistant Professor of Office Administration  
BA, Concordia College; MA, University of North Dakota.
- SOLLIE, ALICE J. (Spring 1959), Associate Professor of Home Economics  
BS, MS, Oregon State University.
- SOMMER, DOROTHY C. (1965), Assistant Professor of Nursing  
BS, University of Buffalo; MN, University of Washington.
- SORTINI, ADAM J. (1968), Lecturer in Speech  
BS, Boston University; MA, University of Illinois, EdD, Boston University.
- SPANGLER, RICHARD C. (Spring 1963), Professor of Economics  
BA, MA, PhD, University of California at Los Angeles.

- SPARKS, RICHARD K. (1961), Dean, School of Education; Director of Teacher Education; Professor of Education  
BA, University of Washington; BA, Central Washington College of Education; MA, EdD, University of California.
- SPENCER, DAVID G. (1969), Professor of English at Bakersfield Center  
AB, MA, PhD, University of California at Berkeley.
- SPENCER, EDWARD M. (1950), Dean of Educational Services and Summer Sessions  
BS, Iowa State College; MA, PhD, State University of Iowa.
- SPIELER, RICHARD A. (1968), Assistant Professor of Biology  
BA, PhD, University of Chicago.
- STAEBLER, ARTHUR E. (1955), Professor of Biology (on sabbatical leave, spring)  
BS, MS, PhD, University of Michigan.
- STANDING, KEITH M. (1958), Professor of Biology; Chairman, Biology Department  
BS, MS, Brigham Young University; PhD, Washington State University.
- STEFFES, EVA L. (1969), Assistant Professor of Nursing  
RN, Methodist Hospital; BS, San Jose State College.
- STEPHENS, RANDALL E. (1968), Assistant Professor of Accounting  
BS, Pepperdine College; MBA, Florida State University.
- STEWART, JOHN O. (1966), Assistant Professor of English (on leave)  
BA, Los Angeles State College; MA, Stanford University; MFA, State University of Iowa.
- STITTICH, ELEANOR M. (1964), Associate Professor of Nursing  
BSNE, MLitt., University of Pittsburgh; Registered Nurse.
- STOCK, EDITH H. (1969), Assistant Professor of Foreign Languages  
AB, Western Reserve University; MA, University of Arizona.
- STORY, SYDNEY R. (1963), Associate Professor of Anthropology; Chairman, Anthropology Department  
BA, MA, PhD, University of California at Los Angeles.
- STRONG, WINSTON C. (1940), Professor of Irrigation  
BA, Stanford University; MA, EdD, University of California.
- STUART, MERRILL M. (1967), Assistant Professor of Geography  
BA, Carroll College; MA, University of Hawaii; EdD, Teachers College, Columbia University.
- STUART, WALTER H. (1967), Assistant Professor of English  
BA, Harvard; MA, PhD, University of Wisconsin.
- STULL, SARAH L. (1967), Assistant Professor of Education  
BA, MS, University of Illinois.
- STUTZMAN, CARL R. (1969), Associate Professor of Education  
AB, MA, EdD, University of the Pacific.
- SUNDSTEN, GWEN S. (1967), Field Instructor in Social Work (AgSH)  
BA, MSW, University of Washington.
- SUTHERLAND, LAWRENCE R. (1969), Associate Professor of Music  
BMusEd, University of Tulsa; MA, University of Missouri.
- SVENSON, KARL A. (1954), Professor of Political Science  
BA, University of Wyoming; MA, Indiana University; PhD, State University of Iowa.
- SWANK, MARILYN D. (1969), Assistant Professor of Education at Bakersfield Center  
BS, MS, Purdue University.

- SWANSON, CHARLES E. (1968), Professor of Marketing  
BA, San Diego State College; MA, PhD, State University of Iowa.
- SWINEFORD, EDWIN J. (1964), Associate Professor of Secondary Education;  
Chairman, Secondary Education Department  
BA, Fresno State College; MA, University of California; EdD, University of Virginia.
- TAHAJIAN, GERALD L. (1969), Assistant Professor of Accounting  
BS, Fresno State College; JD, University of San Francisco; CPA, California.
- TAKIZAWA, CHIAKI (1964) Field Instructor in Social Work (CDC)  
BS, University of Utah; MSW, University of Illinois.
- TANG, WAI-FONG (1968), Librarian II  
BA, Chung Chi College; MA, MLS, University of Hawaii.
- TANIGUCHI, IZUMI (1963), Assistant Professor of Economics  
BBA, MBA, University of Houston.
- TAVASTI, HARRIET A. (1969), Lecturer in Ethnic Studies  
AB, University of California at Los Angeles; MA, University of Southern California.
- TAYLOR, CHARLES (1938), Professor of Speech  
BA, Fresno State College; MA, University of Southern California; EdD, University of California at Los Angeles.
- TAYLOR, FRANK E, JR. (1965), Assistant Professor of Accounting and Quantitative Studies  
BS, MBA, University of California at Los Angeles; CPA.
- TAYLOR, K. PHILLIP (1969), Assistant Professor of Speech Arts  
AB, San Jose State College; MA, Fresno State College; PhD, Indiana University.
- TAYLOR, VERA C. (1965), Associate Professor of Home Economics  
BS, MS, Iowa State University; PhD, University of Southern California.
- TERRY, EDWIN F. (1969), Associate Professor of Economics  
BS, University of Oklahoma; MA, University of Kansas; PhD, Iowa State University.
- THOMPSON, ALASTAIR W. (1969), Professor of Aerospace Studies; Chairman, Aerospace Studies Department  
BA, Kent State College; MBA, George Washington University; Lt. Col. USAF.
- THOMPSON, GENE L. (1965), Assistant Professor of Art  
BFA, California College of Arts and Crafts; MFA, Cranbrook Academy of Art.
- THOMPSON, SHIRLEY M. (1953), Associate Professor of Physical Education  
BS, MS, University of Wisconsin.
- THOMSON, PATRICIA L. (1967), Associate Professor of Physical Education  
BA, University of Washington; MS, University of California at Los Angeles; PhD, University of Southern California.
- THORP, LEONARD W. (1963), Librarian III at Bakersfield Center  
BA, Whitman College (Washington); BLS, University of Washington.
- TIDYMAN, CLAYTON R. (1957), Professor of Accounting; Chairman, Accounting and Quantitative Studies Department  
BS, MBA, PhD, University of Southern California; CPA.
- TINKER, JOHN N. (1969), Assistant Professor of Sociology  
BA, Fresno State College; MA, University of California at Los Angeles.
- TITELMAN, SUSAN C. (Spring 1970), Assistant Professor of Art  
BA, MA, University of California at Los Angeles.
- TITUS, CHARLES B. (1963), Associate Professor of Accounting and Quantitative Studies  
BS, MA, University of Oklahoma; PhD, University of Texas.

- TOCCHIO, OCTAVIO J. (1959), Professor of Criminology (on sabbatical leave, spring)  
BA, Suffolk University; MA, PhD, American University.
- TOKMAKIAN, HAROLD H. (Spring 1968), Professor of Urban and Regional Planning; Chairman, Urban and Regional Planning Department  
BA, MA, Stanford University; MRP, Cornell University.
- TONEY, JOE D. (1969), Assistant Professor of Chemistry  
BS, Agricultural, Mechanical and Normal College; MS, PhD, University of Illinois.
- TORRANCE, ESTHER M. (1967), Assistant Professor of Mathematics (on leave, spring)  
BA, Barnard College of Columbia University; MA, Cornell University; PhD, Brown University.
- TOSCAN, JOYCE S. (1967), Librarian II  
BS, Purdue University; MS, University of Illinois.
- TOSCAN, RICHARD E. (1967), Assistant Professor of English  
BA, Purdue University; MA, University of Illinois.
- TRESTER, KENNETH R. (1968), Assistant Professor of Management  
BS, MBA, Utah State University.
- TRIBBEY, BERT A. (1965), Associate Professor of Biology  
BA, University of California at Santa Barbara; PhD, University of Texas.
- TRUCHAN, MARILYNN J. (1967), Instructor in Music (on leave)  
BA, MA, University of California at Santa Barbara.
- TRUITNER, KENNETH L. (1968), Assistant Professor of Linguistics  
BA, University of California; MA, University of California at Los Angeles.
- TUCKER, HAZEL M. (1966), Assistant Professor of Foreign Languages  
BA, University of California at Los Angeles; MA, National University of Mexico.
- TUCKER, JAMES B. (1968), Assistant Professor of Journalism  
BA, MA, University of Iowa.
- TUDER, PEGGY J. (1969), Assistant Professor of Speech Arts  
BA, San Jose State College; MA, Fresno State College.
- TUELLER, DALLAS A. (1946), Professor of Political Science  
BA, San Jose State College; PhD, Stanford University.
- TURKOT, ANDREW (1969), Assistant Professor of Industrial Arts and Technology  
BS, California State Polytechnic College.
- ULLMANN, W. RICHARD (1968), Assistant Professor of Speech  
BA, Fresno State College; MA, Colorado State University.
- UPHOLD, WILLIAM B., JR. (1954), Professor of English and Philosophy  
BA, ThB, Taylor University; BD, Drew University; PhD, University of Southern California.
- VALETT, ROBERT E. (Spring, 1970), Professor of Education  
BS, George Williams College; MA, University of Chicago; EdD, University of California at Los Angeles.
- VAN DER ELST, DIRK H. (1969), Assistant Professor of Anthropology  
BA, MA, University of Utah; MA, Northwestern University.
- VAN ELSWYK, MARINUS, JR. (1957), Associate Professor of Agronomy  
BS, Fresno State College; MEd, University of California at Davis; PhD, University of Arizona.

- VAN GALDER, ROBERT B. (Spring 1963), Assistant Professor of Physical Education (on sabbatical leave)  
BA, MA, Fresno State College.
- VAN VELDHUIZEN, HENRY (1967), Assistant Professor of Social Work  
BA, Calvin College; MSW, Florida State University.
- VAN ZYL, JACOBUS A. (1969), Visiting Lecturer in Geography  
BA, MA, DPhil, University of Stellenbosch.
- VARLEY, BARBARA K. (1965) Professor of Social Work; Associate Dean, School of Social Work; Chairman, Graduate Department of Social Work  
BS, MSW, University of Utah; DSW, Western Reserve University.
- \* VARNER, LEO P. (1956), Director, Bakersfield Center; Professor of Education  
BA, Howard Payne College; MS, EdD, University of Southern California.
- VAVOULIS, ALEXANDER (1963), Associate Professor of Chemistry  
BA, MA, Brooklyn College; EdD, University of the Pacific.
- VIAU, MONNETTE C. (1969), Assitant Professor of Nursing  
RN, St. Joseph's School of Nursing; BS, MA, Fresno State College.
- VIGIL, RALPH H. (1969), Assistant Professor of History  
BA, Pacific Lutheran University; MA, PhD, University of New Mexico.
- VISWESWARAN, GANESHA (1969), Associate Professor of Social Work  
BS, University of Madras (India); DSSA, Madras School of Social Work; MSW, University of Illinois.
- WADSWORTH, STEVEN D. (1968), Assistant Professor of Speech  
BS, MS, Utah State University.
- WAGONER, RONALD L. (1969), Assistant Professor of Mathematics  
BA, MA, Fresno State College; PhD, University of Oregon.
- WAIBEL, GRACE T. (1963), Librarian III  
BA, College of St. Catherine (Minnesota); MA, George Washington University; MA, University of Minnesota.
- WAKE, WILLIAM H. (1964), Associate Professor of Geography at Bakersfield Center  
BA, Stanford University; MA, Columbia University; PhD, University of California at Los Angeles.
- WALKER, HAROLD E. (1965), Administrative Vice President; Professor of Philosophy  
BA, Whittier College; BD, Hartford Seminary; PhD, University of Edinburgh.
- WALKER, MARGUERITE M. (1959), Professor of Art at Bakersfield Center  
BA, Western Washington College of Education; MA, PhD, University of Washington.
- WALKER, PHILLIP N. (1950), Acting Dean, School of Arts and Sciences; Professor of Speech  
BA, MA, University of Washington.
- WAMPLER, MARVIN B. (1969), Associate Executive Dean  
BA, College of Idaho; MA, DEd, Stanford University.
- WARDLE, ORRIN D. (1957), Professor of Education  
BS, MS, Utah State College; EdD, University of California.
- WARMERDAM, CORNELIUS A. (1947), Professor of Physical Education  
BA, Fresno State College; MA, Stanford University.
- WASHBURN, CHANDLER, (1968), Associate Professor of Sociology  
BA, MA, PhD, Michigan State University.

- WATTS, PHYLLIS W. (1945), Dean, School of Graduate Studies, Professor of English  
BA, Santa Barbara State College; MA, Claremont Colleges; EdD, Stanford University.
- WAYNE, WILLIAM C. (1954), Professor of Business  
BS, MA, Ball State Teachers College; MS, Indiana University; EdD, University of Southern California.
- WEBER, CHARLES R. (1967), Assistant Professor of Sociology (on leave)  
BS, Culver-Stockton College; MA, University of Missouri.
- WEBER, ROBERT B. (Spring 1969), Assistant Professor of Sociology  
MA, Fordham University.
- WEHRLY, ALBERT C. (1969), Assistant Professor of Mathematics  
BS, University of San Francisco; MA, San Francisco State College.
- WEILER, JOHN H., JR. (1962), Associate Professor of Botany  
BS, University of Nebraska; PhD, University of California.
- WEINEL, JIM E. (1969), Assistant Professor of Accounting  
BS, University of Illinois; MS, Arizona State University.
- WEITZMAN, RAYMOND S. (1968), Assistant Professor of Linguistics  
BA, University of California at Los Angeles; MA, PhD, University of Southern California.
- WELCH, MARIE R. (1969), Associate Professor of Nursing  
BS, Simmon College; AM, University of Michigan.
- WEST, LORRAINE W. (1957), Associate Professor of Education at Bakersfield Center  
BA, Fresno State College; MA, Stanford University.
- WHEELER, CHARLES L., JR. (1959), Test Officer and Counselor  
BA, Pasadena College; BD, Nazarene Theological Seminary; MA, Fresno State College; EdD, University of Southern California.
- WHITE, STANTON M. (1967), Assistant Professor of Geology  
BS, University of Massachusetts; MS, University of Rochester; PhD, University of Washington.
- WHITESEL, LITA S. (1969), Assistant Professor of Art  
BA, University of Kentucky; MS, University of Wisconsin.
- WIEK, KLAUS D. (1969), Assistant Professor of Geography  
PhD, Free University, Berlin.
- WIGHT, WILMA F. (1940), Professor of Office Administration  
BA, MA, Stanford University.
- WILCOX, JACK (1968), Assistant Professor of Physical Education  
BA, Fresno State College.
- WILCOX, ORLEY W. (1959), Professor of Education; Chairman, Advanced Education Department  
BA, Southwestern College (Kansas); MS, Kansas State Teachers College; EdD, University of Colorado.
- WILD, ERNEST S. (1948), Associate Professor of Physical Education  
BS, MS, Kansas State College.
- WILEY, FRANCIS A. (1946), Professor of History  
BA, Emory and Henry College; MA, Duke University; PhD, University of California.
- WILKIN, BRUCE M. (1967), Associate Professor of Education  
BA, University of Redlands; MA, University of California; EdD, Colorado State College.

- WILLIAMS, DONALD F. (1968), Assistant Professor of Journalism  
BSJ, MSJ, West Virginia University.
- WILLIAMS, SHERLEY A. (1969), Lecturer in Ethnic Studies  
AB, Fresno State College.
- WILLIAMS, WESLEY M. (1961), Professor of Art  
BA, MA, University of California; EdD, Stanford University.
- WILLIAMSON, HUGH A. (1967), Assistant Professor of Physics  
BA, North Texas State College; PhD, University of Texas.
- WILSON, DONALD M. (1956), Professor of Speech  
BA, Western Washington College of Education; MA, PhD, University of Southern California.
- WINEGAR, GARY H. (1969), Assistant Professor of Industrial Arts and Technology  
BS, Brigham Young University; MEd, DEd, Texas A&M University.
- WINTER, JAMES H. (1947), Professor of Music (on sabbatical leave, spring)  
BA, Carleton College; MMus, Northwestern University; PhD, State University of Iowa.
- WOHL, MILTON (1967), Assistant Professor of Linguistics  
BBA, City College of the University of New York; MA, PhD, University of Michigan.
- WOMACK, J PRINTISE (1958), Librarian IV  
BA, San Francisco State College; MLS, University of California.
- WOO, NORMAN T. (1968), Assistant Professor of Mathematics  
MA, Wabash College, MS, Southern Methodist University; PhD, Washington State University.
- WOOD, FORREST G. (1963), Associate Professor of Social Science at Bakersfield Center  
BA, MA, Sacramento State College; PhD, University of California.
- WOODCOCK, CATHERINE (1968), Associate Professor of Social Work  
BA, University of Manchester; MSW, University of London.
- WOODWICK, KEITH H. (1955), Professor of Biology (on research-creative leave, spring)  
BS, Jamestown College; MS, University of Washington; PhD, University of Southern California.
- WRIGHT, EVELYN H. (1948) Counselor  
BA, Cedar Crest College; MA, Syracuse University.
- WRIGHT, FREEMAN J. (1969), Associate Professor of Political Science  
BS, MS, Montana State University; PhD, John Hopkins University.
- WRIGHT, PATRICIA S. (1968), Director of Institutional Studies  
BS, EdD, Maryland University; MA, American University.
- YORK, WILLIAM L. (1968), Assistant Professor of Sociology  
BS, East Texas Baptist College; MA, Stephen F. Austin State College.
- ZANE, BURKE (1962), Associate Professor of Mathematics; Chairman, Mathematics Department  
BA, Fresno State College; MA, PhD, University of Oregon.
- ZELDIS, JACK B. (1969), Assistant Professor of Linguistics  
BA, University of Pennsylvania.
- ZELLMER, DAVID L. (1969), Assistant Professor of Chemistry  
BS, University of Michigan; MS, PhD, University of Illinois.
- ZENDER, MICHAEL J. (1966), Associate Professor of Physics; Chairman, Physics Department (spring)  
BA, St. John's University; PhD, Vanderbilt University.

- ZENDER, NYLA J. (Spring 1970), Lecturer in Biology  
BS, MS, Fresno State College.
- ZIEGLER, STANLEY M. (1968), Assistant Professor of Chemistry  
BA, University of California at Riverside; PhD, University of California at  
Los Angeles.
- ZITTERKOPF, MARILYN R. (1969), Librarian I  
BA, Eastern Washington State College; MLS, University of Hawaii.
- ZUMWALT, CRANE E. (1969), Lecturer in Engineering  
BS, Massachusetts Institute of Technology; MS, Carnegie Mellon University.
- ZUMWALT, EUGENE E. (1959), Professor of English; Chairman, English De-  
partment  
BA, MA, University of Oregon; PhD, University of California.

## PART-TIME FACULTY, 1969-70

ABELL, JACQUELINE C., Assistant Professor of Speech Arts  
AKRIDGE, JAMES R., Assistant in Chemistry  
ALDREDGE, JAMES, Lecturer in Criminology  
ALTMUELLER, RUDOLF, Lecturer in History  
ANDERSON, ROGER J., Lecturer in Social Welfare  
ANDREWS, EUGEUNIA R., Assistant Professor of Management and Marketing  
ARIAZ, EDWARD, Instructor in Industrial Arts and Technology  
AUERNHEIMER, CLAYTON R., Instructor in Health Science  
AVERY, ROBERT, Lecturer in Ethnic Studies  
AXTELL, J. DEWEY, Assistant Professor of Animal Science  
BAILEY, CATHERINE S., Instructor in English  
BAKER, PAUL C., Lecturer in Health Science  
BAKER, WILLIAM L., Assistant in Health Science  
BALLARIN, JOSEPH M., Instructor in Foreign Languages  
BALOIAN, JAMES C., Instructor in English  
BARNETT, DENEISE, Assistant Professor of Advanced Studies  
BARTON, LEONARD J., Lecturer in Mathematics  
BARTRAM, JOHN, Assistant Professor of Finance and Industry  
BECHKOFF, DIANA, Assistant in Physical Education and Recreation  
BEEBE, JOAN M., Assistant in Chemistry  
BENYO, MICHAEL S., Lecturer in Animal Science  
BERGSTROM, REINARD E., Instructor in Health Science  
BERMAN, PETER P., Assistant Professor of Management and Marketing  
BISSINGER, RICHARD, Instructor in Biology  
BIVINS, HERBERT, Instructor in English  
BLANTON, MARYALYCE, Instructor in Home Economics  
BORGWARDT, PETER A., Assistant in Mathematics  
BOWLEY, MICHAEL S., Assistant in Mathematics  
BRAR, MITA, Assistant Professor of Geography at Bakersfield Center  
BRAUN, DONALD E., Lecturer in Chemistry  
BRITTEN, HUDSON N., Lecturer in Engineering  
BROWN, ALBERTA, Assistant Professor of Elementary Education  
BURTNER, LEONA, Assistant Professor of Music  
CAFFEE, JAMES A., Lecturer in Health Science  
CALDERWOOD, RICHARD E., Instructor in Physical Education and Recreation  
CALLAHAN, KATHLEEN A., Instructor in Nursing  
CAMPBELL, BLANCHE A., Lecturer in Animal Husbandry  
CAPELLE, DONALD G., Lecturer in Urban and Regional Planning  
CARLSON, SHIRLEY M., Lecturer in Social Welfare  
CASKEY, LAURELL, Lecturer in Music  
CASTRO, IRMA, Lecturer in Ethnic Studies

CEHRS, ELIZABETH W.,\* Assistant Professor of Home Economics  
 CHENEY, JAMES T., Lecturer in Agricultural Industry and Education  
 CHOU, JOHN, Assistant Professor of Accounting and Quantitative Studies  
 CHRISTENSEN, GARY, Assistant in Physical Education  
 CLACK, RAYMOND R., Assistant in Geography  
 CLAPP, KENNETH L., Lecturer in Animal Science  
 CLEGG, REED K., Associate Professor of Criminology and Social Work  
 COCHRAN, IONE, Assistant Professor of Elementary Education  
 COHEN, MALCOLM, Lecturer in History  
 COLEMAN, KYLE K., Assistant Professor of Psychology  
 CONRAD, PETER W., Lecturer of Physical Education and Recreation  
 COOKE, E. DAVID, Assistant Professor of Education at Bakersfield  
 COONEY, JAMES R., Lecturer in Education  
 COUGHRAN, WILLIAM M., Associate Professor of Management and Marketing  
 COWAN, JAMES R., Assistant in Criminology  
 CRABTREE, PHILLIP R., Assistant Professor of Data Processing  
 CUNNINGHAM, WILLIAM P., Instructor in Criminology  
 DADDINO, JEANNE, Assistant in Journalism  
 DAHMER, ETHEL R., Lecturer in Foreign Languages  
 DANIEL, DALE W., Assistant Professor of Accounting  
 DAWSON, DAVID C., Assistant in Health Science  
 DeFRIES, WILLIAM A., Associate Professor of Health Science  
 DeREMER, JAMES C., Instructor in Quantitative Studies  
 DILLON, CHARLES, Field Instructor in Social Work (LGH)  
 DOKOOZLIAN, NICK, Lecturer in Viticulture  
 DUGGINS, ROSALIE M., Instructor in English  
 DUPZYK, JAMES ROGER, Instructor in Art  
 DURAN, RICARDO, Lecturer in Ethnic Studies  
 EARLY, MARIE A., Instructor of Nursing  
 EICHHORN, WILLIAM A., Lecturer in Health Science  
 EIDSON, BERNICE I., Lecturer in Mathematics  
 EISSINGER, RICHARD A., Instructor in Biology  
 ELDER, ROBERT E., Instructor in English  
 ELKINS, RUTH, Assistant in Criminology  
 ENGLEMAN, NORMAN P., Lecturer in Plant Science  
 ERIKSSON, BRIGITTE L., Instructor in English  
 ESTRADA, JOAN E., Assistant Professor of Accounting and Quantitative Studies  
 FARLEY, MELVIN, Associate Professor of Secondary Education  
 FARRIS, DONALD K., Lecturer in Social Welfare  
 FITZPATRICK, JULIE B., Instructor in Physical Education  
 FORD, CAROLYN M., Assistant in Mathematics  
 FRENCER, RICHARD P., Lecturer in Plant Science

\* Deceased.

FUTRELL, MAX D., Instructor in Criminology  
GAAB, DENNIS M., Assistant Professor of Management and Marketing  
GAAB, GERALD E., Assistant Professor of Finance and Industry  
GALLARDO, RUDY, Lecturer in Ethnic Studies  
GALLOWAY, RICHARD D., Lecturer in Music  
GARRETT, CLIFTON L., Assistant Professor of History  
GARVER, PHILLIP, Assistant Professor of Education  
GENDRON, AUDREY C., Instructor in Foreign Languages  
GIVENS, JOHN, Instructor in English  
GOEDHARD, NEIL, Lecturer in Political Science  
GOMEZ, STELLA, Lecturer in Chemistry  
GONZALES, THOMAS, Lecturer in Ethnic Studies  
GOODWIN, HUGH, Lecturer in Political Science  
GRAVES, ALVIN R., Assistant in Geography  
GRIECO, KAY, Instructor in English  
GROSS, DOUGLAS C., Instructor in English  
GROTE, ALBERT O., Lecturer in Engineering  
GUAGLIANONE, SAVERIO L., Instructor in Industrial Arts and Technology  
HALVERSON, THELMA C., Field Instructor in Social Work (PACHC)  
HANLEY, SHARON, Instructor in Psychology  
HARDGRAVE, JOHN G., Instructor in Health Science  
HENDRICKSON, DAVID H., Lecturer in Geography  
HERTER, HARRY W., Assistant in Health Science  
HIEBERT, PAUL G., Assistant Professor of Anthropology  
HILL, JERRY D., Instructor in Criminology  
HODGE, DONALD W., Instructor in Psychology  
HOLDER, ELAINE E., Assistant Professor of Psychology  
HOLDER, MAXINE, Assistant Professor of Education at Bakersfield Center  
HOLLADAY, DORIS L., Instructor in Industrial Arts  
HOLMEN, MARTIN L., Instructor in Psychology  
HOVDE, SUSAN F., Lecturer in Chemistry  
HSU, MARILYN M., Librarian II  
HUMPHREY, BARRY, Assistant in Health Science  
ISAAK, DANIEL, Assistant Professor of Biology  
JACKSON, EUGENE, Assistant Professor of Advanced Studies  
JACOBSON, JUDITH, Assistant Professor of Speech  
JAMESON, JOANNE, Instructor in Nursing  
JASZEWSKI, GARY M., Assistant in Mathematics  
JOHNSON, ALAN H., Lecturer in Geography  
JOHNSON, ALBERT R., Lecturer in Agricultural Mechanics  
JOHNSON, ARTHUR E., Assistant Professor of Industrial Arts and Technology  
JOHNSON, GARLAND E., Lecturer in Biology  
JOHNSON, GARY, Instructor in English  
JOHNSON, GERALDINE G., Assistant in Foreign Languages

JONES, CHARLES W., Assistant Professor of Music at Bakersfield Center  
KADY, NASSER T., Instructor in Industrial Arts and Technology  
KAJIWARA, JOHN T., Assistant in Chemistry  
KALINA, MICHAEL, Field Instructor in Social Work (MHR)  
KALLENBERG, RUTH A., Librarian II  
KEARNS, OWEN, Professor of Nursing at Bakersfield Center  
KEENE, JOHN S., Assistant Professor of Education at Bakersfield Center  
KEHLENBECK, GEORGE A., Assistant Professor of Finance and Industry  
KELLAS, ESTHER V., Instructor in English and Linguistics  
KELLER, JEAN, Instructor in Physical Education  
KEVORKIAN, HUGO, Lecturer in Engineering  
KHERDIAN, DAVID, Lecturer in English  
KIRKHART, JUDITH, Instructor in Biology  
KOKX, RUSSELL D., Instructor in Criminology  
KOLIGIAN, ALICE L., Assistant Professor of Chemistry  
KRANZ, PETER L., Assistant Professor of Psychology  
KRUEGER, DARLENE, Instructor in Psychology  
KUO, PATRICIA C., Assistant in Foreign Languages  
KUSEL, ANITA D., Assistant Professor of Foreign Languages  
KUTSCHER, ROBERT I., Assistant Professor of Finance and Industry  
LANDERS, GARY L., Assistant in Health Science  
LARSEN, LELAND M., Lecturer in Animal Science  
LEAVENWORTH, ANN, Assistant Professor of History  
LEE, HELEN S., Assistant in Foreign Languages  
LEET, ELYCE R., Lecturer in Economics  
LEMAN, COLLEEN M., Assistant in Journalism  
LEON, BONNIE T., Assistant in Foreign Languages  
LEVIS, LARRY P., Instructor in English  
LEVY, PAUL, Lecturer in Social Work  
LITTLE, SHERRY B., Lecturer in English  
LOHMAN, NEAL J., Assistant Professor of Education at Bakersfield Center  
LORENZ, ENA B., Assistant in Music  
LUCAS, JAMES G., Lecturer in Animal Science  
LUPPINO, JAMES R., Assistant Professor of Business Law  
LUÉDEKING, EDWIN C., Assistant Professor of Office Administration  
LYNAM, WILLIAM T., Lecturer in Animal Science  
MacDONALD, JOHN, Instructor in Biology  
MALKANI, MOTI C., Assistant in Mathematics  
MANN, HARLAN S., Assistant Professor of Education at Bakersfield Center  
MANNING, JOHN CRAIGE, Professor of Geology at Bakersfield Center  
MANUKIAN, ALICE K., Assistant in Foreign Languages  
MARGOSIAN, EDWARD M., Instructor in Criminology  
MARQUEZ, JEROME, Lecturer in History  
MARUKO, EIJI, Lecturer in Music

MASSIE, MARK, Lecturer in Finance and Industry  
McCALL, SAMUEL, Assistant Professor of History at Bakersfield Center  
McCOLM, JAMES H., Instructor in Health Science  
McCUITION, SHARRON L., Instructor in Psychology  
McDANIEL, EUGENE W., Instructor in Criminology  
McKENNA, THOMAS J., Assistant Professor of Finance and Industry  
McKINNEY, HAROLD C., Instructor in Criminology  
MELNICK, DANIEL C., Instructor in English  
MELTON, ROGER L., Lecturer in Education at Bakersfield Center  
MESSERLIAN, SERPOUHIE, Assistant Professor of Foreign Languages  
MILVTINOVICH, DIANE, Assistant in Physical Education  
MORADIAN, TOM R., Instructor in English  
MORRIS, MAXELLE, Assistant Professor of Education at Bakersfield Center  
MORTLAND, WILLIAM J., JR., Assistant Professor of Criminology  
MOSHER, KENNETH D., Assistant Professor of Industrial Arts and Technology  
MURPHY, EDWARD, Lecturer in Music  
NACHTIGALL, GARY B., Assistant in Geography  
NELSEN, ALICE, Assistant Professor of Education at Bakersfield Center  
NELSON, HERMAN P., Field Instructor in Social Work (SBCH)  
NEWELL, LOUELLA E., Lecturer in English  
NIELSEN, ROBERT W., Assistant Professor of Music  
NITZ, MELVIN W., Assistant Professor of Criminology  
NORLYN, JACK D., Lecturer in Plant Science  
NUNEZ, THOMAS D., Lecturer in Social Welfare  
O'BANION, JAMES, Instructor in Speech Arts  
ODORFER, ADOLF, Associate Professor of Art  
OLNEY, JUDITH A., Lecturer in Plant Science  
ORAZE, ROGER, Lecturer in Mathematics  
ORTMAN, DALE, Assistant in Geology  
OSTRANDER, HOWARD W., Lecturer in Engineering  
OWENSBY, LOLA B., Assistant Professor of Physical Education  
OZIER, DANIEL W., Assistant Professor of Speech Arts  
PANKRATZ, ALAN A., Instructor in English  
PATIL, LAXMAN Y., Lecturer in Chemistry.  
PATNAUDE, WILLIAM E., Instructor in Art  
PAULS, ALBERT N., Assistant Professor of Office Administration  
PAYNE, SUSAN, Field Instructor in Social Work (CGC)  
PAYNTER, LEATRICE F., Instructor in English  
PECK, THOMAS C., Instructor in English  
PETROSINO, ANTONIO, Lecturer in Foreign Languages  
PLEWKA, EUGENE T., Field Instructor in Social Work (VA)  
PROUDIAN, JOHN P., Lecturer in Foreign Languages  
QUASCHNICK, JAMES L., Assistant Professor of Criminology  
READ, GEORGE, Assistant in Geography

REICH, JOSEPH A., Instructor in Health Science  
REMPEL, CLINTON, Assistant in Mathematics  
RENZ, RALPH W., Instructor in Industrial Arts  
ROBINSON, THEOLA L., Lecturer in Education  
RUCKER, JOE H., Lecturer in Mathematics  
SACKS, JOSEPH M., Associate Professor of Psychology  
SAFER, JOSEPH, Assistant Professor of Office Administration  
SALINAS, LUIS O., Lecturer in Ethnic Studies  
SAMUELIAN, VARAZ, Assistant Professor of Art  
SANTIGIAN, MARTY, Assistant Professor of Education  
SARKISIAN, EDWARD, Lecturer in Political Science  
SARKISIAN, GERALD R., Lecturer in Engineering  
SASAI, YOKO, Assistant Professor of Foreign Languages  
SAUNDERS, MARIE Y., Lecturer in Social Work  
SCHULTZ, RONALD C., Instructor in Health Science  
SCHUTT, JOHN E., Lecturer in Urban and Regional Planning  
SEIB, LORAN J., Assistant Professor of Graduate Studies  
SHASKY, JAMES F., Lecturer in Plant Science  
SIMMONS, CHARLES V., Lecturer in Agricultural Mechanics  
SKINNER, BYRON, Lecturer in History  
SKOFIS, ELIE, Lecturer in Agricultural Industry and Education  
SMETHERMAN, BOBBIE A., Lecturer in Linguistics and Political Science  
SMITH, JEAN J., Associate Professor of Psychology  
SMITH, LUCILE H. S., Lecturer in Biology  
SMITH, PHILIP, Associate Professor of Journalism  
SMITH, WILLIAM E., Professor of Animal Science  
STIGLICH, DAVID A., Assistant in Geography  
STONE, FREDERICA H., Field Instructor in Social Work (CSD)  
SWIERCINSKY, DENNIS, Instructor in Psychology  
TAYLOR, WALLACE A., Lecturer in History  
THOMPSON, LEONARD R., Lecturer in Health Science  
THOMPSON, ROBERT, Assistant in Physical Education and Recreation  
THORBURN, MARGARET C., Instructor in Nursing  
TODDHUNTER, LAWRENCE, Lecturer in Education  
TOEWS, CAROLYN R., Instructor in Psychology  
TOFFOLI, WINONA B., Lecturer in Biology  
TREMBLEY, SHIRLEY, Assistant Professor of Mathematics at Bakersfield Center  
TUCCORI, L. STANLEY, Lecturer in Political Science  
VAKIL, LEENA C., Instructor in Geography  
VALDEZ, LUIS, Lecturer in Ethnic Studies  
VOSTRAK, EDWARD C., Assistant in Foreign Languages  
WADDLE, CARL D., Assistant Professor of Linguistics  
WALKER, KRISTIE, Instructor in Office Administration  
WALKER, SYLVIA, Instructor in Psychology

WALLS, LICHUM HAN, Lecturer in Chemistry  
WALTS, PATRICIA A., Lecturer in Physical Education  
WASHINGTON, DELO E., Field Instructor in Social Work (STCDS)  
WHEELDIN, DON, Lecturer in Ethnic Studies  
WEINKE, MAY, Assistant Professor of Education  
WILLIAMS, GEORGE L., Lecturer in Mathematics  
WINNER, BECKY, Assistant Professor of Advanced Studies  
WONG, KWOK L., Lecturer in Chemistry  
WOOD, RONALD F., Lecturer in Urban and Regional Planning  
WORRELL, RALPH L., Lecturer in Geography and Urban and Regional Planning  
WRIGHT, PRESTON J., Field Instructor in Social Work (LGH)  
WYLIE, CAROLYN E., Instructor in English  
YEARY, PATRICIA C., Instructor in Home Economics  
YINGER, WINTHROP B., Lecturer in English  
ZELLMER, CAROL W., Assistant in Biology  
ZIERING, WILLIAM H., Lecturer in Social Work

## EMERITI

*(Numbers in parentheses indicate years of service at Fresno State College)*

- ADDICOTT, IRWIN O. (1934; 1950-1966), Vice President Emeritus; Professor Emeritus of Education  
BA, University of California; MA, BD, Pacific School of Religion; EdD, Stanford University.
- ADDINGTON, ARCH R. (1928-1960), Professor Emeritus of Geology  
BA, MA, Indiana University.
- ALLINGHAM, GRACE (1918-1944), Associate Professor Emeritus of Home-making  
BS, Kansas State Agricultural College; BS, MA, Columbia University.
- BAKER, RANNIE B. (1942-1956), Professor Emeritus of English  
BS, Northwestern University; MA, Rollins College; PhD, Syracuse University.
- BEATTY, HAROLD J. (1937-1970), Professor Emeritus of Physical Education  
BA, Fresno State College; MA, University of California at Berkeley.
- BEARD, C. NOBLE (1937-Spring 1970), Professor Emeritus of Geology  
BA, MA, Indiana University; PhD, University of Illinois.
- BEIDEN, J. PETER (1948-1970), Associate Professor Emeritus of Physical Education  
BA, University of Redlands.
- BERDAHL, ARTHUR C. (1932-1970), Professor Emeritus of Music  
BA, Augustana College; MA, PhD, State University of Iowa.
- BIGELOW, MARION E. (1932-1965), Professor Emeritus of Physical Education  
BS, MS, University of Wisconsin.
- BILLARD, GERTRUDE S. (1938-1957), Professor Emeritus of English  
BA, Mt. Holyoke College; MA, PhD, Cornell University.
- BIRD, C. WESLEY (1932-1969), Professor Emeritus of Foreign Languages  
BA, MA, Oberlin College; Diplôme, Grenoble University; MA, PhD, Princeton University.
- BRADFORD, LILAH C. (1928-1958), Associate Professor Emeritus of Secretarial Administration  
BA, University of Oregon; MA, Stanford University.
- BRAUN, O. MARTIN (1936-1968), Principal Vocational Instructor in Agriculture Emeritus  
BS, MA, University of California.
- BREWSTER, MARJORIE A. (1922; 1930-1964), Associate Professor Emeritus of Elementary Education  
BA, Fresno State College; MS, University of Southern California.
- BRIGGS, MITCHELL P. (1928-1954), Dean of Instruction Emeritus  
BA, Morningside College; MA, University of Wisconsin; PhD, Stanford University.
- BURBRIDGE, HARRY C. (1921-1954), Professor Emeritus of Physics  
BA, PhD, Stanford University.
- CANFIELD, JAMES W. (1927-1957), Associate Professor Emeritus of Education  
BS, University of Utah; MA, University of California.
- COLEMAN, EARL H. (1929-1954), Professor Emeritus of Biology and Health Education  
BA, Stanford University; MD, University of California.
- CULBERTSON, ALEXANDER E. (1925-1956), Professor Emeritus of Biology  
BA, Emporia College; BA, Yale University; MA, Kansas University.

- DOYLE, KATHERINE E. (1937-1964), Professor Emeritus of Physical Education  
BA, Stanford University; MS, Wellesley College.
- FALK, KARL L. (1938-1968), Professor Emeritus of Economics  
BA, Stanford University; PhD, University of Berlin.
- FISK, McKEE (1948-1969), Dean Emeritus of Business. Professor Emeritus of  
Business Administration.  
BA, Oklahoma City University; MA, University of Southern California; PhD,  
Yale University.
- GALE, JANE G. (1935-1959), Associate Professor Emeritus of Art  
BS, MA, Columbia University.
- GROSSE, MARION A. (1930-1962), Professor Emeritus of Industrial Arts  
BA, Fresno State College; MA, Stanford University.
- GURLEY, RALPH R. (1947-1960), Professor Emeritus of Engineering  
BS, United States Naval Academy; MS, Columbia University; Registered Me-  
chanical Engineer.
- HANNER, J. FLINT (1925-1964), Professor Emeritus of Physical Education  
BA, MA, Stanford University.
- HARTON, JOHN J. (1941-1966), Professor Emeritus of Education  
BA, Hendrix College; MA, George Peabody College; PhD, Duke University;  
Licensed Psychologist.
- HENDERSON, BETTY A. (1941-1961), Professor Emeritus of Home Economics  
BA, Fresno State College; MA, University of California at Los Angeles.
- HERBERT, JOHN E. (1928-1966), Professor Emeritus of Art  
BEd, University of California at Los Angeles; MA, Columbia University.
- HOAG, ALEXANDRA BRADSHAW (1917-1948), Professor Emeritus of Fine  
Arts  
BA, Stanford University.
- HUPPRICH, MABEL (1944-1970), Professor Emeritus of Physical Education  
BS, MS, University of Wisconsin.
- INGLES, LLOYD G. (1945-1966), Professor Emeritus of Zoology  
BA, Redlands University; MA, Claremont College; PhD, University of Cali-  
fornia.
- JACK, RALPH A. (1930-1956), Professor Emeritus of Physics  
BA, Pacific University; MA, University of California; Registered Electrical  
Engineer.
- JOYAL, ARNOLD E. (1948-1964), President Emeritus  
BA, MA, PhD, University of California; LHD, California College of Medicine.
- KELLEY, ELIZABETH (1946-1957), Professor Emeritus of Health Education  
BA, University of Wisconsin; MA, New York University; EdD, Stanford  
University.
- KYLBERG, BESSIE N. (1947-1962), Librarian III Emeritus  
BA, University of California.
- LANG, ALBERT R. (1927-1955), Executive Dean Emeritus  
BA, Wesleyan University; MA, University of Nebraska; PhD, Stanford Uni-  
versity.
- LARRABEE, CARLTON H. (1947-Spring 1969), Professor Emeritus of English  
BA, Clark University; MA, Harvard University; EdD, New York University.
- LUNDKVIST, LYLLIS D. (1939-1963), Professor Emeritus of Music  
BM, MA, University of Washington.
- MASTEN, JOHN W. (1929-1953), Assistant Professor Emeritus of Agriculture  
BS, MA, University of California.

- McGREW, J. FRED (1932-1958), Associate Professor Emeritus of Speech  
BA, Willamette University; MA, University of Wisconsin.
- McKIM, V. CALVON (1942-1963), Professor Emeritus of Geography  
BA, Nebraska State Teachers College at Wayne; MA, PhD, University of  
Nebraska.
- MIKESELL, WILBUR B. (1926-1946), Associate Professor Emeritus of Commerce  
BA, Ohio State University; MA, University of California.
- MUDGE, LOUIS A. (1939-1966), Professor Emeritus of Marketing  
BS, MS, EdD, University of Southern California.
- NOAKES, GEOFFREY B. (1947-1965), Professor Emeritus of Industrial Arts  
BA, MA, Fresno State College.
- ODORFER, ELLA M. (1928-1963), Professor Emeritus of Art  
BA, University of North Dakota; MA, Columbia University.
- PHILLIPS, HUBERT (1923-1955), Professor Emeritus of Social Science  
BA, University of Chattanooga; MA, PhD, Columbia University.
- PIERSON, ALVIN P. (1941-1968), Professor Emeritus of Finance and Industry  
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